



**ST. PAUL'S HOSPITAL MILLENNIUM
MEDICAL COLLEGE, SCHOOL OF PUBLIC HEALTH
DIETARY DIVERSITY PRACTICE AND ASSOCIATED
FACTORS AMONG PREGNANT WOMEN ATTENDING
ANTENATAL CARE AT URBAN PUBLIC HEALTH
FACILITIES IN SULULTA DISTRICT, OROMIA SPECIAL
ZONE SURROUNDING FINFINE, CENTRAL ETHIOPIA**

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Dietary diversity practice and associated factors among pregnant women attending antenatal care at urban public health facilities in Sululta District, Oromia Special Zone Surrounding Finfine, Central Ethiopia

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ABSTRACT

Background: - Dietary diversity among mothers is a proxy for dietary sufficiency, and it benefits both the mother and the baby. However, low dietary diversity has serious consequences for mothers, fetuses, and infants. Dietary variety among pregnant women is still limited in low-resource countries. There is limited information documented on maternal dietary diversity and associated variables in the study area.

Objectives: - To assess dietary diversity practice and associated factors among pregnant women attending antenatal care at urban public health facilities in Sululta District, Oromia Special Zone Surrounding Finfine, Central Ethiopia 2022.

Methodology: An Institutional based cross-sectional design was conducted from May to June, 2022. A total of 414 mothers who had antenatal care follow up at urban public health facilities in Sululta District were interviewed. Systematic random sampling method was used on selected study participant. Data were entered in to Epi info version 7.2 and exported to Statistical Package for Social Science (SPSS) version 25 for analysis. Descriptive statistics, bivariate and multivariable logistic regression analyses were employed to describe the characteristic of the study participant put result and identify factors associated with dietary diversity.

Result: - This study shows that 61.8% (95%CI:57-67%) of pregnant women had adequate dietary diversity. Having monthly income of 3501-5000 ETB (AOR=5.0143, 95% CI: 1.787-14.069) and above 5001(AOR=7.354, 95%CI: 2.408-22.458), attending secondary education (AOR=5.766, 95% CI :2.492-13.343), good knowledge (AOR=6.126,95%CI:2.700-13.899) and owning home gardening (AOR=5.492, 95%CI: 2.759-10.931) were factors positively associated with dietary diversity of pregnant women.

Conclusions: The findings of this study showed that the prevalence of adequate dietary diversity was low. Average monthly income, educational status, owning home garden and dietary knowledge were factors significantly associated with adequate dietary diversity practice. Therefore, attention should be paid to promote educational status, promote owning home garden practice and improve sustainable income generating activities through increases community awareness

Keywords: Pregnant women, Dietary diversity, Sululta district, Central Ethiopia

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ABBREVIATIONS

ANC=Ante Natal Care

AOR= Adjusted Odd Ratio

ASF = Animal-Source Foods

BMI=Body Mass Index

CI = Confidence Intervals

COR = Crude Odds Ratio

DDS = Dietary Diversity Scores

DRC =Democratic Republican Congo

EDHS = Ethiopian Demographic Health survey

ETB=Ethiopian Birr

FANTA=Food and Nutrition Technical Assistance

FAO= Food and Agriculture Organization

MDDS= Minimum Dietary Diversity Score

MDDW= Minimum Dietary Diversity of Women

OR =Odds Ratio

SD=Standard Deviation

SDG = Sustainable Development Goal

SPSS=Statistical Package for Social Scientists

TM= Trimister Pregnancy

UN= United Nations

USAID =United States Agency of International Development

WHO=World Health Organization

1. INTRODUCTION

1.1 Background

Dietary diversity refers to the consumption of a variety of foods from a variety of food groups over a period of time in order to ensure a sufficient intake of micronutrients, which can promote a healthy eating pattern and minimize significant chronic illness. Dietary diversity scores (DDS) were created to measure nutrient and energy intake adequacy in women and young children in low-resource settings (1,2). According to the Minimum Dietary Variety of Women (MDD-W) guideline line, women with minimally acceptable diet diversity have consumed at least 5 of the 10 probable food groups over a 24-hour recall period. The Food and Agriculture Organization (FAO) and the United States Agency for International Development (USAID) both recommend using the Minimum Dietary Diversity of Women as a categorical indicator of individual dietary diversity for women (MDD-W). The foods or food groups included in the minimum dietary diversity of women (MDD-W) primarily reflect diet quality, with the likelihood of minimum micronutrient adequacy of the women's diets summarized across 11 important micronutrients: vitamin A, vitamin B1 (thiamine), vitamin B2 (riboflavin), vitamin B3, vitamin B6, vitamin B12, vitamin C, folate, calcium, iron, and zinc (2).

Dietary diversity, which entails include more food groups in a pregnant woman's daily diet, is one of the most effective approaches to improve diet adequacy. To fulfill the increased demand for nutrients needed for breast and uterine growth, as well as tissue synthesis, pregnant women need a diet rich in micronutrients. As a result, pregnant women are advised to eat a greater variety of food than usual (2–4). A woman who has been well-nourished prior to conception begins her pregnancy with sufficient reserves of numerous nutrients to meet the growing foetus's recurring demands without jeopardizing her health. Infants who have been well-fed in the womb have a better chance of surviving life in good health (5).

The World Health Organization (WHO) issued new recommendations in 2016 for a positive pregnancy experience, emphasizing the importance of nutrition through dietary interventions and micronutrient supplementation, as well as health-system interventions to improve the use and quality of Ante Natal Care (ANC) (6). Early beginning of a balanced diet throughout pregnancy, as well as strict adherence to a variety of micronutrient supplements, resulted in greater overall benefits throughout Ante Natal Care (4,7).

1.2 Statement of the problems

In addition to women's nutrient needs, adequate dietary consumption during pregnancy is critical for the fetus's growth and development. However, inadequate dietary consumption during pregnancy is the leading cause of morbidity and mortality in hundreds of millions of pregnant women worldwide, with 570.8 million women of reproductive age (15–49 years) anemic and 20.5 million infants (14.6 percent of all live births) have a low birth weight (8). Seven percent of the global disease burden and at least one-fifth of maternal deaths and poor maternal outcomes are as the result of maternal inadequate dietary diversity (9).

Women's meals in developing countries are often monotonous, consisting mostly of starch-based goods avoid of vegetables, fruits, and animal-based foods, resulting in high levels of malnutrition and vitamin deficiencies (4,10). Maternal and child malnutrition, as well as adverse pregnancy outcomes, are disproportionately affecting low- and middle-income countries in Africa and Asia(11). Pregnant women's dietary patterns varied widely across four low-middle-income countries (Guatemala, India, Pakistan, and the Democratic Republic of the Congo), with only about a fifth (20%) of Pakistani women consuming a diet with adequate dietary diversity, compared to 25% in the Democratic Republic of the Congo, 50% in Guatemala, and 70% in India. More than 80% of women in all sites had insufficient folate, vitamin B12, and choline during pregnancy(12). In addition, pregnancy women in sub-Saharan Africa including Ethiopia remain particularly exposed to inadequate intake of micronutrients, resulting in different types of malnutrition and its complications have insufficient dietary consumption) (9) and do not meet the recommended dietary allowances (RDA(13). As result, pregnant mothers who were inadequate consumed during pregnancy and childbirth, as well as their infants, would endure unusual physical and mental development. Many studies revealed that, pregnant women who are inadequate intake of diversity are more likely to have an unfavorable birth outcome, such as intrauterine growth retardation, obstructed labor, having a baby with a low birth weight, or death from postpartum hemorrhage(14,15). In those who followed the diet religiously, proper nutrient intake throughout pregnancy was observed to minimize the risk of low birth weight (19%), small-for-gestational-age births (8%), preterm birth (16%), and infant mortality (15%). Multiple micronutrient supplementation started before 20 weeks of pregnancy reduced the incidence of preterm birth by 11% in underweight women (16,17).

In Ethiopia, one out of every four women aged 15 to 49 years is malnourished (18). Particularly, Ethiopia has the lowest fruit intake rate among women and the second lowest vegetable consumption rate among the 187 countries studied (19). According to WHO recommendation of vegetable and fruits consumption, the average Ethiopian vegetable and fruits consumption meet only 36.4% of the recommendation (20).

In Ethiopia, the rate of inadequate dietary diversification among pregnant women was estimated to be 53% at the national level(21) and food groups like cereals or grains contribute to the highest proportion of women's diet which is low in quality, diversity and micronutrient content. A diet dominated by staple foods with little diversity can contribute to the burden of micronutrient deficiencies and malnutrition in Ethiopia(22). Ethiopian government developed the second phase in 2016-2020, which focuses on the critical 1000-day window – from pregnancy to the first two years of life – to address malnutrition and improve the nutrition of pregnant and lactating women through comprehensive and routine nutritional assessments and counseling services(23). Therefore, efforts to enhance maternal awareness about nutrition in general, and promoting dietary diversity (≥ 5 food groups) to increase animal sources foods (ASF), fruits and vegetables in particular, could help improve maternal nutrition and prevent the associated adverse outcomes(5). Some studies explored factors influencing maternal dietary diversity adequacy in different parts of the region. For instance, maternal education(24–26), husband education(26), place of residence(27,28), family size(24,27), income(24,27), nutritional information(26,27) and knowledge of dietary diversity(29,30) were the main identified factors for poor dietary diversity in Ethiopia.

In Ethiopia, many studies were conducted about the proportion of pregnant women with dietary diversity and its associated factors. However, there was only 47% proportion of dietary diversity report among pregnant women (21,31). Despite the fact that maternal nutrition during pregnancy is critical for reducing maternal and infant mortality, which is a target area for achieving sustainable development goals; identifying and addressing the possible factors linked to maternal dietary diversity can help improve the nutritional and health status of both the mother and her fetus.

In the study area, research, program reports, and other information explanation linked to maternal nutrition diversity practices, and initiatives are limited. Therefore, this study was aimed

to assess maternal dietary diversity practice and associated factors among pregnant women attending antenatal care in study area

1.3 Significance of the study

Ethiopia's government is working to eliminate hunger, ensure food security, and improve nutrition by 2030, as well as support sustainable agriculture and the United Nations Sustainable Development Goals (SDGs). The Sustainable Development Goals, on the other hand, cannot be achieved until maternal and child nutrition in the country, particularly in the study area, improves. In order to improve it, pregnant women's dietary diversification status must be improved over time by addressing information gaps and removing adherence barriers. As result in this study identifying and addressing the further possible factors connected to maternal dietary diversity may be helps to greatly improve the nutritional and health condition of both the mother and her fetus. This study will help policy maker, programmer, and organization working at national, regional and local level. Also findings of this study might be used as a baseline for planning, and designing appropriate nutrition interventions like delivering nutritional education such as diversified and fortified diet intake and other nutritional initiative activities during first trimester of pregnancy at ante natal care are aimed for improving the dietary diversity of pregnant women.

2. LITERATURE REVIEW

2.1 Magnitude of Dietary Diversity

According to a study conducted in four (Democratic Republic of Congo (DRC), Guatemalan, Pakistan and India) low-middle-income nations, including Pakistan, only about a fifth of women had a diverse diet, and more than 70% of those who did consume animal-source foods (ASF). In the Democratic Republic of Congo (DRC), just around a quarter of women said they ate a varied diet. Fermented maize flour and other staples (46 percent), such as cassava, and vitamin-A rich dark leafy greens (33 percent), came in second and third, respectively, behind non-vitamin A rich veggies (7 percent), peanuts (7 percent), and small fish/insects (4 percent), such as caterpillars (12). Similarly study at Guatemalan reveal that, 50% of women ate a diversified diet and had appropriate dietary diversity. Frequent consumption of their staple foods, such as maize flour tortillas, rice, and bread (57 percent), as well as flesh foods (8 percent), pulses (5 percent), eggs (4 percent), non-vitamin A rich fruit (4 percent), and some dairy (2 percent), such as cheese, contributed to their energy consumption (12). In India, on the other hand, 70% of women said they ate at least five food types every day. Rice, wheat flour chapattis, and/or sorghum roti were the main sources of energy in their diet (46 percent), followed by buffalo milk tea and yogurt (18 percent), as well as a variety of pulses (12 percent), non-vitamin A rich vegetables (5 percent), fruit (3 percent), and peanuts (3 percent)(4,12).

The majority of respondents (60.6 percent) in a cross-sectional analytic study done in Kenya were in the tercile with significant dietary diversity (six food groups) and mean DDS of 6.84 ± 1.46 SD. Furthermore, the medium (4-5 food categories) and low dietary diversity terciles included 37 percent and 2.4 percent of respondents, respectively (three food groups). Cereals were the most regularly consumed items by respondents based on food groups (99.2 percent). In terms of meal frequency, 17.3% of survey respondents said they ate less than three times per day(32).

Study conducted in Jille Tumuga, Northeast Ethiopia, reveal that 31.4 percent of pregnant women exercise enough dietary diversit, (26). Similarly, a research in Bahir Dar town found that just 60.7 percent of study participants had poor dietary habits (30). According to a cross-sectional study done at Bale Zone more than half of pregnant women (55.2 percent) had insufficient diversity, and 77.2 percent of participants ate twice a day. Around 87.9% of pregnant women consumed starchy essentials in the previous 24 hours, 8.2% consumed fish and fish

products, and 21% had received supplementary nutrition during pregnancy. Only 39.2 percent of respondents had a home garden, whereas 39.2 percent and 25.4 percent obtained dietary diversity information from radio and health practitioners, respectively (28). Similarly, study conducted at Shashemane, the average dietary variety score among pregnant women was 3.48 2.46 SD, with scores ranging from 3 to 7 food groups, and only 25.4 percent of pregnant women receive the bare minimum of nutritional diversity. When it came to meal frequency, 23.2 percent of people ate four or more times per day. Only 20.3 percent of respondents ate snacks, although nearly all pregnant women (95 percent) ate starchy basics, two-thirds of women ate other veggies, and 58.7% ate nuts and seeds in the preceding 24 hours. Furthermore, animal-based foods were consumed infrequently, with 33.3 percent of dairy products consumed, and the egg being the least consumed (24).

In contrast, a research conducted at Wacha Primary Hospital in Southwest Ethiopia found that 51% of pregnant women fulfill the minimum dietary diversity requirements, while 49% consume less than five food groups (unmeet minimum dietary diversity score). The mean dietary variety score among pregnant women was 4.5 1.268 SD, with scores ranging from 1 to 8 food groups, according to this study. In terms of the food groups consumed by pregnant women in the previous 24 hours, 98.5 percent consumed starchy stable food groups, 75.3 percent consumed pulses, 56.3 percent consumed dark green leafy vegetables, and 51 percent consumed other vitamin –A-rich fruits and vegetables, while eggs (8.7%) and meat were the least consumed food groups(33). Furthermore, a study conducted at Wachemo University's Nigist Eleni Mohammed memorial referral hospital found that 42.6 percent of respondent were follow good dietary variety practices. Cereals, legumes, eggs, and animal source foods (98.3 percent, 99 percent, 95 percent, 42.5 percent, and 50.5) were ingested over a 24-hour recall study, and just 44.6 percent had received any nutrition information(34). According to a study conducted at Alamata General Hospital in the Raya Azebo Zone, 61.2 percent of patients had high MDDS and 38.8% had low MDDS. In terms of diet, 98.5 percent of the study participants had ingested cereals over the previous 24 hours. Teff, wheat, and maize were the main cereals consumed in the area, and they were considered staple foods. Vegetables were also an important source of nutrients, as they contained a variety of minerals and vitamins. Eighty-five percent of the participants in the study ate dark green leafy vegetables, while 81.6 percent ate other vegetables (onion, tomato, and egg plants). Only 34% of respondents in this poll had done any gardening at home(27).

A community based cross-sectional study conducted in Illu Abor Zone indicates 65.5% pregnant women had adequate DDS while only 37.2% had good nutrition knowledge. The mean (\pm SD) dietary diversity score of pregnant women was 4.88 ± 1.33 . Regarding food groups majority of pregnant women reported consuming cereal-based foods, dark green leafy vegetables, vitamin A-rich fruits and vegetables other fruits and vegetables, legumes, nuts, and seeds (99.8%,72.7%,50.1%,75.4 and 87.6%) respectively in the last 24 h preceding the survey(29). In Ethiopia many studies were conducted about proportion pregnant women with DD while with only 47% of pregnant women required to meet national dietary diversity requirements (21).

2.2 Factors affecting dietary diversity

2.2.1 Socio-demographic factors

Several studies report the association between women dietary diversity and socio-demographic factors. For instance study in Bangladesh reveals that, literacy and increasing household size are positive effect on adequate dietary diversity among the pregnant women(35) and women who received low level of support from their husbands, those with high support are consume diverse diets (36). Health survey conducted in Ghana indicates Women educational level was associated with higher DD—women who had higher than primary educational are achieve higher DD than those with no education and women who received low level of support from their husbands, those with high support are consume diverse diets(37). Similarly study conducted in Tanzania shows levels of education house hold head are strongly positive effect on dietary diversity(38).

According to different study in Ethiopia, factors like partners having government employee, educational status (attended secondary education and above) (27,29,34)and husband support (24,33) are significant associated with adequate DD. According to an institutional based cross-sectional study conducted at Wacha primary hospital, Southwest Ethiopia show that head of household being husband, age of women fewer than 25 and age between 25 to 34 years were significantly associated with the minimum dietary diversity score(33). Study done at Bale show that being rural and family size were the factors associated with adequate dietary diversity among the pregnant women(28)

2.2.2 Socio-economic factors

According to study conducted in Bangladesh reveals that land ownership, vegetable gardens and increasing wealth are positive effect on adequate dietary diversity among the pregnant

women(35).Also research done in Tanzania indicate that house hold having vegetable gardens and land ownership are strongly positive effect on dietary diversity(38).

According to an institutional based cross-sectional study conducted at Shashemane, showed that whose household income was above 3500 ETB attaining adequate dietary diversity than those women whose household income was less than 2000 ETB(24) and pregnant women who had earning a monthly income of >_ 2000 ETB positively related with DD(34). Additionally study conducted in Bar Dar reveal that study participants whose hus- bands earn 1000–2000 ETB per month are e good dietary practice than those earning less than 1000 where as women whose husbands earn more than 2000 ETB are good dietary practice than those earning less than 1000 ETB (32). In other hand survey conducted at Aksum town show that who were not practicing home gardening are negatively associated with dietary diversity(39) while study in Bale show having a home garden was strongly positive effect with adequate dietary diversity among the pregnant women(28). According to study done in Alamata General Hospital, Ethiopia showed that being employed and merchant were significantly associated with high dietary diversity(27)

2.2.3 Feeding pattern factors

According to study conducted in the western hill region of Nepal women with adequate knowledge of nutrition during pregnancy consume a diverse diet than the women with inadequate knowledge on appropriate nutrition during pregnancy(40). Research conducted at Jille Tumuga indicate that pregnant women who had nutrition information positively significantly associated with DD(26).According to study conducted at Wacha primary hospital show pregnant women who received nutrition information during pregnancy are meet minimum dietary diversity score than those who didn't get nutrition information(33). Also community based cross-sectional study conducted in Illu Abor Zone indicates mothers who had good nutrition knowledge are to consume a diversified diet compared to their counterparts(29). Regarding factors like nutritional information and meals frequency (had three meals and above) are positively associated with dietary diversity among pregnant women (27,29,34). According to an institutional based cross-sectional study conducted at Bale zone indicate that pregnant who had got source of information from TV and radio are significantly associated with DD(28).

2.2.4Pregnancy Related factors

Study conducted in Dessie town indicted that first trimester was significantly associated with poor DD(41).In general, there were identified factors that influenced maternal dietary variety in

various sections of Ethiopia. The main identified factors for dietary diversity among pregnant women were maternal education(24–26), husband education(26), place of residence(27,28), family size(24,27), income(24,27), nutritional information(26,27), gestational age(41) and knowledge of dietary diversity(29,30). Despite the well-known importance of dietary diversity, there is little known about the dietary diversity of pregnant women in Ethiopia, particularly in the research area; thus, this study may be fill that gap.

2.3 Conceptual Frame work:

The conceptual framework of this study is developed from literature review through understanding capacity factor which affect women dietary diversity. It is summarized as maternal socio-demographic factor, socio economic status, maternal related pregnancy and feeding pattern factors.

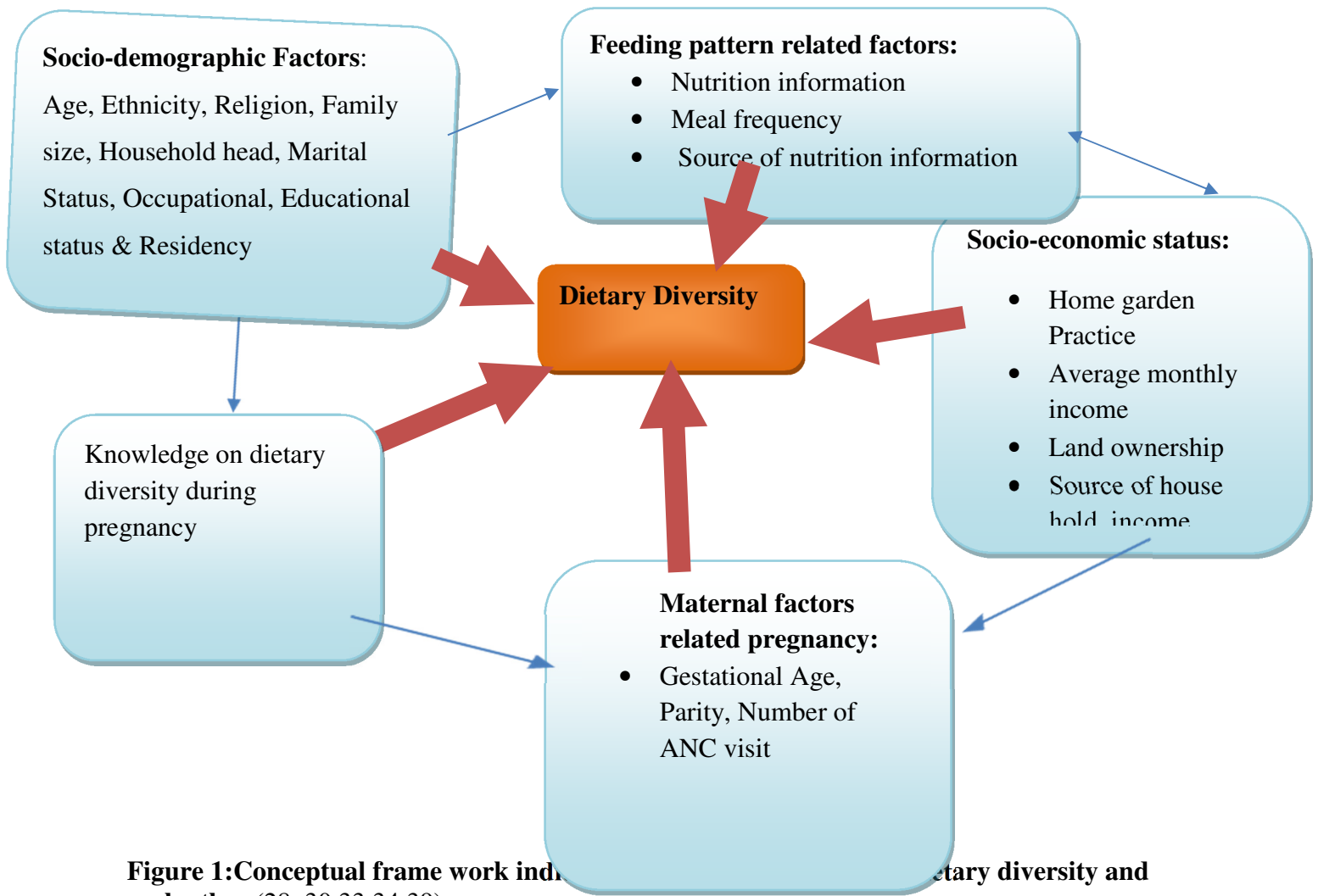


Figure 1:Conceptual frame work including maternal socio-demographic factors, socio economic status, maternal related pregnancy and feeding pattern factors and their influence on dietary diversity and each other (28,,30,33,34,39)

3. OBJECTIVES

3.1 General Objective

To assess dietary diversity practice and associated factors among pregnant women attending antenatal care at urban public health facilities in Sululta district, central Ethiopia, 2022.

3.2 Specific Objectives

- To determine prevalence of dietary diversity practice pregnant women attending antenatal care at urban public health facilities in Sululta district.
- To identify associated factors of dietary diversity practice among pregnant women attending antenatal care at urban public health facilities in Sululta district.

4. METHODS

4.1 Study period and setting

This study was conducted at urban public health facility in Sululta district of Oromia Special Zone Surrounding Finfine (OSZSF) Oromia administrative Region of central Ethiopia. According Central Statistical Agency(CSA)2021 projection report, Sululta district has a Male 92,607, Female 93,712 and a total population of 186,319. Also Sululta district has 41176 reproductive women and 6465 pregnant women. The district has three towns such as Chanco, Dubar and Gorfo. Chanco is the capital town for this district and 40km from Addis Ababa to north, and 23 rural kebele. Sululta district is divided into two agro-ecological conditions. Numbers of Public health facilities are one district hospital, six health center (3 rural and 3urban) and 23 health posts and private health facility are two medium clinics, 6 small clinics, 3 drug store (42).

The study was conducted from end of May – June 21 /2022

4.2 Study design

An Institutional based cross-sectional design was conducted.

4.3 Population

4.3.1 Source population

All pregnant women who attending antenatal care at urban public health facilities of Sululta district, central Ethiopia, 2022 were the source population of the study.

4.3.2 Study populations

All selected pregnant women who attending antenatal care follow up during data collection period at urban public health facilities in Sululta district.

4.3.3 Inclusion criteria

All pregnant women who attending antenatal care in the urban public health facilities during data collection period were included.

4.3.4 Exclusion criteria

All pregnant women who unable to communicate/hear and with chronic diseases (cancer and diabetes) were excluded from the study.

4.4 Sample size Determination

4.4.1 Sample size determination for first objectives:

The required sample size was determined using single population proportion formula based on the the following assumption; the proportion of dietary diversity practice among the pregnant women of in, Wachemo University Nigist Eleni Mohammed memorial referral hospital 42.6% (34) 95% confidence interval, a margin error of 5%, and 10% non-response rate.

Calculated as follows:

p = Proportion of pregnant women dietary diversity practice (42.6%).

$$n = (z\alpha/2)^2 p (1-p)/d^2 \quad n = \frac{(1.96)^2 \cdot 0.426 (1-0.426)}{(0.05)^2} = 376$$

Dietary diversity practice (P1 = 42.6%) n = 376

Adding non-response rate of 10% = (376+376×10%) =414

4.4.2 Sample size determination for second objectives:

Sample size for factors associated with dietary diversity among pregnant women was calculated by using EPI info statistical software version 7 for some of the associated factors obtained from different literatures with the following assumption:

- Confidence level =95%, Power =80 and ratio of unexposed to exposed equivalent to 1.

Table 1 Sample size determination for second objectives calculation

Variable	P1 (%)	P2 (%)	CI	Power	Allocation ratio	AOR	Total sample size	Reference
Home garden practice	39.2	60.8	95%	80	1:1	2.34	236+10%=260	(28)
Place of residence	45.2	54.8	95%	80	1:1	3.72	106+10%=117	
Maternal educational status	33.3	67.7	95%	80	1:1	2.5	234+10% =257	(34)

Note: From the above sample size calculation for the two objectives, I used the highest sample size that is **414**

4.5 Sampling technique/procedure

Duber health facility, Gorfo health facility and Chanco health facility are urban public health facilities in Sululta district providing antenatal care services included in the study. The study participants for each health facilities were allocated proportionally after identifying the three months (September, October and December) antenatal care follow up of pregnant women at each health facility. The study participants were selected by systematic random sampling method. Sampling interval was calculated by dividing the monthly average attendance for antenatal care follow up at each health facility to calculated sample size; the sample of the study was allocated proportionally. The first study participant was started by lottery method then continue every 2nd pregnant woman visiting the urban public health facilities until the required numbers of samples were met

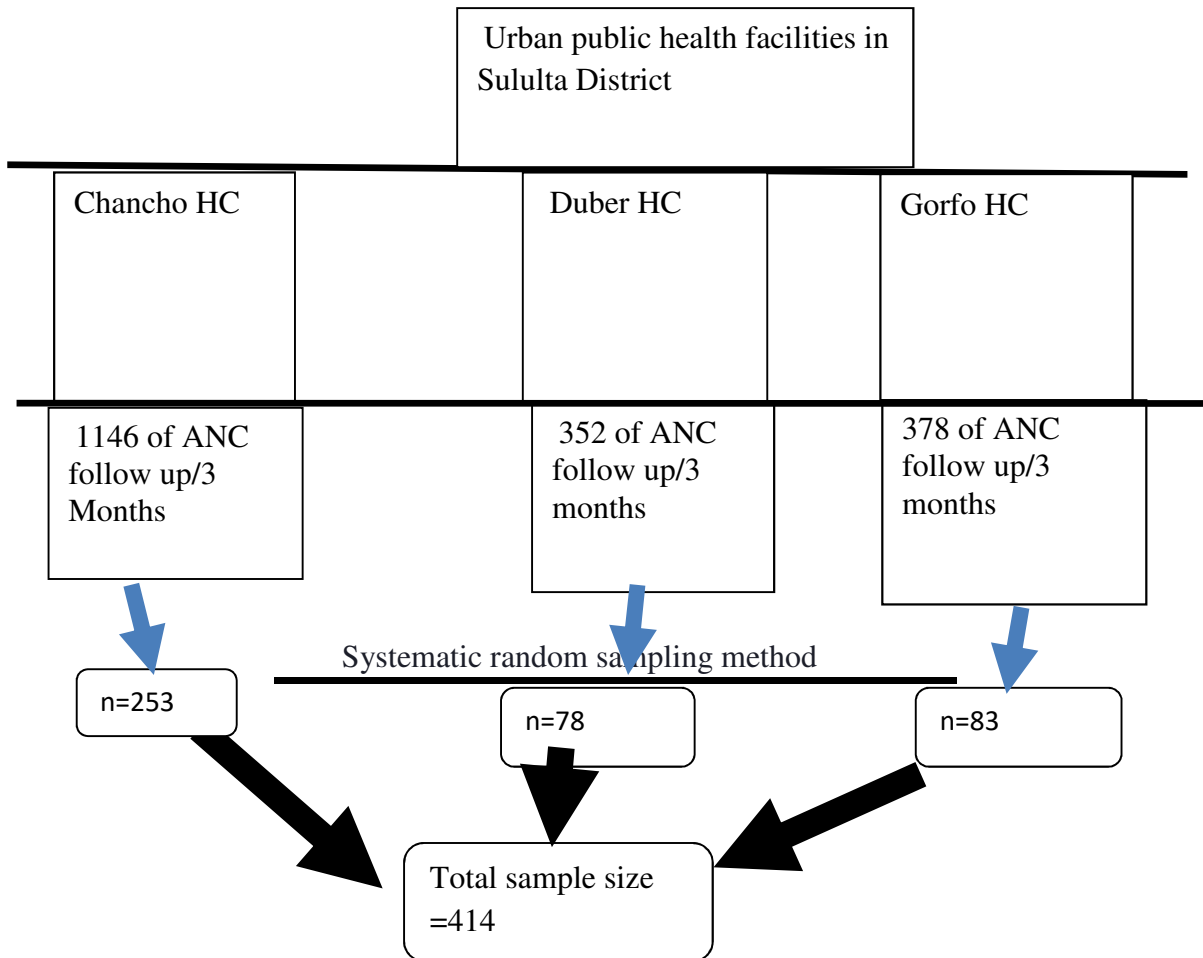


Figure 2 Proprtional allocation of sample size at urban public health facilities in Sululta district

4.6 Study variables

4.6.1 Dependent Variables:

Dietary diversity

4.6.2 Independent variables:

- **Socio-demographic Factors:** Age of women, Ethnicity, Religion, Family size, Marital Status, Occupation of women, Occupation of Husband, Educational status & Residence of mother, Land ownership, Home garden Practice, Main source of house hold income and Average monthly income
- **Pregnancy related and feeding pattern related factors:** Gestational Age, Nutrition information, Meal frequency, Parity, Number of ANC visit and Source of information,
- **Knowledge on nutrition**

4.7 Data Collection Tools

Pre-tested structured interviewer administered questionnaire was used. The questionnaire to collect information on socio-demographic factors, pregnancy related and feeding pattern related factors were adapted and reviewed from literature review(27,34). Also, a questionnaire to collect dietary diversity of pregnant women was adapted from a validated and modified individual dietary diversity guideline as recommended by Food and Agriculture Organization (FAO)(2,24,34). It was assessed by asking respondents to list all food items they consumed in the last 24 h preceding the survey day. Ten dietary diversity questions were used to assess dietary practices. The score of dietary practices was obtained by summation of responses of each question. Dietary knowledge of pregnant women was assessed by constructing 12 questions which were assumed to assess dietary knowledge of pregnant women on the aspects of nutrition required during pregnancy. Nutrition knowledge was computed by adding the responses, scoring (Yes=1) for each correct answer and (No=0) for each no correct answer. Similar questions were used by previous study(29,30). A face-to-face interview questionnaire was first translated into the local language Afan Oromo and Amharic then finally back to English for analysis.

4.8 Operational Definitions

Dietary diversity: refers to how many different food types pregnant women consume in a 24-hour period.

The dietary variety score is determined by how many of the 10 food groups are ingested by pregnant women. According to the MDDS guiding line, starch staples, vitamin A-rich vegetables and fruits; dark green leafy vegetables; other vegetables; other fruits; meat, poultry, and fish; eggs and pulses/legumes; nuts and seeds; and dairy products. The DDS is calculated by adding the amounts of several food groups consumed by pregnant women in the 24 hours preceding the examination. If the food is consumed, each group earns a score of 1; if it is not consumed, each group receives a score of 0.

Inadequate dietary diversity score: When pregnant women consumed less than five food groups among the 10 groups within 24 h before the survey.

Adequate dietary diversity score: When pregnant women consumed five or more food groups among the 10 groups within 24 h before the survey (2).

Good knowledge: If pregnant women correctly respond $\geq 75\%$ of knowledge related dietary questions.

Poor knowledge: If pregnant women respond $< 75\%$ of knowledge related dietary questions(29,30)

Meal frequency: Considered to be recommended (adequate) when respondents take ≥ 3 meals per day as a result of the current pregnancy, otherwise inadequate(27,29).

4.9 Data Quality Control

To assure the quality of data, standard data collection questionnaire was used. Four trainer clinical nurses were collected the data under the supervision of one health officers. The data collectors and supervisors were take one-day intensive training about the contents of the questionnaire and on how to collect the data properly in order to minimize error. The structured questionnaire was tested one week before the study period to test the questionnaire were appropriate for intended data collection. Questionnaire has been used in other previously published studies. The respondents who participated in pre-test process were at other institution which not selected for actual data was collected. The pre-test was done at Mulo district Hoja dure health facility 40 km from sululta apart on participant number equivalent to about 5% of all the study participants. The questionnaire was assessed and improve in its clarity; completeness before actual use. Collected data was checked on the daily basis for completeness and consistency by supervisors and principal investigator. Before data entry, each questionnaire was given a unique code by the principal investigator.

4.10 Data Processing and Analysis

The collected data was checked for its completeness and cleaned before entry into computer. Then the questionnaire was coded and data was entered into Epi info version 7.2. Then the data was exported to SPSS version 25 for further data cleaning and for analysis. Frequency was run to check for any missing values and checked accordingly, for analysis of the outcome variable. Descriptive statistics was presented using frequencies, percentages and graphs. In the bivariate analysis, the independent variables with a P-value ≤ 0.25 with the dependent variable were fitted into a multivariable logistic regression model to control cofounder factors. To know whether there was association between the outcome variable and each independent by multivariable regression analysis were used at less a P value of than 0.05. For measuring strength of the association between the outcome and independent variables, Crude Odd Ratio (COR) and Adjusted Odd Ratio (AOR) along with 95% Confidence interval (CI) was calculated. The fitness of the model was tested by Hosmer- Lemshow goodness of fit test, and accordingly the model was fitted (P=0.63) and significant (P>0.05). Finally, statistical significance was declared at p-value < 0.05.

4.11 Ethical consideration

Ethical clearance was obtained from the Institutional Review Board of St. Paul's Hospital millennium medical College (**Ref.No. PM 23/780 on Date 15/6/2022**) and from organizations where the study was conducted. All pregnant women who attend antenatal care at public health facility participate in the study were asked for their willingness to participated in the study, the right to withdraw at any time during the interview, all the reasons why mothers were chosen and why the research was done explained to the study subjects, confidentiality of the information also explained and verbal consent was assured for all participants.

4.12 Data dissemination and Utilization

The finding of the study is submitted to St. Paul's Hospital millennium medical College department of public health and publicly defended following submission. Copies of the finding is provided to relevant stake holders including nongovernment organizations working on the area and Sululta Woreda health office. Also the finding of study will be made to present on scientific conferences and it will be published on local or international journals.

5. RESULT

5.1 Socio- Demographic Characteristics

From a total of 414 pregnant women, 406 of them were participated in study with response rate of 98.7%. Around 142(35%) of study participants were between 25 and 29 years old. Majority 323 (79.6%) of respondents were Oromo and 324(79.8%) were Orthodox religion followers. About 171(42.1%) of study participants and 110(27.1%) of their husbands were attended secondary education. The majority 311(76.6%) of participants had less than 5 family size and 368(90.6%) of them were married. More than two hundred (59.4%) of study participants were house wife. Around 209(51.5%) of pregnant women were urban dwellers as shown in (Table 2) below.

Table 2:- Socio demographic characteristics of pregnant women attendig antenatal care at urban public health facilities in Sululta district, central Ethiopia, 2022.

Variables	Frequency	Percent (%)
Age in Years		
19-24	67	16.5
25-29	142	35.0
30-34	107	26.4
≥35	90	22.2
Religion		
Orthodoxy	324	79.8
Protestant	67	16.5
Others*****	15	3.6
Ethnicity		
Oromo	323	79.6
Amhara	58	14.3
Tigre	18	4.4
Others*	7	1.7
Marrital status		
Single	30	7.4
Married	368	90.6

Others ***	8	2.0
Education status of the women		
No formal education	75	18.5
Primary education	113	27.8
Secondary education	171	42.1
College/Above	47	11.6
Occupation of the women		
House wife	241	59.4
Merchant	84	20.7
Daily worker	30	7.4
Employee (government or non-government)	51	12.6
Family size		
Below 5	311	76.6
≥5	95	23.4
Place of residence		
Urban	209	51.5
Rular	197	48.5
Educational status of the husband		
No formal education	64	15.8
Primary education	100	24.6
Secondary education	110	27.1
College/Above	94	23.1
Occupation of the husband		
Employee (gornement or non gornement)	85	20.9
Farmer	138	34
Merchant	87	21.4
Daily Worker	54	13.3
Others**	4	1.0

* Gurage and Sidama, ** Driver and car-cleaner, *** Windowed, Divorced and Separated,
 ***** Muslim and Catholic

5.2 Socio-economic characteristics

About 136(33.5%) of study respondents had farming or livestock as a main income source of house hold. Mean average monthly income of house hold was 5232.67ETB and slightly more than one third (32.8%) of respondents earned above 5001ETB on average monthly. As depicted in (Table 3) below 275(67.7%) of pregnant women were owning home garden.

Table 3:-Socio economic characteristics of pregnant women attending antenatal care at urban public health facilities in Sululta district, central Ethiopia, 2022.

Variables	Frequency (406)	Percent (%)
Main income source of House Hold(Family)		
Farming or livestock	136	33.5
Merchant	112	27.6
Employee (government or non-government)	95	23.4
Daily labor	63	15.5
Average monthly income		
Below 2000 ETB	50	12.3
2001-3500ETB	129	31.8
3501-5000ETB	94	23.2
Above 5001ETB	133	32.8
Mean of monthly income	5232.67±3777.32 ETB	
Practice home gardening		
Yes	275	67.7
No	131	32.3
Land Ownership		
Yes	202	49.8
No	204	50.2

5.3 Maternal and nutrition characteristics of pregnant women

Slightly around two third (64%) of study participants were multigravida and 158(38.9%) of them were attended second ANC visit. Majority 319(78.6%) of the pregnant women were in 2nd trimester during the assessment. About 314 (77.3%) of pregnant women were consumed meals three and or above per day. About 287(70.7%) of pregnant women had received health information related pregnancy. Most 248(86.4%) of study participants were got health information about additional meals while 242(84.3%) of the pregnant women were got health information from the Health professionals as shown in (Table 4) below.

Table 4:- Maternal and nutrition characteristics of pregnant women attending antenatal care at urban public health facilities in Sululta district, central Ethiopia, 2022.

Variable	Frequency (406)	Percent (%)
Number of pregnancy		
Primi-gravida	94	23.2
Multigravida	260	64.0
Grand multigravida	52	12.8
Number of ANC visit		
First ANC visit	74	18.2
Second ANC visit	158	38.9
Third ANC visit	67	16.5
Fourth and above ANC visit	107	26.4
Gestational age		
1 st Trimester	20	4.9
2 nd Trimester	319	78.6
3 rd Trimester	67	16.5
Daily eating pattern		
Three and or above	314	77.3
Two and or below	92	22.7
Received health education during pregnancy		
Yes	287	70.7
No	119	29.3
Type of health information the get during pregnancy		
Iron source food	166	57.8
Additional meals	248	86.4
Healthy diets	220	76.7
Formal and informal information source		
Television	94	32.8
Neighbors	46	16
Health professional	242	84.3
Radio	63	22

5.4 Nutrition Related Knowledge of the Participants

Regarding knowledge assessment, nutrition knowledge was computed by adding the responses, scoring (Yes=1) for each correct answer and (No=0) for each no correct answer. All pregnant women had knowledge on benefit of diversity diet while only 24.6% of pregnant women had knowledge about macronutrients Essential Fatty Acid (EFA) sources (Table 5).

Table 5:- Nutrition of the pregnant women attending antenatal care at urban public health facilities in Sululta district, central Ethiopia, 2022.

Knowledge Variables		Frequency	Percent(%)
Know diversity diet	Yes	406	100.0
Benefit of dietary diversity	Yes	405	99.8
	No	1	0.2
Macronutrients carbohydrates sources	Yes	358	88.2
	No	48	11.8
Macronutrients proteins sources	Yes	268	66.0
	No	138	34.0
Macronutrients Essential Fatty Acid sources	Yes	100	24.6
	No	306	75.4
Micronutrients Iron sources	Yes	215	53.0
	No	191	47.0
Micronutrients Vitamin A sources	Yes	221	54.4
	No	185	45.6
Micronutrients Iodine sources	Yes	284	70.0
	No	122	30.0
Micronutrients Vitamin C sources	Yes	217	53.4
	No	189	46.6
Use of Iodized salt during pregnancy	Yes	291	71.7
	No	115	28.3
Maternal complication of maternal undernutrition	Yes	399	98.3
	No	7	1.7
Fetal complication of maternal undernutrition	Yes	394	97.0
	No	12	3.0

Majority 57(63.3%) of pregnant women had poor knowledge while only 147(36.7%) of them had good knowledge during assessment on nutrition (Figure 3).

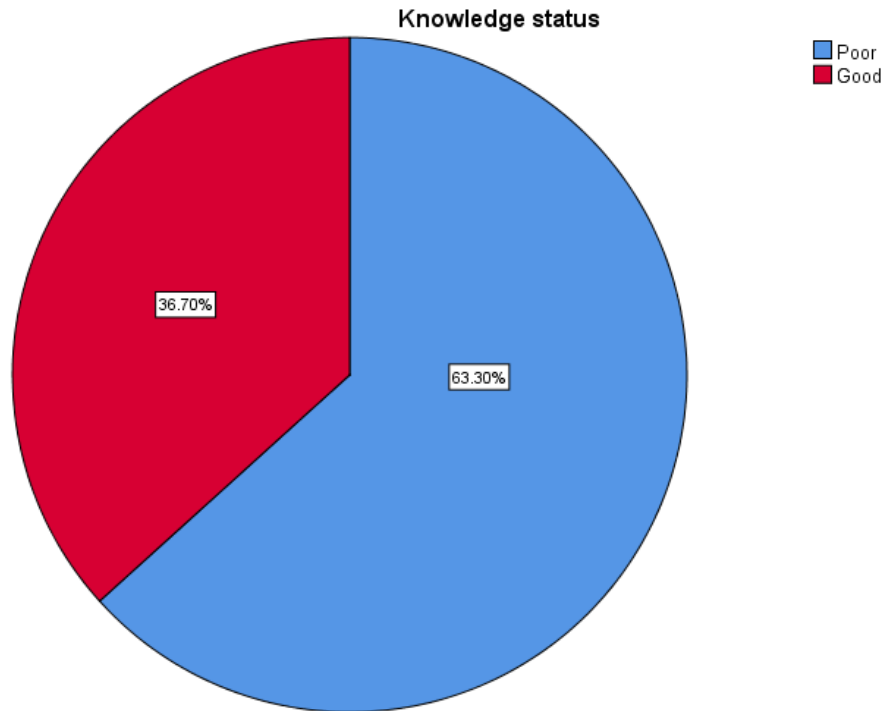


Figure 3:- Nutrition knowledge of the pregnant women attending antenatal care at urban public health facilities in Sululta district, central Ethiopia,2022

5.5 Dietary diversity score of the pregnant women

Regarding food groups, most commonly eaten by respondents were cereals 403(99.3) and pulses 329 (81.0%). On other hand, the least consumed food groups by pregnant women were other vitamin A rich fruits and vegetables (27.8%), meat, poultry and fish (28.3%), other fruits (31.3%) and eggs (32.3%) in the previous 24-hours food pattern recalls (Figure 4 below).

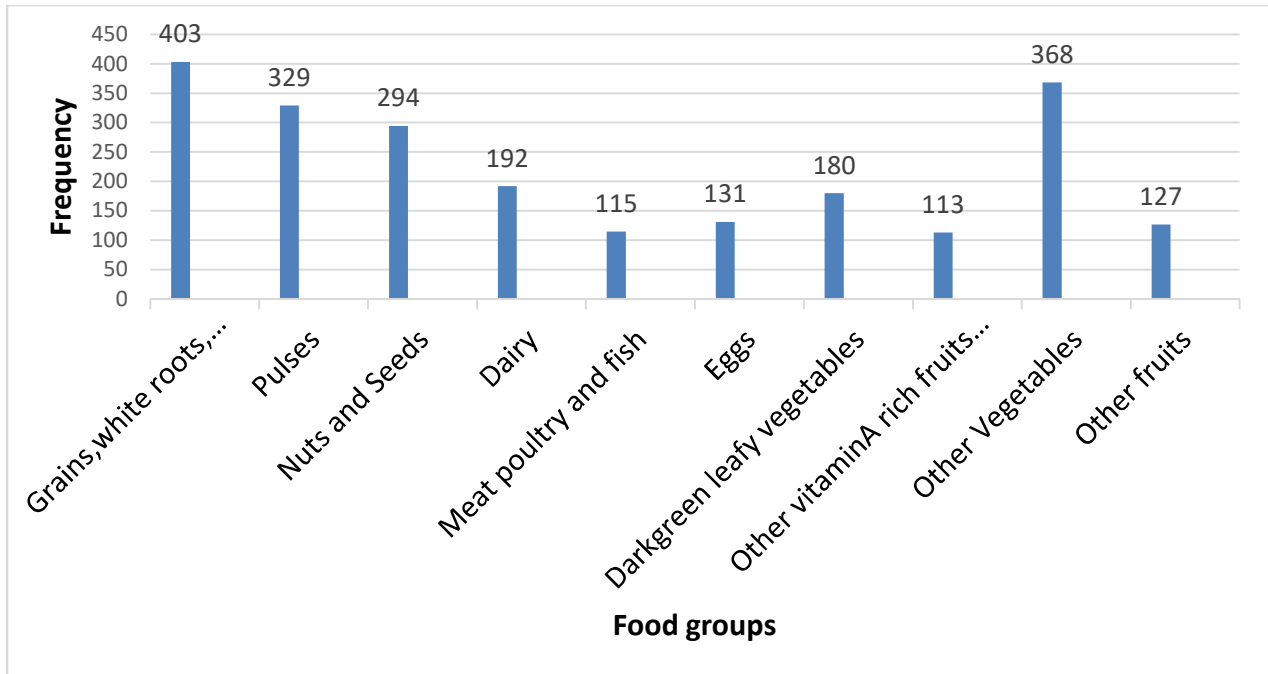


Figure 4:- Food groups of the pregnant women attending antenatal care at urban public health facilities in the Sululta district, central Ethiopia, 2022.

Majority 251(61.8%) (95%CI:57-67%) of pregnant women had adequate dietary diversity (≥ 5) and only 155(38.2%) of them had inadequate dietary diversity (< 5) (Figure 5 below). The mean (\pm SD) dietary diversity score of pregnant women was 5.5468 ± 1.93257 .

Prevalence of DD

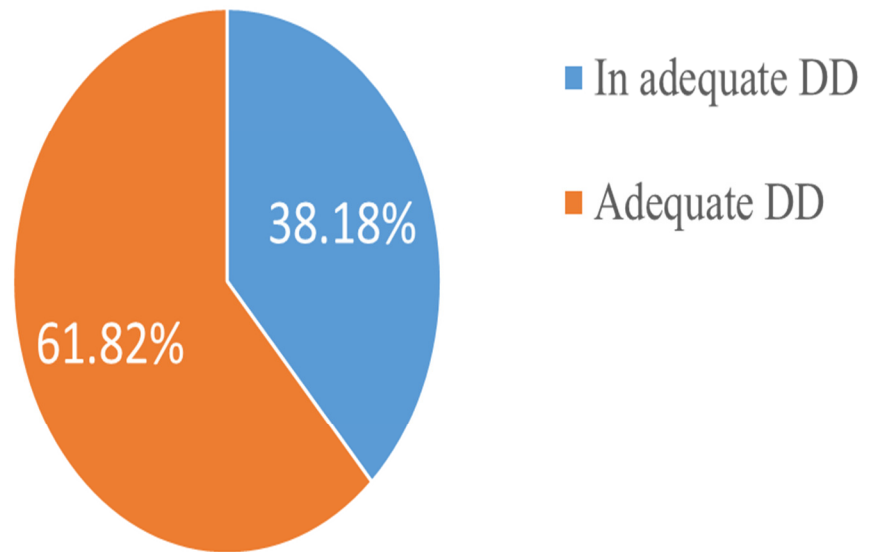


Figure 5 :-Dietary diversity score among pregnant women attending antenatal care at urban public health facilities in the Sululta district,central Ethiopia.

5.6 Factors affecting dietary diversity of pregnant women

In the Bivariate logistic regression land ownership, family size, main income source of house hold, average monthly income, women educational status, place of residence owning home gardening, dietary knowledge, number of pregnancy, daily eating pattern and attending nutrition counseling were associated with dietary diversity practice among pregnant women. On the other hand, in multivariate logistic regression analysis average monthly income, women educational status (secondary education), owning home gardening and dietary knowledge were factors significantly associated with adequate dietary diversity practice among pregnant women. The pregnant woman who had an average monthly income between 3501-5000 ETB (AOR=5.0143, 95% CI: 1.787-14.069) and above 5001(AOR=7.354, 95%CI: 2.408-22.458) were more likely adequate dietary diversity practice than those who had below 2000 ETB average monthly income. Pregnant women who attended secondary education (AOR=5.766, 95% CI :2.492-13.343) were more likely to practice adequate dietary diversity compared to pregnant women who didn't attend formal education. Also, pregnant women who had owning home gardening were 5 times (AOR=5.492, 95%CI: 2.759-10.931) more likely to consume adequate dietary diversity than their counterparts. Pregnant women who had good knowledge about nutrition were 6 times (AOR=6.652, 95%CI: 3.032-14.596) more likely practiced adequate dietary diversity than those pregnant women who had poor knowledge on nutrition.

Table 6 :-Multivariable Logistic Regression analysis of associated factors with dietary diversity among pregnant women attending antenatal care at urban public health facilities in Sululta district,central Ethiopia,2022.

Variables	Dietary diversity		COR (95% CI)	AOR (95% CI)
	Adequate	Inadequate		
Land Ownership				
Yes	147(72.8%)	55(27.2%)	2.570 (1.699-3.888) *	1.062(0.572-1.972)
No	104(51%)	100(49.0%)	1	1
Family size				
<5	202(65.0%)	109(35.0%)	1.740(1.093-2.770) *	1.046 (0.396-2.759)
≥5	49(51.6%)	46(48.4%)	1	1
Main income source of house hold				
Farmer and livestock	69(50.7%)	67(49.3%)	1	1
Merchant	27(24.1%)	85(75.9%)	3.242(1.874-5.609)*	1.061(0.445-2.532)
Employment (government or non-government)	15(15.8%)	80(84.2%)	5.493(2.879-10.478)*	1.217(0.414-3.575)
Daily labour	44(69.8%)	19(30.2%)	0.445(0.236-0.839)*	0.549(0.220-1.371)
Average monthly income				
Below 2000 ETB	11(22.0%)	39(78.0%)	1	1
2001-3500ETB	49(38.0%)	80(62.0%)	2.172(1.018-4.633)	1.663(0.652-4.244)
3501-5000ETB	72(76.6%)	22(23.4%)	11.603(5.100-26.398) *	5.014(1.787-14.069)**
Above 5001ETB	119(89.5%)	14(10.5%)	30.136(12.644-71.829)*	7.354(2.408-22.458)**
Education status of the women				
No formal education	25(33.3%)	50(66.7%)	1	1
Primary education	45(39.8%)	68(60.2%)	1.324(0.719-2.436)	1.201(0.547-2.637)
Secondary education	139(81.3%)	32(18.7%)	8.687(4.697-16.068) *	5.766(2.492-13.343)**
College and Above	42(89.4%)	5(10.6%)	16.800(5.913-47.728) *	2.392(0.536-10.670)
Place of residence				
Urban	148(70.8%)	61(29.2%)	2.214(1.471-3.332) *	0.645(0.327-1.275)
Rular	103(52.3%)	94(47.7%)	1	1

Home gardening Practice				
Yes	205(74.5%)	70(25.5%)	5.411(3.451-8.485) *	5.492(2.759-10.931)**
No	46(35.1%)	85(64.9%)	1	1
Received health education during pregnancy				
Yes	209(72.8%)	78(27.2%)	4.912(3.110 -7.759) *	1.906(0.993-3.659)
No	42(35.3%)	77(64.7%)	1	1
Knowledge status on nutrition				
Good	136(91.3%)	13(8.7%)	12.918(6.950-24.009) *	6.652(3.032-14.596)**
Poor	115(44.7%)	142(55.3%)	1	1
Number of pregnancy				
Multigravida	168(64.6%)	92(35.4%)	0.899(0.545-1.481)	0.665(0.311-1.422)
Grand gravida	20(38.5%)	32(61.5%)	0.308(0.152-0.622) *	0.393(0.097-1.596)
Prim gravida	63(67.0%)	31(33.0%)	1	1

ETB= Ethiopian Birr, COR = Crude odd ration, AOR=Adjusted Odd Ratio
 TM= Trimester Pregnancy *Significant at $P \leq 0.25$, ** Significant at $P < 0.05$

6. DISCUSSIONS

In this study, about two third of pregnant women had consumed good dietary diversity (≥ 5) food groups out of ten food groups, with mean DDS 5.5468 ± 1.93257 SD in the previous 24-hours. This study revealed that 61.8% (95%CI:57-67%) pregnant women practiced adequate dietary diversity. This finding is slightly greater than study done in in Laikipia, Kenya (60.6%). On the other hand, the mean dietary diversity is lower than the study conducted in Kenya, which was of 6.84 ± 1.46 SD (32). Additionally, prevalence of this study is greater than study conducted at Guatemalan (50%) (12), Jille Tumuga (31.4%) (26), Bahir Dar town (39.3%) (30), Bale Zone (44.8%) (28), Shashemane town (25.4%) (24), Wacha Primary Hospital(51%) (33) and Wachemo University's Nigist Eleni Mohammed memorial referral hospital (42.6%) (34). The possible discrepancy might be due to season variation, nutritional program implementation and geographical location. In contrast this result is lower than study in India (70%) (12). The variation figure might be due to nutritional police, study period and socio-cultural factors. Additionally, this finding is almost comparable with the reported rates of in the Raya Azebo Zone (61.2%) (27) and Illu Abor Zone (65.5%) (29). This similarity might be due implementation of various nutritional interventions and socio demographical characteristic.

In this study almost all 99.3% cereals and (81.0%) pulses are consumed by pregnant women in the previous 24-hours. The result of this study is almost similar with study done in in Laikipia, Kenya (32), Wacha Primary Hospital (33), Wachemo University's Nigist Eleni Mohammed memorial referral hospital (34) and in the Raya Azebo Zone (27). This might be most of respondents were consumed locally avail and grown food group within geographical placement and cereals food were always avail and grown due to similar culture of food production in the study area.

Pregnant women average household monthly income between 3501-5000 ETB and above 5001 more likely practiced adequate dietary diversities than those who had below 2000 ETB average household monthly income. This result is consistence with finding of finding studies done in shashemene (24),Laikipia County, Kenya(32) and Wachemo University's Nigist Eleni Mohammed memorial referral hospital (34). The possible explanation might be due to fact that pregnant women who have high income were increase their access to food group and increases chance of consuming variate foods.

This study implies that Pregnant women who attended secondary education were 5 time more likely to practice adequate dietary diversity compared to those who didn't attended formal education. This study was supported by study done in Illu Aba Bor Zone (29) and shashemene (24). This might be due to the fact that those women attaining secondary education were more likely to get information regarding nutritional needs and easily understand any educational messages. It is indicated that as education level increases, the practiced of dietary diversity is expected to increase.

Pregnant women who had owning home gardens were 5 time more likely to consume adequate dietary diversity than their counterparts. This study is supported by study done in Bale zone (28) and Tanzania(38). This might be due to reason that pregnant women who owning home garden increase access to the vegetables, other products, and increased income related to that may contributed to this. Pregnant women who had good knowledge about nutrition were six times more likely to have practice adequate dietary practice than those pregnant women who had poor knowledge. This finding is line with study in Illu Aba Bor (29) and Bar Dar town (30). The possible explanation might be due to fact that pregnant women who had good knowledge about basic nutrients and a balanced diet usually practice dietary diversity which are important for their optimal health to prevent diseases and for more concerning particularly during pregnant.

6.1 Limitation of the study

- ✓ This study might be affected by seasonal variation due to difference food group availability in house hold.
- ✓ This study was might didn't reflect exact figure of dietary diversity practice due to recall bias.

6.2 Conclusion

The findings of this study showed that the over all prevalence of adequate dietary diversity was low. Least consumed food groups by pregnant women were other vitamin A rich fruits and vegetables, while Most commonly eaten by pregnant women were cereals. Higher average monthly income, educational status, owning home garden and knowledge about dietary diet were factors associated with adequate dietary diversity practice.

6.3 Recommendation

❖ **Educational office**

- ✓ Promote the educational status of women through increases community awareness

❖ **Agriculture office**

- ✓ Promote owning home garden practice by increasing their awareness.

❖ **Micro finance office**

- ✓ Improve sustainable income generating activities by strengthen saving habit.

❖ **Health office and health professionals**

- ✓ Improve nutritional knowledge by counseling and health education by HEF and health professional during ANC visit, delivery and postnatal activity.

❖ **Researcher**

- ✓ Further study is needed in different seasons and to determine other variables that were not included in this research.

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DECLARATION

I, the undersigned, declare that the thesis comprises my own work. In compliance with internationally accepted practices, I have acknowledged and refereed all materials used in this work. I understand that non-adherence to the principles of academic honesty and integrity, misrepresentation/ fabrication of any idea/data/fact/source will constitute sufficient ground for disciplinary action by the college and can also evoke penal action from the sources which have not been properly cited or acknowledged.

Name of the student: Ashenafi Kasa

Signature: _____

Date: _____

Place: Addis Ababa, Ethiopia

Approval of the Primary Advisor

Name of the primary advisor: _____

Signature: _____

Date: _____

Approval of the Co-Advisor

Name of the primary advisor: _____

Signature: _____

Date: _____

8. Annexes

1.1 Annex I

Information Sheet and Informed Voluntary Consent Form for Pregnant Women Attending Antenatal at public health facility (English Version).

St. Pual's Hospital Millennium Medical College

Masters of Public Health Nutrition.

My name is _____. I am working as a data collector for the study being conducted in Sululta District by Ashenafi Kasa who is studying for research for his Master's degree of Public Health Nutrition at St. Pual's Hospital Millennium Medical College. I kindly request you to lend me your attention to explain you about the study and being selected as the study participant.

1. **Study title:** -. Dietary diversity practice and associated Factors among pregnant women Attending Antenatal at urban public health facility in Sululta District, Oromia Special Zone Surrounding Finfine, Central Ethiopia
2. **Purpose of the Study:** - Finding of this study can be paramount importance for the Sululta health office to plan intervention programs concerning prevalence Dietary diversity practice and Associated Factors among pregnant mothers at public health facility in Sululta District. It can also provide important base line information four further studies. More over the aim of this study is to write a thesis as a partial fulfillment of a Master's program in public health Nutrition for the principal investigator
3. **Procedure and duration** The questionnaires will be self-administered and it takes about 25 minute, so I kindly request you to apparel me this time.
4. **Risk and Benefits:** - The risk of being participating in this study is very minimal, but only taking few minutes from your time. There would not be any direct payment for participating in this study. But the findings from this study research may reveal important information for the local health planner.
1. **Confidentiality:** - The information you will provide will be confidential. There will be no information that will identify you in particular. The findings of this study will be general for the study community and will not reflect anything particular for individual person or house. The questionnaire will be coded to exclude showing name. No reference will be made in oral or written report that could link participants to the research.

- 2. Rights:** -Participant for this study is full voluntary. You have the right to declare to participate or not to participate in this study. If you declare not to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of benefits which otherwise entitle. You don't have to answer any question that you don't want to answer.
- 3. Contact address:**-If there are any questions or enquires any time about the study or the procedure, please contact Mr. Ashenafi Kasa at mobile phone +2519 20924899 or by email ashekasa0@gmail.com.

4. Declaration of informed voluntary Consent: - I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risk and benefits, issues of confidentiality, the rights of participants and the contact address for any requires. I have been given the opportunity to ask questions for thing that may have been unclear. I was informed that I have the right to with draw from the study at any time or not to answer any question that I do not want. I declared my voluntary consent to participate in this study with my initials(signature)

Name and signature of participant _____

Name and sign of data collector _____

8.2Annex II

Information Sheet and Informed Voluntary Consent Form for Pregnant Women Attending Antenatal at public health facility (Afaan Oromo Version).

St. Pual's Hospital Millennium Medical College

Masters of Public Health Nutrition.

Unka Odeeffannoo fi Heyyamamummaan Hirmaattootaa ittin Mirkanaa'u.

Akkam Bultan, akkam Ooltan (akkuma Barbaachisummaa isaatti). Ani Maqaan koo _____ jedhama. Obboo Ashannaafii Kaasaa Kollejji fayyaa hospila milliniyemi phawulositti, barataa fayyaa hawwaasummaa digrii lammaffaa (MPH) yommuu ta'uu ani immoo qorannoo inni aanaa kana keessaatti gaggeessuf odeeffannoo (ragaa) funaanuufan asitti argame. Kanaafuu, Haala waliigala qorannichaa fi haala kamiin hirmaataa qorannichaa taatanii akka filamtan isniif ibsuu akkan danda'u xiyyeeffannoo akka naaf kennitan kabajaan isin gaafadha.

- 1. Mata duree qorannoo:**-Itoophiyaa, Naannoo Oromiyaa, Godina Addaa Nannawaa Finfinnee, Aanaa Sulultaatti haala haati ulfaa tokko yeroo hordoffi dahumsaa dura gootu gosa (gartuule nyaanya) irra jiran fi rakkoo kana wal in wal qabatan.

2. **Kaayyoo qorannichaa:** -Bu'aawwan (Argannoowwan) qorannoo kanarraa argaman sababoota haati ulfaa yeroo hordoffi dahumsa dura nyaata gosaa hundaa haalaan akka hinsooranne waantonni taasitan addabaasuun rakkoo kana furuuf waajjirri eegumsa fayyaa Aanaa Sulultaa, Wajjirri Eegumsa Fayyaa Godinaa fi Qopheessitooni poolisii fayyaa Itoophiyaa akka ragaatti gargaara. Jalqaba garuu hadholii qorannoo kanarratti garagaara. Inni guddaan garuu waraqaa qorannoo Obbo Ashannaafii Kaasaa fayyaa hospilata milliniyemi phawulositti irraa eebbifamuuf waraqaa qorannoo qopheessaniif gargaara.
3. **Adeemsa ragaan itti funaanamu:** - Qorannichi gaaffilee sadarkaa isaa eeggatan qopha'e. yeroon qorannoo kanaaf barbaachisu daqiiqaa 25 qofa ta'a. Kanaaf yeroo gabaabaa kana keessatti gaaffilee kana guutnee akka xumuruuf odeeffanoo gahaa akka naaf kennitu sigaafadha.
4. **Bu'aa fi miidhaa qorannoo kana keessatti hirmmaachuu:-**Qorannoo kana keessatti hirmmaachuun kee fayidaa yookiin miidhaa kallattii siif hin qabu, kaffaltiin addaa siif kaffalamu hinjiru, miidhaa qaamaa fi sammuu xuqu tokko hinqabu. Haa ta'u malee odeeffannoo ati nuuf laattu rakkoo hanqina gosa nyaata dubartoota ulfaa irratti fiduu adda baasa.kanaaf ragaan kun ooggantoota fayyaaf fi namoota poolisii fayyaa baasan hedduu fayyada. Kun ammo dubartoota ulfa hedduu fayyada.
5. **Iccitii qorannichaa:-.** Oddeeffannoo ati nuuf laattu hundi dhoksaadhan kan eegamuudha, namni sadaffaan yookiin anaa fi sirraa kan hafe. Maqaan kee gaaffilee kana irratti hinguutamu. Kanaaf eenyu akka ta'e adda baasuun hin danda'amu.
6. **Mirgoota:-** Unki kun qorannoo kana irratti hirmaachuuf akka ati murteessitu ibsa siif kenna. Qorannoo kana keessatti hirmaachuun kee fedhii keessan irratti kan hunda'e ta'a. Hirmaachuuf yoo murteessitan yoo ta'e mallattoo keesaniin mirkaneessitu.dabalataan qorannoo kana yeroo barbaaddetti adda hutuu fi gaaffii deebisuuf sitti hintolle deebisuu dhiisuu dandeessa. Hirmaachuu dhiisuu keetiin sirrattis ta'e qabxii kee irratti dhiibbaa fidu tokkollee hinqabu.
7. **Teessoo nama dhimmi isaa ilaaluu:-** Waantti gaaffi sitti ta'uu fi siyaaddressu yoo si mudate teessoo qorataa Obbo Ashenafi Kasa bilbila 0920924899,imeelii ashekasa0@gmail.com argatu dandessu.
8. **Fedhiin hirmmachuu hirmmaattotaa irratti mirkanaa'u.** An kanneen armaan olitti ibsaman dubbisee jira. Bu'aa fi miidha qorannichaa naaf galeera. Akkasumas mirgi ani qabu, yoo rakkoon naquunnames eenyuun gaafachuu akkan qabu hubadheera.

Kana maleess yeroon barbaaddetti qorannoo kana addan kutuus kanan danda'u hubadheera. Dhumma irrattis fedhii kootiin qorannoo kana irratti hirmachuuf mallattoo kootiin nan mirkaneessa.

Maqaa fi mallattoo hirmaataa _____

Maqaa fi mallattoo raga fudhataa _____

8.3Annex III

Information Sheet and Informed Voluntary Consent Form for Pregnant Women Attending Antenatal at urban public health facility (Ahmaric)

ጤና ጣቢያስም-----

ጤናይስጥልኝ: ስሜ _____ይባላል።

እዚህ የመጣሁት በ ቅዱስ ጳውሎስ ሜድካል ኮሌጅ በስነ ምግብ ትምህርት ክፍል ማስተርሱን የሚሰራው ተማሪ አሸናፊ ካሳ ስለምሠሩት ጥናት መረጃ ለመሰብሰብ ነው። የጥናቱ ዋና ዓላማ በሱሉልታ ወረዳ የህዝብ ጤና ተቋማት በሚገኙ ነፍሰ ጡር እናቶች የአመጋገብ ሁኔታ እና ተያያዥ ምክንያቶችን ለመለየት የታለመ ነው።

በጥናቱ በመሳተፍ ክፍያም ሆነ የተለየ ጥቅም አይደረግልዎትም። ለሚቀርብልዎ ጥያቄ መልስ ለመመለስ የማይፈልጉት ካለ አይገደዱም። ጥያቄዎቹን ሞልቶ ለመጨረስ ከ 30 ደቂቃ በላይ አይወስድም።

ማንኛውም የሚሰጡት መረጃ ምሥጢራዊነቱ ተጠብቆ ለሌላ ሰነድ ወገን (ለነርስ ፣ ለሀኪሞች እና ለሌሎች ሰዎች) አይተላለፍም።

በማንኛውም ቦታ የዕርስዎ ስም አይጠቀስም። የሰጡት መረጃ ለምርምር አገልግሎት ከዋለ በኋላ ይቃጠላል።

በዚህ ጥናት ለመሳተፍ ፈቃደኛ ነዎት?

1. አዎ-----

2. አይደለሁም-----

ፈቃደኛ ካልሆኑ ጥያቄውን እዚህ ጋ ያቋርጡ።

Annex: IV. English Version Questionnaire

Questionnaires

Code	Questions	Response
001	Questionnaire Code number	
002	Name of health facility	
003	Interviewer Name	
004	Date of interview	DD/MM/YYYY /---- /---- /----/
005	Checked by supervisor:	Signature_____ Date_____
006	Checked by investigator:	signature _____ Date_____
007	Data entry clerk	Signature _____ date_____

SECTION-1: Socio-economic and Demographic Characteristics

S.No	Questions	Coding categories	Skip to
101	How old are you?	_____year	
102	Ethnicity	1. Oromo 2. Amhara 3. Tigre	
102.1	Others	4.Others (specify)_____	
103	Where is your place of residence	1. 1. Urban 2. Ruler	
104	Do you have land owner ship?	1. Yes 2. No	
105	What is your Religion?	1. Orthodox 2. Protestant 3.Catholic 4. Muslim	
105.1	What is your Religion?	5. Others (specify)_____	
106	Educational level of mother?	1.No formal education 2. Primary education 3. Secondary education 4. College/university	
107	Occupation of mother	1. House wife 2. Merchant 3. Daily worker 4. Employee (government and nongovernment)	
107.1	Occupation of mother	Other specify_____	

108	What is your current marital status?	(1. Single 2. Widowed 3. Divorced, 5. Separated) if No 4. Married 6. Other (specify)_____	112
108.1	6. What is your current marital status?	Other (specify)_____	
109	Education status of Husband	1.No formal education 2. Primary education 3. Secondary education 4. College/university	
110	Occupation of Husband	1. Employed (government and nongovernment) 2. Farmer 3. Merchant 4. Daily worker	
110.1	Occupation of Husband	Other specify_____	
111	Did you have husbands support on nutrition?	1. Yes 2. No	
112	Number of people live in your household?	_____.	
113	What is the main source of income to the family?	1. Farming or livestock 2. Merchant 3. Employed (government and nongovernment) 4. Daily laborer _____	
113.1	What is the main source of income to the family?	Other specify_____	
114	What is your total monthly family average income in ETB birr (approximately)?	_____ETB birr/month	

SECTION: 2. Pregnancy and Health Related Maternal Factors

S. No	Questions	Coding categories	Skip to
115	Total number of pregnancy including the current one?	_____	

116	Last normal menstrual period of the women, gestational age in week?	_____ weeks.	
117	How many times did you visit antenatal care service with this pregnancy?	_____.	
118	Have you ever taken Health education about Nutrition during pregnancy?	1. Yes 2. No _____	120
119	If 118 Yes What kinds of health information did you get related pregnancy ?	1. Iron source food 2. Additional meals 3. Healthy diets	
119.1	Kinds of information did you get (Iron source food)	1-Yes 2-No	
19.2	Kinds of information did you get (Additional meals)	1-Yes 2-No	
19.3	Kinds of information did you get (Healthy diets)	1-Yes 2-No	
120	If 118 Yes, what is your source of information about nutrition?	1. Television 2. Radio 3. Neighbors 4. Health professional	
120.1	Source of information about nutrition (Television)	1-Yes 2-No	

120.2	Source of information about nutrition (Radio)	1-Yes 2-No	
120.3	Source of information about nutrition (Neighbors)	1-Yes 2-No	
120.4	Source of information about nutrition(Health professional)	1-Yes 2-No	
120.5	If 118 Yes What is your source of information about nutrition?	.Others (specify.....)	
121	Do you practice home gardening?	1. Yes 2. No	
122	What is your daily eating pattern in the previous days?	1. Three meals and/or above 2. Two meals and/or below	

SECTION: 3. Nutrition related and Dietary Intake Factors

3.1. Nutrition Knowledge of the Pregnant Women (“yes” if a few items of each question are listed and no if can’t list any)

S. No	Variables	Coding categories
1.	Know diversified diet? 1.Grains, white roots and tubers 2. Pulses (beans, peas and lentils) 3. Nuts and seeds 4. Dairy and their products 5. Meat, poultry and fish 6. Eggs 7. Dark green leafy vegetables 8. Other vitamin A rich fruits and Vegetables 9. Other vegetables 10. Other fruits	1.Yes 2.No
2.	Know benefit of diversified diet? (Reduces pregnancy complications, reduces incidents of birth defects, ensures good health for your baby throughout its life, ensures you recover stronger and healthier after delivery, helps you lose weight faster)	Yes 2.No
3.	Know dietary sources of macronutrients carbohydrates? (Fruits like apples, oranges, banana, pineapple, sweet potatoes, Grains (whole grains, grain bread), Pumpkin, carrot, tomatoes, beans, broccoli, barley, oats, wild rice)	1.Yes 2.No
4.	Know dietary sources of macronutrient proteins? Beans and legumes, meat, egg	1.Yes 2.No
5.	Know dietary sources of macronutrients, EFA (Essential Fatty Acid)? Fish, seed Oil, olive oil, Avocados	1.Yes 2.No
6.	Know dietary sources of micronutrients iron? fruit, chocolate, Organ meats, Soybeans, Lentils	1.Yes 2.No
7.	Know dietary sources of micronutrients Vitamin A? Liver, dairy, Sweet Potato, Carrots	1.Yes 2.No
8.	Know dietary sources of micronutrients iodine?	1.Yes 2.No

	Seafood, Iodized Salt, Nonfat Milk, oysters, Eggs, bread, Liver	
9.	Know dietary sources of micronutrients Vitamin C? Orange, peppers, broccoli	1.Yes 2.No
10.	Know the use of iodized salt during pregnancy? fetal development, brain development	1.Yes 2.No
11.	Know the maternal complication of maternal under-nutrition? Mortality, Risk of Miscarriage, Anemia	1.Yes 2.No
12.	Know the fetal complication of maternal under-nutrition? Stillbirth, Premature Birth, mortality	1.Yes 2.No
	Knowledge status	_____ —

3.2. Maternal 24 Hours Dietary Recall

INSTRUCTIONS ONE: Please describe the foods (meals and snacks) that you ate or drank yesterday during the day and night, whether at home or outside the home. Start with the first food eaten in the morning (Sunrise time yesterday to Sunrise today), Write down all food and drinks mentioned by the respondent. When composite dishes are mentioned, ask for the list of ingredients.

Meal	Breakfast	Snack	Lunch	Snack	Dinner	Snack	Remark
Food items (Eaten with in the last 24hrs)							

INSTRUCTIONS TWO: When the respondent recall is complete, fill in the food groups based on the information recorded above. For any food groups not mentioned, ask the respondent if a food item from this group was consumed.

S.No	Food group	Items Consumed	Consumed Yes=1

			No=2
1	Grains, white roots and tubers, and plantains	Barley, corn, oats, sorghum, teff, wheat, potatoes, sweet potato, rice, and food made from this such as Porridge, bread, pasta/noodles or other foods made from grains, white yams, manioc/cassava/yucca, or any other foods made from white-fleshed roots or tubers, or plantains	___ yes (1) ___ no (2)
2	Pulses (beans, peas and lentils)	Mature beans or peas (fresh or dried seed), lentils, Soybean or bean/pea products.	___ yes (1) ___ no (2)
3	Nuts and Seeds	Any tree nut, groundnut/peanut or certain seeds, or nut/seed “butters” or pastes, flaxseed, pumpkin, sesame seed, sunflower seed.	___ yes (1) ___ no (2)
4	Dairy	Milk, cheese, yoghurt or other milk products	___ yes (1) ___ no (2)
5	Meat, poultry and fish	Liver, kidney, heart or other organ meats or blood based foods, including from wild game, cow, ox, sheep, goat, beef , lamb, chicken, duck or other bird, Fresh or dried fish, shellfish or seafood	___ yes (1) ___ no (2)
6	Eggs	Raw eggs and foods prepared from eggs	___ yes (1) ___ no (2)
7	Dark green leafy vegetables	Spinach, kale, lettuce, Chili greens, Sweet potato leaves, Pumpkin greens	___ yes (1) ___ no (2)
8	Other vitamin A rich fruits and vegetables	Carrots, pumpkin, red sweet pepper, mangoes, papaya, and deep yellow- or orange-fleshed squash and fruit juice made from this group.	___ yes (1) ___ no (2)
9	Other Vegetables	other vegetables (e.g. green pepper, mushroom, tomato, onion) , fresh/green pod of bean, pea, corn, etc. and including wild vegetables	___ yes (1) ___ no (2)
10	Other fruits	other fruits such as apple, avocado, banana, grapefruit, lemon, orange, pineapple, strawberry, fruit juice and including wild fruits	___ yes (1) ___ no (2)

Annex V: Questionnaires of Afaan Oromo version

Koodii	Gaafannoo	Deebii
001	Lakkofsa Eenyummaa Gaafannoo	
002	Maqaa mana hojjii mootummaa	
003	Maqaa gaafataa	
004	Guyyaa gaafannon itti geggeefame	G/J/W---- /---- /----/
005	Suparviserii	Mallattoo_____Guyyaa_____
006	Qorataa	Mallattoo_____Guyyaa_____
007	Ragaa gutuu	Mallattoo_____Guyyaa_____

Kutaa-1: Gaffii waa'ee seenaa jireenyaa fi odeeffannoo haala dinagdee

T/L	Gaffii	Filannoo
101	Umriin kee meeqa?	_____waggadhan
102	Lammummaa	1. Oromo 2. Amhara 3. Tigre
102.1	kan biraa	_____
103	Bakki jireenya kee essaa?	1. Maagala 2. Badiyyaa
104	Lafa dhunfaa kee qabdaa?	1. Eyyee 2. Lakkii
105	Amanta kamii hordoftuu?	1. Ortodoksii 2. Porotestantii 3. Katolik 4. Muslima 5. Kan biraa(ibsi)_____
106	Sadarkaa barnoota kee maali?	1. Barreessuu fi dubbisuu kan hin dandeenyee 2. Barreessuu fi dubbisuu kan dandeessuu 3. Sadarkaa tokkoffaa kan barattee

		<ul style="list-style-type: none"> 4. Sadarkaa lammaaffa kan barattee 5. koolleejjii fi isaa ol kan barattee
107	Hojiin kee amma maali?	<ul style="list-style-type: none"> 1. Hadhaa manaa 2. Hojjeettuu (mootummaaykn mitii mootummaa 3. Daldaltuu 4. Hojjeettuu guyyaa 5.
107.1	kan biro	_____
108	Haali gaa' ilaa kee akkami?	<ul style="list-style-type: none"> 1. kan hin herumnee 2. kan abbaan mana irraa du'e 3. kan wal hikaan 4. kan herumtee <p>(1,2,3)Yoo abbaa hin qabne gara → 112</p>
109	Sadarkaa barnoota abbaa mana kee maali?	<ul style="list-style-type: none"> 1. Barreessuu fi dubbisuu kan hin dandeenyee 2. Barreessuu fi dubbisuu kan dandeessuu 3. Sadarkaa tokkoffaa kan barattee 4. Sadarkaa lammaaffa kan barattee 5. koolleejjii fi isaa ol kan barattee
110	Degarsaa abbaa kee qabda	<ul style="list-style-type: none"> 1.Eyyee 2. Lakki
111	Hojiin abbaa mana kee maali?	<ul style="list-style-type: none"> 1. Hojjetaa mootumma 2. Q/Buulaa 3. Daldalaa 4. Hojjetaa Guuyyaa

111.1	Kan biro	_____
112	Baayyina maatii mana keessaa wal in jirattan meeqa?	_____.
112	Galiin maatii keessaani inni guddaan maal irraa argama?	<ol style="list-style-type: none"> 1. Qonnaa yookin hoorsiaa beeladoota 2. .Daldalaa irraa 3. Hojii mootumma 4. Hojii guyyaa irraa 5. Kan biroo (ibsii)----
112.1	Kan biro	_____
113	Galiin ji'a maatii keessaanii gidduu galeessaan qarshii meeqa (tilmaama)?	_____ brritti ji'an

Kutaa: 2. Gaffii ulfaa fi Fayyaa hadhooli wajjin wal qabatan

T/L	Gaffii	
111	Ulfii kee ji'a meeqa?	_____torbanin
112	Ulfa kee amma dabalate yeroo meqaa ulfofte?	_____
113	Yeroo hordoffii kee amma kanatti yeroo meeqa tajajila dahumsa dura argatte?	_____.
114	Yeroo hordoffii ulfaa gorsa waa'ee nyaataa fudhattee Beekta?	<ol style="list-style-type: none"> 1. Eyyee 2.Lakkii →117
115	Yoo gaffiin 114 eeyyee ta'e, gorsa gosa kamii fudattee?	1. Madda ayiranii

		2. Nyaata dabalata 3. Nyaata Fayyalessa
116	Yoo gaffiin 114 eeyyee ta'ee maddii oddeffanno kee essaaa?	1. TV 2. Radio 3. Hollaa 4. Ogeessa fayyaa
117	Oddoo keessaan keessatti biqiloota nyaatamaan ni Oomishtuu	1. Eyyee 2. Lakkii
118	Guyyaa kalessaa yeroo meeqaf nyaata nyaattee turee?	1. Yeroo sadii fi isaa olii 2. yeroo lamaa fi isaa gadii

Gaffiilee beekumsaa nyaata dhalooli ulfa wajjin wal qabate jiru (Tokko tokkoon gaaffiileef wantootni muraasni yoo tarreeffam ‘Eeyyee’, yoo homaa tarreessuu hin dandeenye ammoo ‘lakkii’ jedhi.)

T/L	Gaaffiiwwan beekumsaa	Filanno deebii
1	Gosa nyaata garaa garaa ni beektuu? <ul style="list-style-type: none"> • Midhaan Dheedhii, Jirma adii fi kan jirmii isaanii nyaatamuu • Kan firiin isaanii nyaatamuu • Nyaata coomaa fi zaayita • Gosaa Aanaanii • Foon,qurxummii fi allatiwwaan nyaatamaan • Hanqaaqu(killee) • Kuduralee baala magariisaqabaani fi nyaataf oolan fi gosa biro 	Eyyeen---1 Lakkii-----2
2	Faayidaa nyaata gosa garaa garaa ni beektuu? Ibsi... <ul style="list-style-type: none"> • Dhibeewwan ulfa wajjin walqabatan ni hir'isa • Yeroo dhalatan carraa hir'ina qaamaa ni hir'isa 	Eyyeen---1 Lakkii-----2

	<ul style="list-style-type: none"> • Fayyummaa daa'immaniif,ragaa ni ta'a • Da'umsa booda jabduu fi fayyaalessa akka taatu si gargaara • Saffisaan ulfaatinni akka hir'atu ni taasisa 	
3	<p>Madda nyaata kaarboohaydireetii/Anniisaa kennan/ ni beektuu?</p> <p>-Kanneen akka Aappilii,Burtukaana, Muuzii, Ananaasii, Mosee, fuduraalee fi k.k.f Midhaan dheedhii</p> <p>-Dabaaqula, Kaarotii,Timaatimii, Baaqelaa,Atara, Garbuu, Ajjaa, Ruuzii</p>	<p>Eyyeen---1</p> <p>Lakkii-----2</p>
4	<p>Madda nyaata ijaarsaa/Pirootiinii/ ni beejktuu?</p> <p>-Baaqelaa, midhaan dheedhii,Foon, Killee</p>	<p>Eyyeen---1</p> <p>Lakkii-----2</p>
5	<p>Madda nyaata dandeettii sammuu gabbisan ni beektuu?</p> <p>Qurxummii, midhaan ,Zayita Ejersaa, Avukaadoo</p>	<p>Eyyeen---1</p> <p>Lakkii-----2</p>
6	<p>Madda nyaata Ayiranii beektuu? Fuduraalee, Chookoleettii, Kalee,Tiruu,Missira ,Atara</p>	<p>Eyyeen---1</p> <p>Lakkii-----2</p>
7	<p>Madda nyaata vaayitamin A ni beektuu?</p> <p>Tiruu, kaarotii, aannan fi bu'aalee aannanii</p>	<p>Eyyeen---1</p> <p>Lakkii-----2</p>
8	<p>Madda nyaata Ayidoonii ni beektuu?</p> <p>Nyaata Galaanaa, ashaboo Ayodiiniin gabbifame, Killee, Daabboo, Tiruu</p>	<p>Eyyeen---1</p> <p>Lakkii-----2</p>
9	<p>Madda nyaata Vaayitaamin C beektuu? Burtukaan, Corqaa, Bronkoolii/Raafuu abaaboo</p>	<p>Eyyeen---1</p> <p>Lakkii-----2</p>
10	<p>-Yeroo ulfaa Ashaboo Ayoodiiniin gabbifame gargaaramuun faayidaa akka qabu beektuu?</p> <p>-Guddina daa'ima, guddina sammuu</p>	<p>Eyyeen---1</p> <p>Lakkii-----2</p>
11	<p>Hir'inni nyaataa haadholee,rakkoon fayyaa haadharratti geessisu beektuu? Du'a, hir'ina dhiigaa, ulfi bahuu</p>	<p>Eyyeen---1</p> <p>Lakkii-----2</p>
12	<p>Hir'inni nyaata haadholee rakkoon ulfa irraan gahu ni beektuu? Du'aan dhalachuu, yeroon osoo hin gahin</p>	<p>Eyyeen---1</p>

	dhalachuu	Lakkii-----2
	Haala Beekumsaa	_____

Ajaja tokkooffaa: Nyaata kaleessa galgala ,guyyaa manatti ykn alatti nyaattee tarreessi. Nyaata kaleesaa ganama erga biiftuun baaate hanga ganama har’a nyaatte ibsi. Nyaata jalqaba ganama nyaatte ykn dhugde waliin eegali. Gosa nyaataa fidhugaatii armaan gaditti ibsaman hunda isaanii barreessi.qabiyyeen isaanii yeroo ibsaman qabiyyee isaanii tokko tokkon ibsi jedhii gaafadhu.

Sorata	Ciiree	Oolchaa (turtii)	Laaqana	Oolchaa (turtii)	Irbaata	Oolchaa (turtii)	Yaa da
Tokkon tokkon ntaata sa,aa 24 tti soratam e							

Ajaja lammaffaa: Gaaffileen kana gubbaa jiran erga guutamani boodaa nyaata caqasaman gosa gosa dhaan gutii. Nyaata gosa kamiyyuu kan hin caqasamiin jiruu taanaan ,nyaataa gosa kana fayyadamuu isaanii gaafadhu.

T/L	Ramaddii nyaata	Fakkeenya	Deebii Eyyeen-- -1 Lakkii--- --2
-----	-----------------	-----------	--

1	Midhaan Dheedhii, Jirma adii fi kan jirmii isaanii nyaatamuu	Xaafii,garbuu,mishingaa,boqqolloo,qamadii,ruuzii,ajjaa, dinnicha, maxaxishaa, kaasaava adii fi nyaata kanneen irraa hojjetaman kanneen akka marqaa, dabboo, buddeen, mokoroonii, paastaa, fi kanneen kan fakkataan.	Eyyeen-- -1 Lakkii--- --2
2	Kan firiin isaanii nyaatamuu	Baaqelaa, ataraa, misira goggogaan fi nyaata isaan irraa Hojjetamee	Eyyeen-- -1 Lakkii--- --2
3	Nyaata cooma fi zaayitaa	Oocholonii,nuugii, talbaa, suufii, kkf	Eyyeen-- -1 Lakkii--- --2
4	Gosa aannan	Aannan, itittuu,baaduu fi firiwwaan aannani kanneen Biro	Eyyeen-- -1 Lakkii--- --2
5	Foon ,qurxummii fi allatiwwaan nyaatamaan	Tiruu, kalee, oonnee fi nyaata qamaa ta' aan Foon hoola, re'ee, sa'aa , kuruphee, fi kanneen kan fakkaatan akkasumaas nyaata gosaa kammiyyuu kanneen irraa hojjetaman	Eyyeen-- -1 Lakkii--- --2

		Foon qurxummii	
6	Hanqaaquu (killee)	Hanqaaquu lukkuu, gogorrii, fi nyaata kanneen irraa hojjeetaman	Eyyeen-- -1 Lakkii--- --2
7	Kuduralee baala magariisaqabaani fi nyaataf oolan	Raafuu, saalaxaa, raafuu maramaa, doobbii, qoosxaa fi kanneen kan fakkataan	Eyyeen-- -1 Lakkii--- --2
8	Nyataa vaayitaminii A badhaadhaan kuduralee fi muduralee biroo	Mango, pappaaayyaa, karoota, hundee diimaa, fi cuunfaa nyaatoota kanneen irraa hojjetaman	Eyyeen-- -1 Lakkii--- --2
9	Kuduralee biroo	Timaatimaa, qullubbii adii yookiin diimaa, coorqa fi nyaata yeroo asheeta nyaataman kanneen akka baaqelaa, atara,misiraa, shumburaa fi kanneen kan fakkaatan	Eyyeen-- -1 Lakkii--- --2
10	Muduraalee biroo	Avocadoo, muuzii, loonii, burtukaana, annanasii, cuunfaa kanneen irraa hojjetaman fi kanneen kan	Eyyeen-- -1

		fakkatan	Lakkii--- --2
11	Baayina rammaddi nyaata haati ulfaa soratte (Gosa nyaata arman olitti ibsame)	Rammaddii nyaata	

Appendix VI: Amharic Version Questionnaire

የሚጠየቁ ኑሮ ሁኔታ ለመዳሰስ የተዘጋጀ መጠይቅ		
\	መጠይቅ	አማራጭ መልሶች
1	አድሜዎ ስንት ነው ?	-----አመት
2	የጋብቻ ሁኔታ ምን ይመስላል	1. ያላገቡ 2. ያገቡ 3. የሞተባቸው 4. የተፋቱ
3	ብሔር	1. አሮሞ 2. አማራ 3. ትግሬ 4. ሌላ ካለ (ይገለፁ.....)
4	ሐይማኖትዎ ምን ይደነዘዛል	1. አርቶዶክስ 2. ፕሮቴስታንት 3. ካቶሊክ 4. ሙስሊም 5. ሌላ ካለ (ይገለፁ.....)
5	አሁን የሚኖሩበት ቦታ	1. ከተማ 2. ገጠር
6	ያጠናቀቁት ከፍተኛ የትምህርት ደረጃ ምን ይደነዘዛል ?	1. ያልተማረች/ መጻፍና ማንበብ የማትችል 2. ማንበብና መጻፍ የምትችል 3. አንደኛ ደረጃ 4. ሁለተኛ ደረጃ

		5. ከልጅና ከዚያ በላይ
7	የባለ ቤት የትምህርት ሁኔታ	1. ያልተማረች/ መጻፍና ማንበብ የማትችል 2. ማንበብና መጻፍ የምትችል 3. አንደኛ ደረጃ 4. ሁለተኛ ደረጃ 5. ከልጅና ከዚያ በላይ
8	የቤተሰብ አባላት ብዛት ስንት ነው (ጠቅላላ የቤተሰብ አባላት ቁጥር)?	-----
9	አሁን ስራዎ ምንድን ነው?	1. የቤት አመቤት 2. ሰራተኛ(የመንግስት/የግል) 3. ነጋዴ 4. የቀን ተቀጣሪ(ላብ አደር) 5. ስራ የልላት 6. ሌላ ካለ (ይገለጹ.....)
10	የባለ ቤት ሥራ	1. የቤት አመቤት 2. ሰራተኛ(የመንግስት/የግል) 3. ነጋዴ 4. የቀን ተቀጣሪ(ላብ አደር) 5. ስራ የልላት 6. ሌላ ካለ (ይገለጹ.....)
11	የመሬት ባለ ቤት ኖት	1. አዎ 2. የለም

የእኮኖሚ ሆኔታ ለመዳሰስ የተዘጋጀ መጠይቅ		
1	የቤተሰብዎ ዋነኛው የገቢ ምንጭ ምንድን ነው?	1. ግብርና 2. የንግድ ስራ 3. የመንግስት ስራ 4. የቀን ስራ

		5. ሌላ ካለ (ይገለፅ.....)
2	የቤተሰብዎ አማካይ ገቢ በወር ስንት ነው?	----- ብር/ወር
3	የጓሮ አትክልት ያለማሉ?	1. አዎ 2.የለም
ከእርግዝና ጋር የተያያዙ ሁኔታ ለመዳሰስ የተዘጋጀ መጠይቅ		
1	የፅንሱ ዕድሜ	-----ወር
2	የአሁኑን ጨምሮ አጠቃላይ የፅንስ ብዛት	-----
3	ለዚህ እርግዝና ስንት ጊዜ የቅድመ ወሊድ ክትትል አድርጓል	-----
4	ትናንት ምግብ ስንት ጊዜ በላሽዉ	1. ሶስት ጊዜና ከዛ በላይ 2. ሁለት ጊዜና ከዛ በታች
5	ለቅድመ ወሊድ አገልግሎት የመጡት ጊዜ የምግብ አመጋገብ ምክር አግኝተዉ የዉቃሉ	1. አዎ 2.የለም
6	5 መልሶ አዎ ከሆነ ምን ዓይነት መረጃ ነበር ያገኙት	1. የ ኤይረን ምንጭ ምግብ 2. ተጨማሪ 3. ጤናማ ምግብ
7	ሥላ ምግብ የመረጃ ምንጭ ምንድነዉ	1. ቲቪ 2. ራድዮ 3. ጎረቤት 4. ጤና ባለ ሙያ 5. ሌላ ካለ (ይገለፅ.....)
8	የምያግዝክ ባለ ቤት አለ	1. አዎ 2.የለም

የእርጉዝ ሴቶች በምግብ ላይ ያላቸውን እውቀት ለመጠየቅ የተዘጋጀ መጠይቅ(ለያንዳዱ ጥያቄ የተወሰኑ ነገሮች ከተዘረዘሩ <አዎ> ምንም መዘርዘር ካልቻሉ <አይደለም> በል)

ተ. ቁ.	ጥያቄዎች	የመልስ አማራጮች
1	<p>የተለዩ የምግብ አይነቶችን ያውቃሉ?</p> <ul style="list-style-type: none"> • የእህል እና የእህል ዘሮች፤ ስራቸው የሚበላ • ጥራጥሬ (ባቀላ፤ አተርና ምስር) • ለውዝና የቅባት አህሎች • ወተትና የወተት ተዋጽኦዎች • ስጋ አሳ እና የሚበሉ አእዋፋት • እንቁላል • ቅጠላቸው የሚበላ ደማቅ አረንጓዴ • ቅጠላቅጠል ያላቸው አትክልቶች • በሻይታሚን ኤ የበለጸጉ ፍራፍሬ እና • አትክልቶች • ልሎች አትክልቶች • ሌሎች ፍራፍሬዎች 	<p>5. አዎ 6. አይደለም</p>
2	<p>የተለያዩ የምግብ አይነት ጥቅሞችን ያውቃሉ?</p> <ul style="list-style-type: none"> • ከእረግዝና ጋር የተያያዘ ተጨማሪ በሽታን ይቀንሳል • ሲወለዱ የአካሉ ጎዶሎነት አጋጣሚን ይቀንሳል • ለህጻን ለጥሩ ጤና ማረጋገጫ ይሆናል • ከወሊድ በሃላ ጠንካራ እና ጤናማ እንዲሆኑ ይረዳዎታል • በፍጥነት ክብደትን እንዲቀንሱ የረዳል 	<p>1.አዎ 2. አይደለም</p>
3	<p>የካርቦህይድሬት/ሙቀት ሰጪ/ ምግብ ምንጮች ያውቃሉ?</p> <ul style="list-style-type: none"> • እንደ አፕል፤ ብርትኪን፤ ሙዝ፤ አናናስ፤ ስኳር ድንች የመሳሰሉት ፍራፍሬዎች • ጥራጥሬዎች • ዱባ፤ ካሮት፤ ቲማቲም፤ ባቄላ፤ አተር፤ ገብስ፤ አጃ፤ ሩዝ 	<p>1.አዎ 2.አይደለም</p>
4	<p>የፕሮቲን/ገንቢ/ ምግብ ምንጮች ያውቃሉ?</p> <ul style="list-style-type: none"> • ባቄላ እና ጥራጥሬ፤ ስጋ፤ እንቁላል 	<p>1.አዎ 2.አይደለም</p>
5	<p>የልሂቅ ምግቦች ምንጭ ያውቃሉ?</p> <p>አሳ፤ የዘይት እህሎች፤ ወይራ ዘይት፤ አቦካዶ</p>	<p>1.አዎ 2.አይደለም</p>

6	<p>የአይረን ንጥረ ነገር ምንጭ ያወቃሉ?</p> <ul style="list-style-type: none"> • ፍራፍሬ፤ ቸኮሌት፤ የኦሪጋን ስጋ፤ ምስር፤ አኩሪ አተር 	<p>1.አዎ 2.አይደለም</p>
7	<p>የሽታሚን ኤ ንጥረ ነገር ምንጭ ያወቃሉ?</p> <p>ጉቦት፤ ወተት እና የወተት ተዋፅኦዎች፤ ስኳር ድንች፤ ካሮት</p>	<p>1.አዎ 2.አይደለም</p>
8	<p>የአዮዲን ንጥረ ነገር ምንጭ ያወቃሉ?</p> <ul style="list-style-type: none"> • የባህር ምግብ፤ በአዮዲን የበለጸገ ጨው፤ እንቁላል፤ ዳቦ፤ ጉቦት 	<p>1.አዎ 2.አይደለም</p>
9	<p>የሽታሚን ሲ ንጥረ ነገር ምንጭ ያወቃሉ?</p> <ul style="list-style-type: none"> • ብርትኪን፤ ቃሪያ፤ ብሮክሊ 	<p>1.አዎ 2.አይደለም</p>
10	<p>በእርግዝና ጊዜ በአዮዲን የበለጸገ ጨው መጠቀም ጥቅም ያወቃሉ?</p> <ul style="list-style-type: none"> • ለፅንሰ እድገት፤ ለአንጎል አድገት 	<p>1.አዎ 2.አይደለም</p>
11	<p>የእናቶች የምግብ እጥረት በእናቶች ላይ የሚያስከትለውን የጤና እክል ያወቃሉ?</p> <ul style="list-style-type: none"> • ሞት፤ የወርጃ አደጋ፤ የደም ማነስ 	<p>1.አዎ 2.አይደለም</p>
12	<p>የእናቶች የምግብ እጥረት በፅንሰ ላይ የሚያስከትለውን የጤና እክል ያወቃሉ?</p> <ul style="list-style-type: none"> • ሞት መወለድን፤ ጊዜዉ ሰይደርስ መወለድን 	<p>1.አዎ 2.አይደለም</p>
	የእውቀት ሁኔታ	_____

3. የአመጋገብ ሁኔታ ለመዳሰስ የተዘጋጀ መጠይቅ

መመሪያ አንድ፡- እባክዎን ትናንት ቀንም ሆነ ሌሊት በቤት ውስጥም ሆነ ከቤት ውጭ የበሉትን ወይም የጠጡትን ምግቦች ያብራሩ ። ሁሉንም ምግቦች እና መጠጦች ይጻፉ።

ምግብ	ቁርስ	መክሰስ	ምሳ	መክሰስ	እራት	መክሰስ	አስተያይ ት
የምግብ አይነት							

መመሪያ ሁለት፡- መልስ ሰጪው ሲታወስ ከዚህ በላይ በተመዘገበው መረጃ ላይ በመመርኮዝ የምግብ ቡድኖችን ይሙሉ። ላልተጠቀሱት ማንኛውም የምግብ ቡድኖች ተጠቅመው ከሆነ ይጠይቁ።

ተ.ቁ	የምግብ ምድብ	ዝርዝሮች	የመልስ አማራጮች
1	እህል እና የእህል ዘሮች	ጤፍ፣ ስንዴ፣ ገብስ፣ ማሽላ፣ በቆሎ፣ ፍዝ፣ ማስላ፣ ዳጉሳ፣ ድነች፣ እና ከእነዚህ የሚሰሩ ምግቦች በሙሉ (ገንፎ፣ ዳቦ፣ ፓስታ፣ መኮረኒ፣ እንጀራ፣ ቂጣ፣ ንፍሮ እና ወዘተ ምግቦች)	1. አዎ 2. አይደለም
2	ጥራጥሬ	የበሰላ ባቄላ፣ አተር፣ ምስር፣ እና ከእነዚህ የሚሰሩ ምግቦች በሙሉ (ንፍሮ፣ ቆሎ፣ ክክ ወጥ እና የመሳሰሉት)	1. አዎ 2. አይደለም
3	ለወዝና የቅባት አህሎች	ኑግ፣ ተልባ፣ ሰሊጥ፣ ሱፍ፣ ዱባ፣ አቶሎኒ	1. አዎ 2. አይደለም
4	ወተትና የወተት ተዋጽዖች	ወተት፣ አይብ፣ ዕርጎ፣ አሬራ፣ አጉዋት፣ ወይም ልላ የወተት ተዋጽዖ	1. አዎ 2. አይደለም

5	ስጋ አሳ እና የሚበሉ አእዋፋት	የሰውነት ክፍሎች (ጉበት፣ኩላሊት፣ልብ፣ደም ወይም ልላ አካል) የበሬ ፣የበግ ፣የፍየል ፣የዶር ፣ እና ከእነዚህ የሚሰሩ ማናቸውም ምግቦች በሙሉ(ወጥ፣ ጥብስ፣ቅቅል፣ ወዘተ ምግቦች ትኩስ (ፍረሽ) አሳ ወይም የደረቀ ወይም የባህር አሳ	1.አዎ 2.አይደለም
6	እንቁላል	የዶሮ እንቁላል(የተቀቀለ፣ፍርፍር፣ዋይም እንቁላል ከልሎች ምግቦችጋር የተሰራ)	1.አዎ 2.አይደለም
7	ቅጠላቸው የሚበላ ደማቅ አረንጓዴ ቅጠላቅጠል ያላቸው አትክልቶች	ጎመን፣ሰላጣ፣ቆስታ፣ሳማ፣ጥቅል ጎመን	1.አዎ 2.አይደለም
8	በቫይታሚን ኤ የበለጸጉ ፍራፍሬ እና የጓሮ አትክልቶች	የበሰለ ማንጎ ፣ፓፓያ፣ካሮት፣ቀይሰር፣ዱባ እና ግሽጣ፣	1.አዎ 2.አይደለም
9	ልሎች አትክልቶች	ቲማቲም፣ሽንኩርት፣ ቃሪያ፣ የበቆሎ ፣የአተር ፣የምስር እና የባቄላ እሽት፣ ወዘተ እሽቶች	1.አዎ 2.አይደለም
10	ሌሎችፍራፍሬዎች	ፖም፣ አቮካዶ፣ ሙዝ፣ሎሚ፣ብርቱካን፣አናናስ፣ እንጆሪ፣የወይን ፍሬ፣ እና ወዘተ ፍራፍሬዎች	1.አዎ 2.አይደለም