HAWASSA UNIVESITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

FACTORS ASSOCIATED WITH DIETARY PRACTICE AND NUTRITIONAL STATUS AMONG PREGNANT WOMEN ATTENDING ANC AT MAALIE WOREDA, SOUTH OMO ZONE, ETHIOPIA: FACILITY BASED CROSS SECTIONAL STUDY.

MPH THESIS

BY: WONDU BERRA (B.SC)

May 2024

HAWASSA, ETHIOPIA

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A THESIS SUBMITTED TO SCHOOL OF GRADUATE STUDIES HAWASSA UNIVERSITY COLLEGE OF MEDICINE AND HEALTH SCIENCES SCHOOL OF PUBLIC HEALTH FOR PARTIAL FULFILLMENT FOR REQUIREMENTS OF MASTERS OF PUBLIC HEALTH IN GENERAL PUBLIC HEALTH

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We, the undersigned, members of the Board of Examiners of the final open defense by **Wondu Berra Arke** have read and evaluated his thesis entitled, "**Factors associated with dietary practice and Nutritional status among pregnant women attending ANC at Maalie Woreda, South omo zone, Ethiopia: 2023**" and examined the candidate, this is therefore, to certify that the thesis has been accepted in partial fulfillment of the requirement for the master's degree.

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DECLARATION

I hereby declare that this MPH thesis is my original work and has not been presented for a degree in any other university, and all sources of material used for this thesis have been duly acknowledged.

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Contents

Abbreviations and acronyms

ANC	Antenatal Care
AOR	Adjusted Odds Ratio
ASL	Above Sea Level
BMI	Body Mass Index
CI	Confidence Interval
COR	Crude Odds Ratio
EDHS	Ethiopian Demographic Health Survey
EFA	Essential Fatty Acid
FP	Family Planning
Hb	Hemoglobin
HAD	Health Development Army
HF	Health Facility
HH	House Hold
HIV	Human Immunodeficiency Virus
HO	Health Officers
HW	Health Workers
IRB	Internal Review Board
LBW	Low Birth Weight
MDDS	Minimum Dietary Diversity Score
MUAC	Mid Upper Arm Circumference
MW	Mid Wives
SPSS	Statistical Package for social science
WDDS	Women Dietary Diversity Score
WHO	World Health Organization

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Abstract

Background: Maternal dietary practices during pregnancy play an important role. Hence, this study was intended to assess factors associated with the dietary practice and nutritional status of pregnant women in Maalie Woreda, South Omo zone, Ethiopia.

Methods: Facility based cross-sectional study design was conducted among 318 pregnant women had participated. Socio demographic and socio economic data were collected using a structured interviewer-administered questionnaire. The dietary practice was measured using 16 dietary practice questions. Dietary diversity was obtained by using a 24-hr dietary recall method and Nutritional status was assessed by using mid-upper arm circumference (MUAC) measurements. Binary and multiple logistic regression analysis were conducted. Variables with $P \leq 0.2$ in bivariate analysis were entered for multiple logistic regressions. At a 95% confidence interval, variable with < 0.05 in multiple logistic regression analysis was considered statistically significantly associated with dietary practice and Nutritional status.

Result: About 68.6% of the pregnant women had poor dietary practice and 34.3% were undernourished. Educational status (AOR=4.6; 95% CI: 1.50, 11.51), family income (AOR=2.61; 95% CI: 1.35, 6.43), family size (AOR=2.30; 95% CI: 1.10, 2.87), ANC visits (AOR=2.49, 95% CI: 1.09, 4.03), nutrition counseling (AOR=1.81; 95% CI: 1.12, 5.46) and Knowledge (AOR=1.28; 95% CI: 1.13, 4.19) were significantly associated with dietary practice. Husband occupation (AOR=3.29; 95% CI: 1.79, 71.2), cash decision maker (AOR=2.27; 95% CI: 1.14, 3.92), nutrition counseling (AOR=1.73; 95% CI: 1.42, 7.26), Source of nutrition information (AOR=1.51; 95% CI: 1.07 , 8.3), Dietary practice (AOR=1.87; 95% CI: 1.21, 3.51), and knowledge (AOR=1.92; 95% CI: 1.05, 3.06) were significantly associated with nutritional status.

Conclusion: The prevalence of good dietary practice during pregnancy was 31.4% and 34.3% were undernourished. Educational status, family income, family size, number of pregnancy, ANC visits, nutrition counseling, Diversity of diet and Knowledge which were significantly associated with dietary practice. Government, health extension workers and responsible stakeholders should focus on pregnant women to have ANC follow-up.

Keywords: Dietary practice, Nutritional status, Pregnant women, Ethiopia

1. Introduction

1.1 Background

Nutrition throughout the life cycle has a major impact on health. This is true for pregnant women as pregnancy is the most nutritionally demanding period in their life. Under nutrition and failure to receive essential nutrients in both quality and quantity during this physiologically demanding period would result in adverse pregnancy outcomes (1),(2). Worldwide, maternal and child under-nutrition, is the leading developmental challenge affecting nearly half of the world's population and responsible for the death of 3.5 million mothers and children annually (3).

Globally, malnutrition accounts for 7% of the disease burden and contributes to an increased likelihood of poor pregnancy outcomes. It has been strongly associated with functional consequences like increased risk of unfortunate pregnancy outcomes, poor infant survival, and chronic disease risk at later stages of life. The problem of both maternal and child under-nutrition together with adverse pregnancy outcomes are skewed to low- and middle-income countries in Africa and Asia(3).Maternal under nutrition rates in Ethiopia are among the highest in the world. In addition, a huge inequity exists within the country, with pregnant women in rural communities being at increased risk (4) . Maternal malnutrition in Ethiopia is higher than the level for many African countries(5).

Maternal dietary practices during pregnancy play an important role in determining the long-term health and nutritional status of both the mother and her growing fetus. Poor dietary practices during pregnancy may result in increased rates of stillbirths, premature birth, and low birth weight, maternal and prenatal death (6) ,(7),(8).

Dietary practices have a major role in determining the continuing health status of both mother and the growing fetus. Suboptimal dietary practices of pregnant women have outwardly contributed to increased rates of stillbirths, premature birth, low birth weight, and maternal and prenatal death(9).

1.2 Statement of the problem

Malnutrition is a serious public health challenge which has been directly associated with increased mortality and morbidity rate especially in many parts of developing countries. According to the World Health Organization, 585,000 deaths resulting from pregnancy and childbirth-related complications occur globally with about 1,500 deaths recorded daily; however, most of these deaths occur in developing countries (10).

The global maternal mortality ratio is unacceptably high, with an estimated 42% of maternal deaths occurring during labour and delivery. Every day, approximately 800 women die due to pregnancy or childbirth-related complications worldwide. In 2015, developing regions were responsible for approximately 302,000 global maternal deaths, with Sub-Saharan Africa alone accounting for roughly 201,000, followed by Southern Asia (66,000) (11).

Poor dietary practice and under nutrition among pregnant women have a major impact on fetus health and development. Nutrition of pregnant women should supply a sufficient amount of nutrients for mother, fetus and for successful lactation. Various factors can influence dietary practice and nutritional status leading to poor pregnancy outcomes (1).

Malnutrition in women is rooted in poor care practices at the individual, household, community and societal levels. Together, these factors influence women's ability to make informed decisions about their nutrition and care. At the individual and household levels, women's knowledge, beliefs and values, fears about pregnancy, lack of family support, and household dynamics around food distribution, influence their food and care-seeking behaviors and choices (12).

Despite, understanding dietary practice and nutritional status among pregnant women is an important component to reduce maternal and neonatal mortality and morbidity due to malnutrition complication, there is no study conducted in south omo zone health facilities regarding dietary practice and nutritional status among pregnant women. Few studies conducted in Ethiopia were on the magnitude of malnutrition and others were limited in numbers of factors that influence dietary practice and nutritional status among pregnant women. Therefore, the aim of this study will be to Assessment of factors associated with dietary practice and nutritional status among pregnant women attending ANC at Maalie woreda, south omo zone, Ethiopia.

1.3 Significance of the study

Previous studies have more focused on prevalence of malnutrition in pregnant women; however, there have been limited investigations and report on dietary practice and nutritional status among pregnant women attending ANC at Maalie woreda, south omo zone Ethiopia. So, this study showed that the gap on research area. Moreover; it serves as baseline document for health stakeholders and those who were interested in further research undertaking in this area. The finding was also assist policymakers and program managers to design a program that helps as input for evidence-based decision-making.

2. Literature review

2.1 Pregnancy

Pregnancy is one of the critical periods when nutrition is very important. In this period, unhealthy nutrition of the mother or an inability to meet the nutritional requirements which may cause some health problems that can be seen in both mother and the infant. The investigation for maternal nutritional status during pregnancy is vital for the optimization of maternal, fetal, and neonatal health(13).

Pregnancy is the most crucial nutritionally demanding period of every woman's life. The high demand of nutrients to deposit energy in the form of new tissue, growth of existing maternal tissues such as breast and uterus and increased energy requirements for tissue synthesis makes pregnant women more vulnerable to malnutrition (6).

During pregnancy, women have increased dietary requirements to support changes in maternal tissues, metabolism, and fetal growth and development. Compared with pre-pregnancy, energy requirements increase by an average of 300kcal/day during pregnancy. In addition, pregnancy also increases women's need for protein, vitamins and minerals such as iron, folic acid and calcium(12),(14).

During pregnancy, there are increased metabolic and physiologic demands on the body, which are expected to be met by adequate nutrition. However, at conception, many women do not have sufficient micronutrient intake to meet their bodies' demands. Therefore, this lack of specific dietary practices during pregnancy is critical for under-nutrition and micronutrient deficiencies resulting in poor birth outcomes (15).

2.2 Intergenerational Malnutrition effect

Women are doubly vulnerable to malnutrition, because of their high nutritional requirements for pregnancy and lactation and also because of gender inequalities in poverty. Under nutrition and over nutrition coexist in developing countries undergoing rapid nutrition transition, and women are susceptible to this double burden of "dysnutrition," often cumulating stunting or micronutrient malnutrition with obesity or other nutrition-related chronic diseases (16).

Improving women's resources, including health, nutrition, education, and decisional power, is critical not only on the basis of equity, but also out of concern for the health of children and adults of several generations(16).

Women are doubly vulnerable to under nutrition or micronutrient deficiencies, owing to their high nutritional requirements for pregnancy and lactation, and also because of gender inequalities in poverty (16) .

Major physiological, anatomical, metabolic and hormonal changes occur during normal pregnancy to mobilize fuel stores for foetal growth and to prepare the mother for labour and delivery (17).

Because of malnutrition's profound effects on neuronal growth, nutritional insults during infancy and early childhood put individuals at risk for lifelong impairment. These deficits can result in poor health, lower educational attainment and diminished social status in adulthood. If the affected individuals themselves become parents, the impact of their early nutritional insult may even extend into the next generation(18) .

Malnutrition during pregnancy can be deleterious to both child and mother by increasing the risk of obstructed labor, premature or low-birth-weight babies, postpartum hemorrhage, and increased maternal mortality due to severe anemia(18).

2.3 Factors affecting Nutritional status of pregnant women.

Maintaining good nutrition and a healthy diet during pregnancy is critical for the health of the mother and unborn child. It is also good to remember that the quality of the food is more important than the quantity, so it is recommended to choose healthy foods with high nutritional value, and avoid unhealthy foods(19).

The nutritional status of the mother at conception is a key factor for development and foetal growth, so a healthy, balanced diet is essential both before and during pregnancy. During pregnancy, the mother's diet provides energy and nutrients to both herself and the foetus' growth and for future lactation(20).

Inadequate nutrition (both maternal and paternal), with excessive intake of calories and deficiency in micronutrients, can affect future generations(21).

A community-based cross-sectional study done factors associated with dietary practice and nutritional status of pregnant women in Dessie town, northeastern Ethiopia, the result of factors associated with nutritional status revealed that 118 (19.5%) of pregnant women were undernourished (MUAC < 23 cm) and the rest 486 (80.5%) were normal (MUAC≥23 cm). Antenatal care (ANC) follow-up, history of illness, dietary diversity, nutritional knowledge, good dietary practice, and perceived self-efficacy to prevent malnutrition were showed significant association with under nutrition(1).

2.4 Factors affecting Dietary practice of pregnant women.

Dietary practice is defined as an observable actions or behavior of dietary habit and can be classified as good dietary practices and poor dietary practices(6).The research done on Dietary Practice and Associated Factors among Pregnant Women in Nono Woreda west shoa, Oromia, Ethiopia showed that 31% of the study participants had good dietary practices while the rest 69% of pregnant women had poor dietary practices. Concerning dietary knowledge about a balanced diet, 63.5% of the study participants had good dietary knowledge while 36.5% had poor dietary knowledge about a balanced diet. Marital status, breastfeeding, health-seeking behavior, food avoiding, and dietary knowledge were shown to have a significant association ($P < 0.05$) with dietary practices of pregnant women (10).

The research done on dietary Practice and associated factors among pregnant women at public health institution in Mizan-Aman Town, Southwest Ethiopia, showed that the overall magnitude of good dietary practice among pregnant women was 25.1%.The variables having television/radio, household food security, good dietary knowledge favorable dietary attitude and monthly income were significantly associated with good dietary practice (22).

A community based cross sectional study conducted in Gedeo zone Dilla Zuria woreda, southern Ethiopia reported that 32.2% of pregnant women had good dietary practices, regarding knowledge and attitude 45.6% and 42.8% of respondents had good dietary knowledge and positive attitude respectively. Based on this study educational status of the mother, monthly income, ANC visit, knowledge, and attitude were the factors that affect the dietary practices of pregnant women(23).

The research done at Oromia Regional state, Ethiopia in Mettu Karl Hospital, southwest Ethiopia showed that the prevalence of sub-optimal dietary practices was 22% and under-nutrition was 17.5 %. Family size and severe food insecurity were significantly associated with sub-optimal dietary practices and WDDS< 6 and/or usual meal frequency of ≤3. Sixty-six (17.50%) study subjects were found to be undernourished (MUAC< 21.0 cm) (9).

A study conducted in northwestern Ethiopia indicated that attitude towards specific dietary habits, exposure to nutrition information; maternal education; income and nutritional knowledge

were predictors of the dietary practice. Another study from Bahirdar town, Ethiopia, showed that not taking iron supplements, lack of radio/television, husband's income, maternal age and poor nutrition knowledge were factors for poor dietary practice. Another study conducted in Shashamane district, Ethiopia, discovered that following antenatal care significantly associated with maternal dietary practice. Similarly, age at first marriage and meal frequency, educational status, occupation of the head of household and religion, marital status was discovered as risk factors for under nutrition among pregnant women (1).

2.5 Conceptual Framework

The conceptual frame work of the factors associated with dietary practice and Nutritional status of pregnant women was developed by reviewing different literatures. According to the framework, four factors were identified as factors those affects dietary practice and Nutritional status of pregnant women and perception factors.

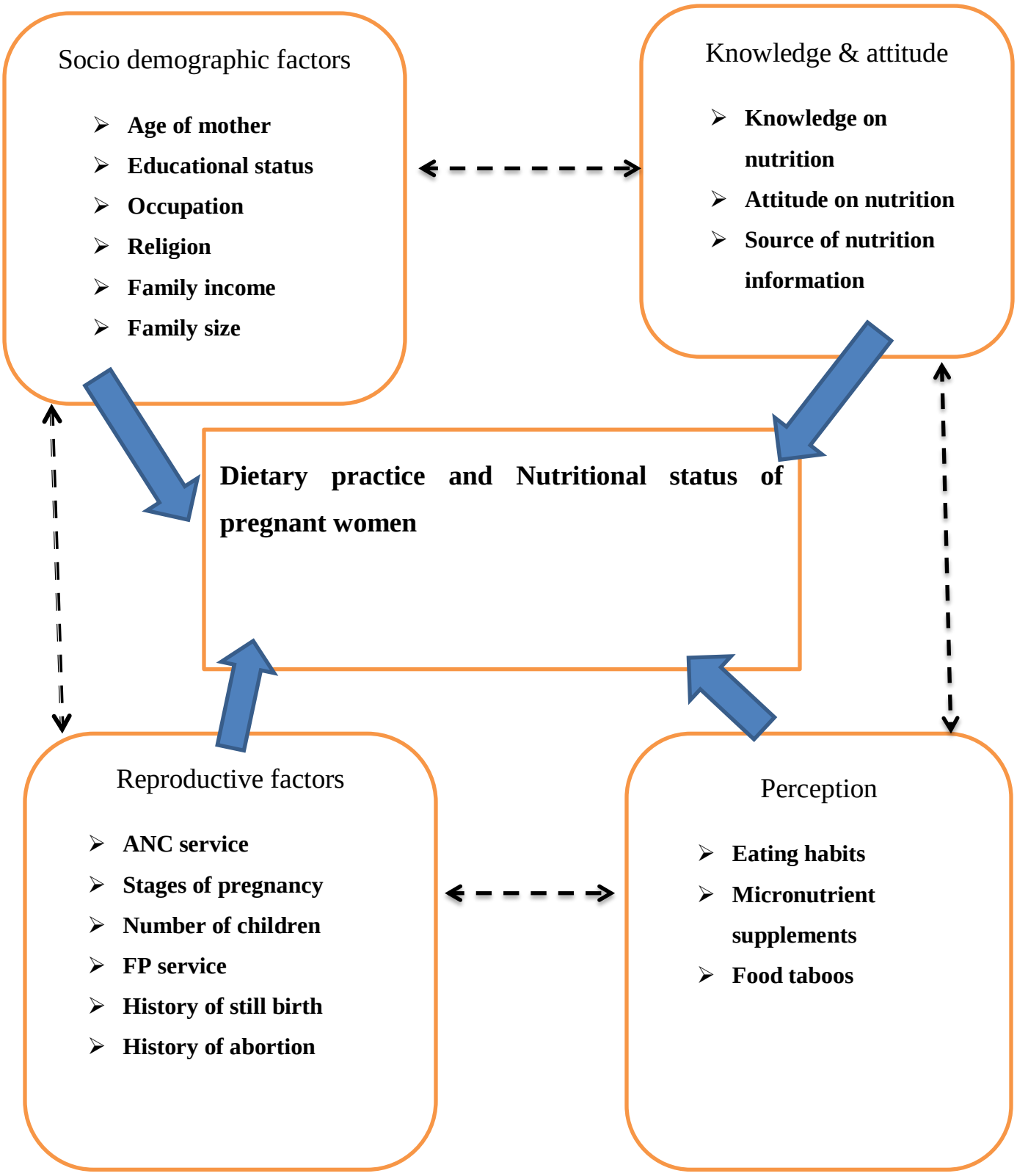

Figure 1. Conceptual framework of the study, developed by reviewing different literatures (1), (3)**,** (11)**,** (9)**, and** (24)

3. Objectives

3.1 General objectives

- To assess factors associated dietary practice, nutritional status and associated factors among pregnant women Maalie Woreda, South omo zone, Ethiopia, 2023

3.2 Specific objectives

- To determine dietary practice of pregnant women in Maalie Woreda, South Omo zone, Ethiopia, 2023
- To determine nutritional status of pregnant women in Maalie Woreda, South Omo zone, Ethiopia, 2023
- To identify factors associated with dietary practice of pregnant women in Maalie Woreda, south Omo zone, Ethiopia, 2023.
- To identify factors associated with nutritional status of pregnant women in Maalie Woreda, south Omo zone, Ethiopia, 2023.

4. Methods and Materials

4.1 Study Area and Period

The study was undertaken from Feb to May 2023 in Maalie woreda, south omo zone, Ethiopia. Maale woreda is one of the eleven woreda in South Omo Zone. The Woreda covers an area of 1,432 square kilo meters and located 42km from zone capital city Jinka town, 542km from Hawassa and 742km far from Addis Ababa. The woreda is bordered on the south by Bena Tsemay, on the west by Bako Dawla Ari, on the north by the Uba Debretshay woreda, and on the east by Marta Gogale woreda. The woreda divided in to 28 kebeles of which 22 of them are rural administrative units and 6 urban administrative kebeles with (121,951) total populations,of which 62195 are women, (24888) HHs, (28415) women of aged 15-49 and pregnant women (4219). The altitude of the woreda ranges between 600-1500 m above sea level and astronomical located at 5.08N-6.01N latitudinal and 36.30E-370E longitudinally. It had comprised 40% mid-altitude which ranging from 1000-1400 m a.s.l and whereas, 60% is low lands which has been ranging from the 605-999 m a.s.l. The mean annual rain fall which ranging from 800-1200 mm with mean annual temperature has lain between 18-35^{0}c. The agro-pastoral production is the farming system has prevailed the study area for the last four decades. In Maale woreda there are 1 primary hospital, 6 Health centers and 28 Health posts. The facilities were Koybe Primary hospital, Lemogento, Doyso and Beneta Health centers were included in this study. The selected facilities were functional for ANC service and also all other services were functional without any interruption throughout the year.

4.2 Source and Study population

4.2.1 Source population

The source population of this study was pregnant women who were attending ANC service in Koybe Primary hospital, Lemogeneto Health center, Doyso Health Center and Beneta Health Center from Feb-May/2023.

4.2.2 Study population

The study population was selected by systematic randomly who were attending ANC service in Koybe Primary hospital, Lemogeneto Health center, Doyso Health Center and Beneta Health Center from Feb-May/2023.

4.3 study Design

Facility based cross-sectional study design was used.

4.4 Inclusion and exclusion criteria.

4.4.1 Inclusion criteria

All pregnant women who are living for at least 6 months in the Maalie woreda and who was come for ANC visit during study period was included.

4.4.2 Exclusion criteria

Pregnant women who are not living in the Maalie Woreda for more than 6 months residency.

4.5 Sample size and Sampling procedures

To get a sufficient sample size, dietary Practice and associated factors among pregnant women at public health institution in Mizan-Aman Town, Southwest Ethiopia, showed that the overall magnitude of good dietary practice among pregnant women was 25.1% (22). The single population proportion formula was used to determine the sample using the following assumptions: 95% CI, 5% marginal error, adding non-response rate of 10%, and the final sample size becomes 318.

Z a/2=1.96, P=0.251, CI=95%, marginal error d=5% (0.05)

$$n = \frac{(Z\ a/2)^2\ P(1-P)}{d^2}$$

$$n = \frac{(1.96)2 * 0.251 *(1-0.251)}{(0.05)2} = \mathbf{288.88678336 = 289}$$

Considering non respondents, 10% of non-response rate was taken and becomes= 318

The facility from out of 7 public health institutions including primary hospital fifty percent then was 4 facilities and those was selected by lottery method. The sampling frame the lists of pregnant women living in the woreda were obtained from Health facility ANC registration that came for ANC visit during study periods. Pregnant women were selected by using systematic random sampling after proportional allocation of the total sample.

4.5.1. Sample size for the second objective

The sample size of objective two associated factors of dietary practice is calculated by using Epi Info version 7. Independent variables of significant associated factors were meal frequency of the proportion 51.2% and AOR=2.88 (3), women with more than 5 family size proportion=14.5% and AOR=2.90 (3) and women those who were have additional meal during pregnancy proportion=11.7% and AOR=5.03 (24) . Then calculated by none respondent rate of the 10%; showing in the following table.

Table-1. The sample size calculation for second objective

Variables	Expected prevalence (%)	Ratio of variables	OR(95% CI)	Power of test	Level of significance	Calculated sample size including 10% non-response rate
Meal frequency during pregnancy	51.2%	3.91	2.88	80	5	230
Family size	14.5%	5.106	2.9	80	5	268
Additional meal during pregnancy	11.7%	1.71	5.03	80	5	80
nutritional statu	17.5%	3.2	4.1	80	5	284

Hence, the sample size of the first objective is larger than the second one and then the first sample size was taken for this study.

There are 7 public health institutions in study area, first calculate fifty percent of health institutions, it was 4 Health facilities which is fifty percent and then this four Health facility was selected by lottery method from seven Health facilities. The sampling frame the lists of pregnant

women living in the woreda were obtained from each Health facility ANC registration that came for ANC visit during study periods. To get respondents from selected Health institutions total sample size was allocated proportionally to each selected Health institutions, then select study participants by using a systematic random sampling technique.

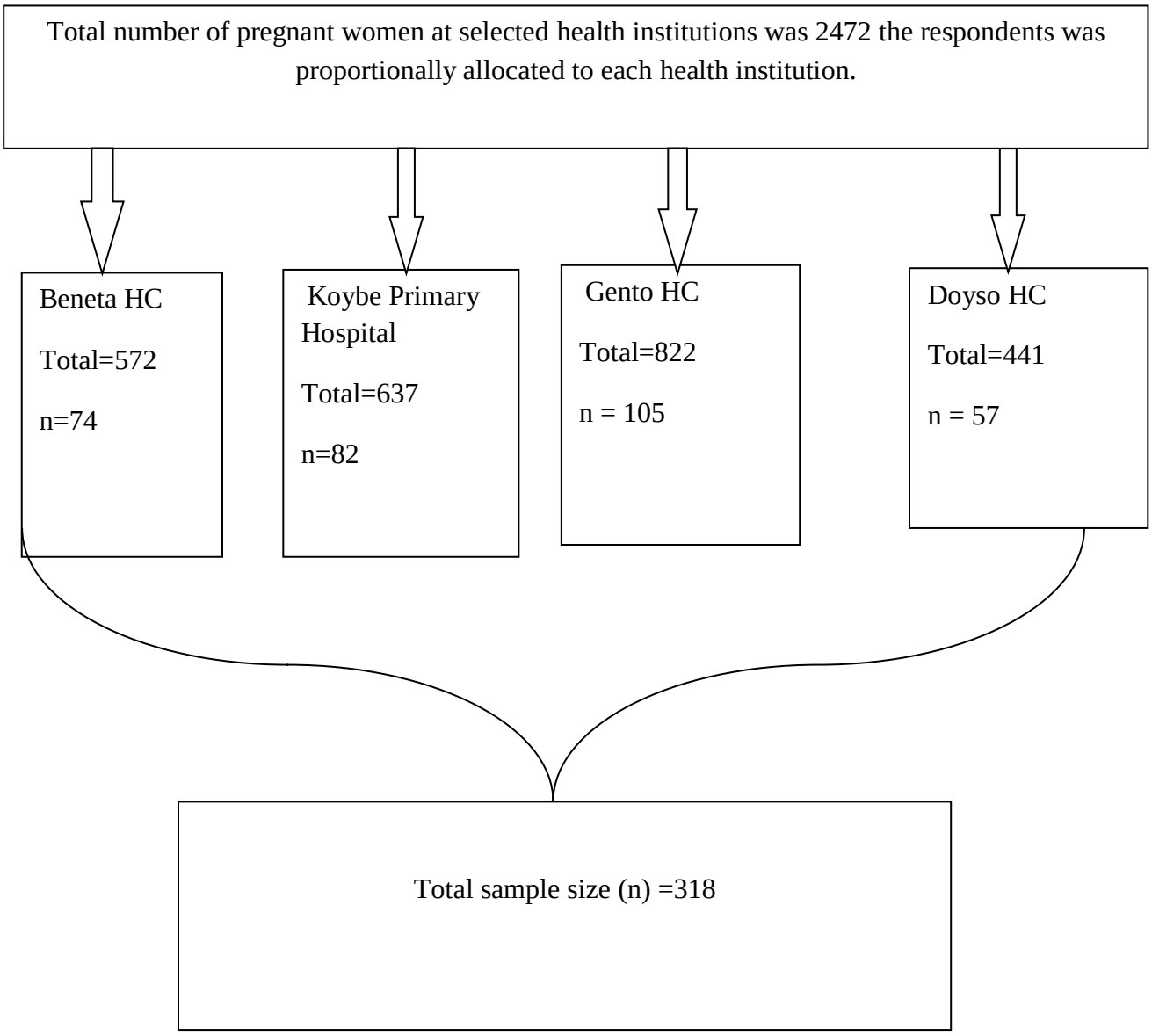

***Figure 2: Schematic presentation of sampling Procedure*.**

4.6 Variables of the study

4.6.1 Dependent Variables

- Dietary practice (Good Vs. Poor)
- Nutritional status among pregnant women.

4.6.2 Independent Variables

- Socio-economic and socio-demographic factors,
- Reproductive -related factors,
- knowledge,
- Source of information
- morbidity,
- Dietary diversity,
- Attitude.

4.7 Operational definitions

Poor dietary practice: women had poor dietary practice if she scored less than or equal to mean of dietary practice questions(23) .

Good dietary practice: women had good dietary practice if she scored greater than the mean of dietary practice questions(23) **.**

Poor nutrition knowledge: women had poor nutritional knowledge if she scored less than mean of nutrition knowledge questions.(23)

Good nutrition knowledge: women had good nutritional knowledge if she scored greater than or equal to mean of nutrition knowledge questions.(23)

Poor nutrition status: the pregnant women had poor nutritional status if she were undernourished for malnutrition screening with (MUAC < 23 cm). (25)

Good nutrition status: the pregnant women had good nutritional status if she were normal for malnutrition screening with (MUAC≥23 cm). (25)

Negative attitude: A pregnant women had scored below or equal to the mean score, she was considered as having a negative attitude.(23)

Positive attitude: A pregnant woman was considered to have a positive attitude if she had scored more than the mean score. (23)

4.8 Data collection procedures

Data was collected by using a structured interviewer administered questionnaire by using trained Midwifes and Health Officers. Socio demographic and socio economic factors, reproductive factors, nutrition knowledge and attitude.

Dietary diversity was assessed by using a 24h dietary recall method, and the dietary diversity score will be computed for ten food groups and these food groups include 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, dietary practice will be assessed by 16 dietary practice questionnaires (Low) Yes= 1, No= 0

Then sum up total result and the calculate the mean average. By using the mean average classify low Or Normal Dietary practice .Good -greater than mean average, Poor-less than or equal to mean and MUAC anthropometric data was collected.

Nutritional status was determined by anthropometric measures of middle upper arm circumference (MUAC). MUAC of the left arm was measured triplicate using a non-stretchable standard MUAC tape to the nearest 0.1 cm with no clothing on the arm. The average of triplicate measurement was taken. Pregnant women having MUAC< 23 cm were considered undernourished and ≥ 23 cm normal.

4.9 Data quality assurance

A questionnaire was first prepared in English and then translated to the local language Amharic. The training will be given for data collectors and supervisors on methods of obtaining consent, study objectives, contents of the questionnaire, interviewing technique and anthropometric measurement procedures.

Pretesting of the 16 questionnaire was done on 5% of the sample size among ANC attendees who were not included in the study; that was taken a week before commencement of the actual data collection. The questionnaire was developed in English and then translated into Amharic language for simplicity then back-translated to English language for its consistency by two different language expert individuals who speak both English and Amharic fluently.

To ensure reliable data collection and attain standardization and maximize interviewer reliability, midwives who speak both Amharic and the local language (Maallegna) was recruited and I gave training on data collection procedure.

4.10 Data processing and analysis

The collected data was exported from kobo tool server to SPSS Version 25 for analysis. Data was coded, transformed, categorized and cleaned. Descriptive statistics like frequencies and proportions was used to summarize the data and Binary logistic regression was employed to control confounders and determine the factors associated with dietary practice and Nutritional status among pregnant women. Summary statistics of mean, percentages and proportions was used to describe the study population by the study outcomes and demographic characteristics and other relevant factors. The independent variables with p-values ≤ 0.2 on bi variable analysis was be included into the final multivariable model to test for association between the dependent variables. At 95% confidence, variable with probability value (p-value) less than 0.2 was considered statistically significantly associated with dietary practice and Nutritional status. The strength and direction of association was described by using a crude odds ratio (COR) and adjusted odds ratio (AOR).

Models: Binary logistics regression models. Multicollinearity is the occurrence of high intercorrelations among two or more independent variables in a multiple regression model .in my independent variable there is no Multicollinearity VIF for all variable is <10 and tolerance test was >0.1.

5. Ethical considerations

Ethical clearance was obtained from IRB of Hawassa university college of medicine and health science school of public health. Official permission letter was submitted to Maale woreda Health office then bringing written permission letters to selected facilities in which the actual data collection was under taken. The purpose and importance of the study was explained and informed consent was secured from each participant. Confidentiality was maintained at all levels of the study. Participant's involvement in the study was on voluntary basis; participants who are unwilling to participate in the study and those who wish to quite their participation at any stage was informed to do so without any restriction.

6. Result

6.1 Socio-Demographic and Economic Factors of Respondents

In this study, 318 pregnant women were included with a response rate of 100%. The mean (standard deviation) age of study participants was 27±5.5years. Most (99.7%) of study participants were married (Table-1).

Table 1 socio-demographic characteristics of pregnant women attending ANC at Maalie woreda, south omo zone, Ethiopia 2023 G.C (n=318)

Variable	Category	Frequency	Percent %
Age group	≤24	116	36.5 %
	24-34	164	51.6 %
	≥ 35	38	11.9 %
Marital status	Married	317	99.7 %
	Single	1	0.3 %
Ethnicity	Male	299	94.03 %
	Others	19	5.97%
Mothers' Education	No formal education	127	39.9 %
	primary education	91	28.6 %
	Secondary and Higher education	100	31.4 %
Husband's Educational status	No formal education	136	42.8 %
	primary education	77	24.2 %
	Secondary and Higher education	105	33 %
Occupation status	House wife	253	79.6 %
	Government employee	36	11.3 %
	Private business & student	29	9.1 %
Husband's occupation status	Farmer	218	68.6 %
	Government employee	57	17.9 %
	Private business &student	43	13.5 %
Family monthly income (23)	< 1000	206	64.8 %
	>1000	112	35.2 %
Family size	1-4	181	56.9%
	≥5	137	43.1%

6.2 Household facility of Respondents

From 318 study participants, 223 (70.1%) had tape water for drinking and 23 (7.2%) of pregnant women had running water for drinking. Among the respondents, 264 (83.0%) had no radio/television (Table 2).

Table 2. Household facility of pregnant women attending ANC at Maalie woreda, South Omo Zone, Ethiopia 2023 G.C (n=318)

Variable	Category	Frequency	Percent %
Radio/Television For health news.	Yes	54	17.0 %
	No	264	83.0 %
Latrine facility	Yes	313	98.4 %
	No	5	1.6 %
Type of drinking water	Tape water	223	70.1 %
	Hand pump water	10	3.1 %
	Spring water	62	19.5 %
	river water	23	7.2 %
Distance from yours home to drinking water supply do you have.	<1 hour	255	80.2 %
	≥ 1 hour	63	19.8 %
Get support from your husband	Yes	303	95.3 %
	No	15	4.7 %
What is the way you get support from your husband	Purchasing diverse foods	126	39.6 %
	Caring to get health screening	150	47.2 %
	reminding to consume these food	27	8.5 %

6.2 Reproductive characteristics of the study participants

Regarding obstetric and pregnancy related characteristics 137 (43.1%) were having less than or equal to two pregnancy experiences. 57.5 % were having less than three years pregnancy intervals. Most of them were having access to nutrition counseling about nutrition during pregnancy and about two hundred seventy five (86.5%) of them were having nutrition information from health professional (Table 3).

6.3 Dietary practice of the study participants.

The results of dietary practice indicated that, below half (111) of them were faced craving for items not normally consumed. One hundred ten (34.6%) of them were avoided certain foods in the current pregnancy, of which 5.4% avoids food due to culture. Above the half of them 223 (70.1 %) had taken additional meal during current pregnancy. About 71.5 % of study participants had not having additional meal due to poor economy. One hundred (31.4%) of study participants had good dietary practice (Table 4).

Table 3: Reproductive characteristics of pregnant women attending ANC at Maalie woreda, South Omo Zone, Ethiopia 2023 G.C (n=318)

Variable	Category	Frequency	Percent %
Number of pregnancy	≤ 2	137	43.1 %
	3-4	86	27.0 %
	≥ 5	95	29.9 %
How many ANC visits	Ones	134	42.1 %
	Twice	99	31.1 %
	Three and above	85	26.7 %
History of still birth	Yes	25	7.9 %
	No	293	92.1 %
History of abortion	Yes	30	9.4 %
	No	288	90.6 %
Birth interval	< 36	183	57.5 %
	≥ 36	135	42.5 %
Nutrition counseling during	Yes	282	88.7 %
ANC	No	36	11.3 %
nutrition information	Health professional	275	86.5 %
	Family & Friends	43	13.6 %
Iron/folic acid supplementation	Yes	272	85.5 %
	No	46	14.5 %
What time it takes to reach	< 1 hour	182	57.2 %
HF?	≥ 1 hour	136	42.8 %

ANC-Antenatal care GA- Gestational age HF- Health Facility

Table 4: Dietary practice of pregnant women attending ANC at Maalie woreda, South Omo Zone, Ethiopia 2023 G.C (n=318)

Variable	Category	Frequency	Percent %
Have food craving	Yes	111	34.9 %
	No	207	65.1 %
Avoid any food items	Yes	110	34.6%
	No	208	65.4 %
Reason of avoiding food items	Personal dislike	102	92.7 %
	Culture	6	5.4 %
	Makes fetus big	2	1.8 %
Additional meal during current pregnancy	Yes	223	70.1 %
	No	95	29.9 %
What is the reason of not having additional meal?	Lack of information	8	8.4 %
	Poor economy	68	71.5 %
	Considered as adequate	19	20 %
Eat snack	Yes	236	77.0 %
	No	82	74.2 %
Skipping meal	Yes	95	25.8 %
	No	223	29.9 %
Which meals do you skip?	Breakfast	17	70.1 %
	Lunch	78	5.3 %
Eating fresh fruits and vegetables	Yes	272	24.4 %
	No	46	85.5 %
Type of salt	Canned salt	22	14.5 %
	Not canned salt	296	6.9 %
Over all dietary practice	Good	218	93.1 %
	Poor	100	68.6 %
			31.4 %

Overall dietary practice of study participants

From a total of 318 study participants 218 (68.6) have scored less than or equal to 8.0 mean of dietary practice questions so that classified under poor dietary practice and only 100 (31.4%) have good dietary practice which means the mean of dietary practice questions answered was greater than 8.0

6.4 Food groups consumed by the study participants.

The majority (96.2 %) of the study participants reported that they consumed cereals, white root and tubers, and (85.8 %) consumed pulses/legumes. The nuts and seeds were consumed by (86.8 %). Meat, fish and poultry (64.2 %), dairy and milk products (86.2 %) and egg (81.4 %) were consumed by study participants with in the last 24 hours (Table 5).

Table 5: Dietary diversity and food groups consumed with in 24 hour by a pregnant women attending ANC at Maalie woreda, South omo Zone, Ethiopia 2023 G.C (n=318)

Variable	Category	Frequency	Percent %
Cereals, white root and tubers, and plantains	Yes	306	96.2 %
	No	12	3.8 %
Pulses/legumes (bean, pea, shiro wet, kolo, nifiro)	Yes	273	85.8 %
	No	45	14.2 %
Nuts and seeds (nut, pumpkin, suppi)	Yes	276	86.8 %
	No	42	13.2 %
Meat, fish and poultry (chicken)	Yes	204	64.2 %
	No	114	35.8 %
Dairy and milk products	Yes	274	86.2 %
	No	44	13.8 %
Egg	Yes	259	81.4 %
	No	59	18.6 %
Vitamin A rich fruits and vegetables (avocado, Mango,	Yes	268	84.3 %
	No	50	15.7 %
Other fruits (banana, oranges, lemons, Guava)	Yes	270	84.9 %
	No	48	15.1 %
Other vegetables (cabbage, morringa leaf, lettuce, red bell peppers,)	Yes	305	95.9 %
	No	13	4.1 %
Overall dietary diversity status	Yes	219	68.9%
	No	99	31.1%

6.5 Nutrition Knowledge of the study participants.

In this study, 196 (61.6 %) of respondents had good knowledge of the dietary practice. Majority 272 (85.5 %) of the respondents did know about benefits of diversified diet. Regarding the sources of macronutrients, 237 (74.5 %) and sources of micronutrients 218 (68.5%) of respondents had known about dietary source (Table 6).

Table 6: Nutrition Knowledge of a pregnant women attending ANC at Maalie woreda, South Omo Zone, Ethiopia 2023 G.C (n=318)

Variable	Category	Frequency	Percent %
Know benefits of diversified diet for (Maternal health, child health and both)	Yes	272	85.5 %
	No	46	14.5 %
Know Vitamin A rich food source?	Yes	252	79.2 %
	No	66	20.8 %
Know Iron rich food source?	Yes	222	69.8 %
	No	96	30.2 %
Know iodine rich food source	Yes	213	67.0 %
	No	105	33.0 %
Know the use of iodized salt during pregnancy?	Yes	166	52.2 %
	No	152	47.8 %
Know the fetal complication of maternal under-nutrition.	Yes	211	66.4 %
	No	107	33.6 %
Know maternal complication of undernutrition.	Yes	204	64.2 %
	No	114	35.8 %
Knowledge about Iodine source food.	Yes	181	56.9 %
	No	137	43.1%
Food is important for growth and development of fetus	Yes	307	96.5 %
	No	11	3.5 %
Food is important for providing heat, energy and for the normal functioning of women's body	Yes	305	95.9 %
	No	13	4.1 %
Overall nutrition knowledge	Poor	122	38.4 %
	Good	196	61.6 %

Overall nutrition knowledge

Remark: based on operational definition, Poor nutrition knowledge: women had poor nutritional knowledge if she scored less than (9.6) mean of nutrition knowledge questions. **Good nutrition knowledge**: women had good nutritional knowledge if she scored greater than or equal to (9.6) mean of nutrition knowledge questions.

6.6 Attitude of pregnant women towards dietary practice of study participants.

Above half 192 (60.4%) of respondents have scored a positive attitude while (39.6%) scored a negative attitude for dietary practice during pregnancy. The mean (±SD) attitude score of the study participants was (23.3±4.3) out of 9 possible points. About 282 (89.9 %) of the study participants had agreed for eating an additional meal. Below half (47.8 %) of the respondents had agreed to prepare meals with iodized salt. Majority of study participants eat more carbohydrates and eat more proteins source food were 88.1 % and 88.4 % had agreed respectively (Table 7).

Table 7: Attitude of pregnant women towards dietary practice of the study participants

Variable	Category	Frequency	Percent %
Eat additional frequency of food per day	Disagree	25	7.9 %
	Neutral	7	2.2 %
	Agree	286	89.9 %
Eat more carbohydrates	Disagree	30	9.4 %
	Neutral	8	2.5 %
	Agree	280	88.1 %
Eat more proteins source food	Disagree	21	6.6 %
	Neutral	16	5.0 %
	Agree	281	88.4 %
Prepare more milk	Disagree	48	15.1 %
	Neutral	10	3.1 %
	Agree	260	81.8 %
Prepare meals with iron-rich foods	Disagree	72	22.6 %
	Neutral	19	6.0 %
	Agree	227	71.4 %
Like the taste of meat and other iron-rich food item or meals	Disagree	36	11.3 %
	Neutral	30	9.4 %
	Agree	252	79.2 %
Like the taste of milk and milk products	Disagree	20	6.3 %
	Neutral	8	2.5 %
	Agree	290	91.2 %
Prepare meals with iodized salt	Disagree	132	41.5 %
	Neutral	34	10.7 %
	Agree	152	47.8 %
Overall attitude	Negative attitude	126	39.6 %
	Positive attitude	192	60.4 %

Remark: During analysis of attitude status; the pregnant women agreed for questions regarding attitude, she had a score of 3 points, for neutral a score of 2 points and if she answers disagree, scored 1 point following the Likert scale. Then, the aggregate attitude score was determined for each pregnant woman by summing up the scores across the nine attitudes related questions. A pregnant woman was considered to have a positive attitude if she had scored more than the mean score out of the nine items. If she had scored below or equal to the mean point, she was considered as having a negative attitude.(23)

6.7 Nutritional status of study participants.

About 34.3% of study participants were undernourished (MUAC< 23 cm) (Table 8).

Table 8: MUAC screening for pregnant women towards dietary practice of the study participants

Variable	Category	Frequency	Percent %
Nutritional status	Undernourished (MUAC< 23cm)	109	34.3 %
	Normal (MUAC ≥ 23 cm)	209	65.7 %

6.8 Factors associated with dietary practice pregnant women attending ANC

From a total of 15 variables, ten variables in multi-variable logistic regression were significantly associated with dietary practice. With p <0.05 these variables were educational status, family monthly income, family size, Radio/Television For health news, number of pregnancy, ANC visits, nutrition counseling, time it takes to reach health facility, Diversity of diet, Knowledge, Attitude and Nutritional status ; which were significantly associated with dietary practice. Respondents who are Secondary and higher educational status were 4 times higher odds of good dietary practice than respondents who haven't formal education [(AOR=4.6, 95% CI: (1.50-11.51)].

Similarly, the odds of dietary practice among participants whose family size 1-4 were two times higher odds of good dietary practice than participants whose family size were ≥5 [(AOR=2.3, 95% CI: (1.10-2.870)].

Also the odds of participants who have Radio and Television for health news were 3 times higher odds of good dietary practice than respondents who haven't Radio and Television for health news [(AOR=3.17, 95% CI: (1.46-6.19)].

Respondents whose number of pregnancy < 2 was 2 times higher odds of good dietary practice than respondents who number of pregnancy ≥ 5 [(AOR=2.34, 95% CI: (1.21-3.98)].

Respondents whose ANC visits Three and above were 2 times higher odds of good dietary practice than respondents whose ANC visits Ones [(AOR=2.49, 95% CI: (1.09-4.03)].

Respondents who get Nutrition counseling during ANC follow up were nearly 2 times higher odds of good dietary practice than respondents who haven't get Nutrition counseling during ANC follow up [(AOR=1.81 , 95% CI: (1.12-5.46)].

Respondents who have good Knowledge were 1 times higher odds of good dietary practice than respondents who have poor Knowledge [(AOR=1.28, 95% CI: (1.13-4.19)].

Respondents who have good Attitude were 1 times higher odds of good dietary practice than respondents who haven't good Attitude [(AOR=1.25, 95% CI: (1.13-3.02)] (Table 10).

Table 1 .Multivariate logistic regression factors associated with dietary practice pregnant women attending ANC at Maalie woreda, south omo zone, Ethiopia 2023 G.C (n=318)

Independent variables		Dietary practice		AOR (95% CI)	P value
		Poor	Good		
Educational status	No formal education	80(52.3 %)	47 (28.5 %)	1	
	Primary education	46(30.1 %)	45 (27.3 %)	1.66 (0.86-3.51)	0.11
	Secondary and Higher education	27(17.7 %)	73(44.3 %)	4.6(1.50-11.51)	0.00*
Family monthly income	<1000	116 (75.9 %)	90 (54.5 %)	1	
	>1000	37 (24.2 %)	75 (45.4 %)	2.61 (1.35-6.43)	0.00*
Family size	≥5	82 (53.6 %)	55 (33.3 %)	1	
	1-4	71 (46.4 %)	110 (66.7 %)	2.3 (1.10-2.87)	0.01*
Radio/Television For health news.	No	139 (90.8 %)	125 (47.3 %)	1	
	Yes	14 (9.2 %)	40 (24.2 %)	3.17 (1.46-6.19)	0.00*
Number of pregnancy	≥ 5	56 (36.6 %)	39 (23.6 %)	1	
	3-4	45 (29.4 %)	41 (24.8 %)	1.3 (0.50-1.84)	0.00*
	≤ 2	52 (34.0 %)	85 (51.5 %)	2.34 (1.21-3.98)	0.09
ANC visits	Ones	72 (47.1 %)	62(37.6 %)	1	
	Twice	54 (35.3 %)	45 (27.3 %)	0.96 (0.50-1.68)	0.9
	Three and above	27 (17.6 %)	58 (35.2%)	2.49 (1.09-4.03)	0.02*
Nutrition counseling	No	22 (14.4 %)	14 (8.5 %)	1	
	Yes	131 (85.6 %)	151 (91.5 %)	1.81 (1.12-5.46)	0.02*
Time it takes to reach health facility	<1 hour	89 (58.2 %)	93 (56.4 %)	1.07 (1.03-3.82)	0.00*
	≥1 hour	64 (41.8 %)	72 (43.6%)	1	

Knowledge	Good	99 (64.7 %)	97 (58.8 %)	1.28(1.13-4.19)	0.01*
	Poor	54 (35.3 %)	68 (41.2 %)	1	
Attitude	Poor	65 (42.5 %)	61 (37.0 %)	1	
	Good	88 (57.5 %)	104 (63.0 %)	1.25 (1.13-3.02)	0.01*

1: reference category *=p-value < 0.05, CI = Confidence Interval, AOR = Adjusted Odds Ratio

6.9 Factors associated with nutritional status of pregnant women

From a total of 15 variables, seven variables in multi-variable logistic regression were significantly associated with Nutritional status. With p <0.05 these variables were Age, Husband occupation, cash decision maker, nutrition counseling, Source of nutrition information, Dietary practice and knowledge; which were significantly associated with Nutritional status Respondents whose age are between 24-34 were 2 times higher odds of have Normal Nutritional status than respondents whose age are less than 24 [(AOR=2.63, 95% CI: (1.39-5.80)].

Similarly, those participants whose Husband occupation had Farmer [(AOR=1.3, 95% CI :(1.05-8.92)], Government employee [(AOR=3.29, 95% CI :(1.79-71.2) and Private business [(AOR=6.80, 95% CI: (1.33-34.8)] were higher odds of have Normal Nutritional status than those whose Husband occupation had student.

Also the odds of participants whose both Father and mother cash decision makers were 2 times higher odds of have Normal Nutritional status than those whose cash decision maker are only. [(AOR=2.27, 95% CI: (1.14-3.92)].

Respondents who get Nutrition counseling during ANC follow up were nearly 2 times higher odds of Normal Nutritional status than respondents who haven't get Nutrition counseling during ANC follow up [(AOR=1.73, 95% CI: (1.42-7.26)].

Respondents who have poor dietary practice were nearly 2 times lower odds of have Normal Nutritional status than respondents have good dietary practice. [(AOR=1.87, 95% CI: (1.21-3.51)].

Respondents who have good Knowledge were nearly 2 times higher odds of good have Normal Nutritional status than respondents who have poor Knowledge [(AOR=1.92, 95% CI: (1.05-3.06)] (See Table 12).

Table 12: Multivariate logistic regression factors associated with nutritional status of pregnant women attending ANC at Maalie woreda, south omo zone, Ethiopia 2023 G.C (n=318)

Independent variables		Nutritional status		AOR (95% CI)	P value
		undernourished	Normal		
Age	≤24	36 (52.9 %)	80 (32.0 %)	1	
	24-34	24 (35.3 %)	140 (56.0 %)	2.63 (1.39-5.80)	0.00*
	≥ 35	8 (11.9 %)	30(12.0 %)	1.68 (0.59-5.16)	0.3
Husband occupation	Private business and Student	12(17.7 %)	31 (12.4 %)	1	
	Farmer	50 (73.5 %)	168 (67.2 %)	1.3 (1.05-8.92)	0.04*
	Government employee	6 (8.8 %)	51 (20.4 %)	3.29 (1.79-17.2)	0.01*
Cash decision maker	Father alone	40 (58.8 %)	96 (38.4 %)	1	
	Father and mother	28 (41.2 %)	153 (61.2 %)	2.27 (1.14-3.92)	0.01*
Nutrition counseling	No	11 (16.2 %)	25 (10.0 %)	1	
	Yes	57 (83.8 %)	225 (90.0 %)	1.73 (1.42-7.26)	0.005*
Source of nutrition information	Family and Friends	12(17.6 %)	31 (12.4 %)	1	
	Health professional	56 (82.4 %)	219 (87.6 %)	1.51(1.07 -8.3)	0.03*
Dietary practice	Good	75 (68.8 %)	113 (60.1 %)	1.87(1.21-3.51)	0.00*
	Poor	34 (31.2 %)	96 (45.9 %)	1	
knowledge	Poor	53 (48.6 %)	69 (33.0 %)	1	
	Good	56 (51.4 %)	140 (67.0 %)	1.92 (1.05-3.06)	0.03*

1: reference category*=p-value < 0.05, CI = Confidence Interval, AOR = Adjusted Odds Ratio,

7. Discussion

Maternal dietary practices during pregnancy play an important role in determining the long-term health and nutritional status of both the mother and her growing fetus.(6) Poor dietary practice and under nutrition among pregnant women have a major impact on fetus health and development. Nutrition of pregnant women should supply a sufficient amount of nutrients for mother, fetus and for successful lactation.(1) Proper nutrition is one of the most important factors influencing health and well-being, particularly during pregnancy(26). Poor dietary practices during pregnancy may result in increased rates of stillbirths, premature birth, low birth weight, maternal and prenatal death.(6) The current study revealed that about 100 (31.4%) of pregnant women had good dietary practices. This finding is almost similar (31.2%) with studies in Buno Bedele zone, south west Ethiopia(26) and 32.2% in Gedeo Zone, Southern Ethiopia(23) and it's also almost consistent (33.9%) with studies conducted in Guto Gida woreda, East Wollega zone, Ethiopia(2). This is higher than that of the study in Ambo district west Shoa Zone, Oromia region, Ethiopia(27), which was 26.9% and in Mizan-Aman Town, Southwest Ethiopia(28), which was 25.1% and in West Gojjam Zone, Northwest Ethiopia (14), which was 19.9% of study participants had good dietary practice. The variation could be attributed to difference in; Social demography, sample size, differences in study year, improvement in dietary practices may be due to Ethiopian government is currently promoting nutrition related interventions through health extension program and active involvement of pregnant women in antenatal care as well as in one-five network meeting and HDA at community level and maternity waiting home construction in PHCU with good maternity waiting home utilization. The result, finding is lower than the study done in Northwestern Ethiopia (39.3%)(6) and in Dessie town, northeastern Ethiopia(1), which was 45.2% of the pregnant women had good dietary practice. The reason for the variation may be different in social, demographic, cultural, economic, sample size and cultural variability between the study settings.

This study found that mother's educational status was significantly associated with dietary practices of pregnant women (AOR=4.6, 95% CI: (1.50-11.51). This may be due to as the mother educational status increase her awareness, knowledge, access to information, attitude about nutrition practice increases by reading some materials, by following media, by attentively following her ANC care, maternity waiting home utilization, pregnant women health conference

and one-five networking participation may increase. This result is in line with a study conducted in Buno Bedele zone, Ethiopia(26) and in Gedeo Zone, Southern Ethiopia(23) in which women with high educational level had good dietary practice compared to no formal education.

The finding of this study revealed that dietary knowledge was significantly associated with dietary practices of pregnant women (AOR=1.28, 95% CI: (1.13-4.19). This may be when a woman had good dietary knowledge; she understands the issue more and practices it. Additionally, good knowledge about nutrients and balanced diet usually resulting in positive dietary practices. It is in line with a study done in Buno Bedele zone, Ethiopia(26) and in Illu Aba Bor Zone, Southwest Ethiopia(3).

The finding of this study identified that income was significantly associated with dietary practices of pregnant women (AOR=2.61, 95% CI 1.35, 6.43). This may be as income increase their level of seeking health care specially Antenatal care increase, as income increases their capacity in using recommended food or practicing nutrition, increase and as income increase their capability in suing different information, education and communication materials may increase. .This result is in line with a study conducted in Buno Bedele zone, Ethiopia(26) and in Ambo District, West Shoa, Oromia, Ethiopia(27).

The finding also showed an association of family size with dietary practices of mothers during pregnancy (AOR=2.3, 95% CI 1.10, 2.87), which is in line with the study done in Mettu Karl Referral Hospital, Southwest Ethiopia(9)

In this study, 34.3 % of pregnant women were undernourished (MUAC< 23 cm). On the contrary, the result of the current study is higher than the study reported in Dessie town, northeastern Ethiopia(1), where (19.5%) of pregnant women were undernourished (MUAC < 23 cm) and in Urban and Rural Areas of Deyang City, Sichuan Province, China(29) where 11.8% of pregnant women were undernourished.

This study found that nutrition counseling was significantly associated with nutritional status of pregnant women (AOR=1.73, 95% CI: 1.42, 7.26). This may be due to as the mother nutrition counseling may increase her awareness, knowledge and access to information to have well nutritional status. The current study makes important contributions to understand dietary practices and determinants of diet during pregnancy. It can be used as an input for policymakers,

planners, researchers, programmers, health office managers and health professionals in the improvement of maternal diet to achieve the “Seqota Declaration” to end stunting by 2030.

8. Conclusion

In the current study, the prevalence of good dietary practice during pregnancy is 31.4% of pregnant women had good dietary practice. This indicated that the majority (68.6%) of the study participants had a poor dietary practice during pregnancy, which is a concern because having poor dietary practice contributes to maternal and neonatal mortality and morbidity. Educational status, family monthly income, family size, Radio/Television For health news, number of pregnancy, ANC visits, GA at first ANC visit, history of abortion, nutrition counseling, time it takes to reach health facility, Diversity of diet, Knowledge, Attitude and Nutritional status ; which were significantly associated with dietary practice. In order to improve dietary practice and alleviate the associated factors, the federal and regional government of Ethiopia, community health extension workers and other responsible stakeholders should focus on pregnant women to have ANC follow-up, use maternity waiting home, increase knowledge and good practice towards nutrition during pregnancy through community-based nutrition education program and local mass media.

9. Recommendation

Nutrition education intervention needs to be tailored to meet the need for pregnant women to improve their dietary practices. Therefore, government, other concerned bodies, health professionals and health extension workers should encourage pregnant women to attend ANC and promote health during pregnancy, strength, and counsel to improve dietary diversity and practice good nutrition and should give regular nutrition counseling using cards and role models during ANC visit. Nutritionists should be assigned at each level in the health system. Incorporating nutrition education into the school curriculum is recommended.

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ANNEX I. Bivariate logistic regression factors associated with dietary practice of pregnant women attending ANC at Maalie woreda, south omo zone, Ethiopia 2023 G.C (n=318)

Table 9. Bivariate logistic regression factors associated with dietary practice of pregnant women attending ANC at Maalie woreda, south omo zone, Ethiopia 2023 G.C (n=318)

Independent variables		**Dietary practice**		**COR (95% CI)**	**P value**
		Poor	**Good**		
Educational status	No formal education	80(52.3 %)	47 (28.5 %)	1	
	Primary education	46(30.1 %)	45 (27.3 %)	1.66 (0.78 - 2.76)	0.23
	Secondary education	18(11.8 %)	46(27.9 %)	4.34 (1.56 - 5.81)	0.00*
	Higher education	9(5.9 %)	27(16.4%)	5.10 (2.46 – 11.9)	0.00*
Husband's Educational status	No formal education	78 (51.0 %)	58 (35.2 %)	1	
	Primary education	39 (25.5 %)	38 (23.0 %)	1.31(0.57 -2.13)	0.7*
	Secondary education	22 (14.4 %)	29 (17.6 %)	1.77 (1.29 -5.09)	0.00*
	Higher education	14 (9.2 %)	40 (24.2 %)	3.84 (1.87 -7.11)	0.00*
Occupation status	House wife	132 (86.3 %)	121(73.3 %)	1	
	Government employee	10(6.5 %)	26 (15.8 %)	2.83(1.63-6.80)	0.001*
	Private business and student	11(7.2 %)	18(10.9 %)	1.78 (0.73-3.62)	0.23
Husband occupation	Farmer	117(76.5 %)	101(61.2 %)	1	
	Government employee	14(9.2 %)	43 (26.1 %)	3.55 (1.80 -6.00)	0.00*

	Private business and Student	22 (14.4 %)	21(12.7 %)	1.10 (0.44-2.00)	0.88
Family monthly income	< 1000	116 (75.9 %)	90 (54.5 %)	1	
	1000-2000	20 (13.1 %)	20 (12.1 %)	1.28(0.6 -2.8)	0.41
	>2000	17 (11.1 %)	55 (33.3 %)	4.16(1.3 -4.1)	0.002*
Cash decision maker	Father alone	72 (48.3 %)	54 (32.8%)	1	
	Mother alone	10 (4.2%)	11 (7.3 %)	1.46 (0.5-5.4)	1.0*
	Father and mother	71 (47.5%)	100 (59.9 %)	1.87 (1.23-3.36)	0.00*
Family size	≥5	82 (53.6 %)	55 (33.3 %)	1	
	1-4	71 (46.4 %)	110 (66.7 %)	2.30 (1.0 -2.66)	0.05*
Radio/Television For health news.	No	139 (90.8 %)	125 (47.3 %)	1	
	Yes	14 (9.2 %)	40 (24.2 %)	3.17 (1.57 -5.22)	0.001*
Distance from yours home	<1 hour	123 (80.4 %)	132 (80.0 %)	1.02 (1.02 -3.86)	0.042*
	≥ 1 hour	30 (19.6 %)	33 (20.0 %)	1	
Number of pregnancy	≥ 5	56 (36.6 %)	39 (23.6 %)	1	
	3-4	45 (29.4 %)	41 (24.8 %)	1.30(0.48-1.87)	0.89
	≤ 2	52 (34.0 %)	85 (51.5 %)	2.34 (1.11-3.52)	0.02*
ANC visits	Ones	72 (47.1 %)	62 (37.6 %)	1	
	Twice	54 (35.3 %)	45 (27.3 %)	0.96(0.64-2.08)	0.67
	Three and above	27 (17.6 %)	58 (35.2%)	2.49(1.33-4.23)	0.003*
Nutrition counseling	No	22 (14.4 %)	14 (8.5 %)	1	
	Yes	131 (85.6 %)	151 (91.5 %)	1.81 (1.18-8.36)	0.021*
Time it takes to reach health facility	< 1 hour	89 (58.2 %)	93 (56.4 %)	1.07(0.98-2.61)	0.059*
	≥ 1 hour	64 (41.8 %)	72 (43.6 %)	1	
Knowledge	Good	99 (64.7 %)	97 (58.8 %)	1.28 (1.02-2.82)	0.039*
	Poor	54 (35.3 %)	68 (41.2 %)	1	
Attitude	Poor	65 (42.5 %)	61 (37.0 %)	1	
	Good	88 (57.5 %)	104 (63.0 %)	1.25 (1.14-3.76)	0.002*

1: reference category, *=p-value < 0.2, CI = Confidence Interval, COR = Crude Odds Ratio

ANNEX II. Bivariate logistic regression factors associated with nutritional status of pregnant women attending ANC at Maalie woreda, south omo zone, Ethiopia 2023 G.C (n=318)

Table 11: Bivariate logistic regression factors associated with nutritional status of pregnant women attending ANC at Maalie woreda, south omo zone, Ethiopia 2023 G.C (n=318)

Independent variables		**Nutritional status**		**COR (95% CI)**	**P value**
		undernourished	**Normal**		
Age	≤24	36 (52.9 %)	80 (32.0 %)	1	
	24-34	24 (35.3 %)	140 (56.0 %)	2.62 (1.46-4.71)	0.00*
	≥ 35	8 (11.9 %)	30(12.0 %)	1.68 (0.70-4.04)	0.24
Husband occupation	Private business and student	12(17.7 %)	31(12.4 %)	1	
	Farmer	50 (73.5 %)	168 (67.2 %)	1.30 (0.62-2.71)	0.48
	Government employee	6 (8.8 %)	51 (20.4 %)	3.29 (1.12-9.65)	0.03*
Family monthly income	< 1000	44 (64.7 %)	162 (64.8 %)	1	
	1000-2000	15 (22.1 %)	25 (10.0 %)	0.45 (0.22-0.93)	0.03*
	≥2000	9 (13.2 %)	63 (25.2 %)	1.90 (0.87-4.12)	0.10*
Cash decision maker	Father alone	40 (58.8 %)	96 (38.4 %)	1	
	Father and mother	28 (41.2 %)	153 (61.2 %)	2.27(1.31-3.93)	0.00*
Family size	1-4	44 (64.7 %)	137 (54.8 %)	1	
	≥5	24 (35.3 %)	113 (45.2 %)	1.51 (0.86-2.63)	0.14*
Radio/Television For health news.	No	60 (88.2 %)	204 (81.6 %)	1	
	Yes	8 (11.8 %)	46 (18.4 %)	1.69 (0.75-3.77)	0.20*
Get support from	No	7 (10.3 %)	8 (3.2 %)	1	

your husband	Yes	61 (89.7 %)	242 (96.8 %)	3.47 (1.21-9.94)	0.02*
Number of pregnancy	≤ 2	35 (51.5 %)	102 (40.8 %)	1	
	3-4	14 (20.6 %)	72 (28.8 %)	1.76 (0.88-3.51)	0.1*
	≥ 5	19 (27.9 %)	76 (30.4 %)	1.37 (0.72-2.58)	0.3
Nutrition counseling	No	11 (16.2 %)	25 (10.0 %)	1	
	Yes	57 (83.8 %)	225 (90.0 %)	1.73 (0.80-3.73)	0.1*
Source of nutrition information	Family and Friends	12 (17.6 %)	31(12.4 %)	1	
	Health professional	56 (82.4 %)	219 (87.6 %)	1.46 (1.36-9.07)	0.00*
Dietary practice	Good	75 (68.8 %)	113 (60.1 %)	1	
	Poor	34 (31.2 %)	96 (45.9 %)	1.87 (1.15 -3.05)	0.01*
knowledge	Poor	53 (48.6 %)	69 (33.0 %)	1	
	Good	56 (51.4 %)	140 (67.0 %)	1.92 (1.19-3.08)	0.00*

1: reference category, *=p-value <0.2, CI = Confidence Interval, COR = Crude Odds Ratio

Annex III. Multi-Collinearity test result for dietary practice

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	religion of respondents	.893	1.120
	ethnicity of respondents	.880	1.136
	educational status of respondents	.270	3.704
	husband educational ststus	.251	3.991
	occupational status of respondents	.732	1.366
	husbands occupation status	.630	1.588
	head of house hold	.948	1.054
	family income	.389	2.569
	cash decision maker of respondent	.856	1.168
	family size of respodents	.794	1.259
	household facilities	.622	1.607
	latrine facility	.900	1.112
	drinking water supply	.835	1.198
	distance from home	.779	1.284
	handwashing practice	.948	1.055
	way of geting support	.894	1.119

a. Dependent Variable: dietery practice status

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	numer of pregnancy	.904	1.106
	How many ANC visits do you have	.837	1.195
	what is GA at first ANC visit	.837	1.194
	current stage of pregnancy	.772	1.295
	History of still birth	.657	1.523
	history of abortion	.663	1.508
	birth interval in months	.887	1.128
	get nutritioncounciling during ANC visit	.874	1.144
	source of nutrition information	.783	1.277
	Take iron folic acid supplemetation	.957	1.045
	sick in past 2 weeks	.940	1.064
	time to reach health facility	.835	1.198
	knoeledge status of resp	.603	1.658
	attitude status	.645	1.551

	nutritional status of px	.919	1.088

a. Dependent Variable: dietery practice status

Annex IV. Multi-Collinearity test result for nutritional status

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	religion of respondents	.893	1.120
	ethnicity of respondents	.880	1.136
	educational status of respondents	.270	3.704
	husband educational ststus	.251	3.991
	occupational status of respondents	.732	1.366
	husbands occupation status	.630	1.588
	head of house hold	.948	1.054
	family income	.389	2.569
	cash decision maker of respondent	.856	1.168
	family size of respodents	.794	1.259
	household facilities	.622	1.607
	latrine facility	.900	1.112
	drinking water supply	.835	1.198
	distance from home	.779	1.284
	handwashing practice	.948	1.055
	way of geting support	.894	1.119

a. Dependent Variable: nutritional status of px

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	numer of pregnancy	.893	1.120
	How many ANC visits do you have	.833	1.200
	what is GA at first ANC visit	.828	1.208
	current stage of pregnancy	.774	1.292
	History of still birth	.646	1.549
	history of abortion	.651	1.535
	birth interval in months	.891	1.122
	get nutritioncounciling during ANC visit	.863	1.159
	source of nutrition information	.778	1.286
	Take iron folic acid supplemetation	.932	1.073
	sick in past 2 weeks	.937	1.067
	time to reach health facility	.836	1.197
	dietery practice status	.882	1.134
	diversity of diet	.591	1.693
	knoeledge status of resp	.510	1.959
	attitude status	.608	1.646

a. Dependent Variable: nutritional status of px

ANNEX V. INFORMATION SHEET AND INFORMED CONSENT

Introduction

My name is…….. I am here to interview you on behalf of **Wondu Berra** who is a post graduate student of Hawassa University, college of medicine and health science, school of public health. Currently he is conducting a research for the partial fulfillment of Master's degree in **General Public Health**. This questionnaire is intended to assess **factors associated with dietary practice and Nutritional status among pregnant women attending ANC at Maalie Woreda, South omo zone, Ethiopia: 2023.**

Purpose: purpose of the project is to identify factors associated with dietary practice and nutritional status of pregnant women. The other purpose is for the fulfillment of master degree in public health. The information you provide here will be very helpful to the investigator of this study to write a research paper for the requirement in completion of master's program. The findings of this project could help in designing priority intervention strategies for better implementation of dietary practice and Nutritional status that enables to meet better maternal nutrition programs.

Duration of the Study: From February to May 2023.

Procedures: There are questions that assess factors associated with dietary practice and nutritional status of pregnant women. I would like to ask you to give your genuine and honest answers on the questions forwarded. If you need clarification please ask me. It will take you about 20 minutes to finish this survey.

Benefits and Risks: By participating in this study and answering our questions, you will not

Receive any direct benefit. However, the information will help the researcher to understand factors associated with dietary practice and nutritional status of pregnant women in order to appropriately identify and design future interventions related to problem to be found. Your participation in this study will not involve any risks. If a question makes you feel uncomfortable, you may choose not to answer.

Confidentiality: you will not be asked your name on to be written the survey questions. All the information you give to us will be kept private. Whatever information you provide will be kept strictly confidential. The information you give will kept in a locked file cabinet. Only the researcher will have access to see the answers you give. No information identifying you will ever be released to anyone outside of this data collection activity.

Participation: Participation in the survey is completely voluntary. If you are not comfortable in answering any question(s), you can leave it blank. You can stop filling out the questionnaire at any time without giving a reason and your relationship with the community or any other body will not be affected in any way. If you would like to know more, please **contact**: **Address** of the Principal Investigators Name **Wondu Berra, 0916378639**. I thank you in advance for taking your time to answer questions. Would you be willing to participate in the study? If yes, I am in advance to ask you. If no, please stop here.

Consent of the participant: I the undersigned have been informed that the purpose of this research project. Based on the above information I agree to participate in the research voluntarily, Signature of Participant ---------- Date----------

ANNEX VI: ENGLISH VERSION QUESTIONNAIRE

English questionnaires on factors associated with dietary practice and nutritional status of pregnant women.

Kebele---------- Interviewer name ---------- Interviewee name (code) ---------

Woreda/Town---------- Date of interview----------

Part I: Socio-demographic and socio-economic characteristics of the study participants (14)(24)(3)(1)(23)

S.no	Questions	Possible Answers	Skip
1	How old are you? Age at interview in completed year	----------year	
2	What is your religion?	1. Orthodox 2. Muslim 3. Protestant 4. Others	
3	What was yours marital status	1. Married 2. Single 3. Divorced	
4	What is your ethnicity?	1. Male 2. Amhara 3. Wolaita 4. Gamo	
5	What is your Educational status?	1. No formal education 2. Primary (1-8 grade) 3. Secondary education (9-12 grade) 4. Higher education (College or University)	

6	What is your husband's Educational status?	1. No formal education 2. Primary (1-8 grade) 3. Secondary education (9-12 grade) 4. Higher education (College or University)	
7	What is your occupation status?	1. House wife 2. Government employee 3. Private business 4. Student	
8	What is your husband's occupation status?	1. Farmer 2. Government employee 3. Private business 4. Student	
9	Who is the head of household?	1. Father 2. Mother 3. Grandfather	
10	What is your family monthly income? (1)	----------ETB birr	
11	Who is cash decision maker?	1. Father alone 2. Mother alone 3. Father and mother	
12	What is yours family size?	----------person	
13	Do you have household facilities? For health news.	1. No Radio/Television 2. Radio/ Television	
14	Do you have latrine facility in the compound?	1. Yes 2. No	
15	What type of drinking water supply do you have?	1. Tape water 2. Hand pump water 3. Spring water 4. Running water 5. Bore whole	

16	Distance from yours home	1. < 1 hour 2. ≥ 1 hour	
17	Do you have hand washing practice before meal,food preparation and after toilet?	1. Yes 2. No	
18	Do you get support from your husband?	1. Yes 2. No	
19	What is the way you get support from your husband?	1. By purchasing diverse foods/ supplements 2. By caring to get health screening 3. By reminding to consume these food/supplements 4. Others ----------	

Part II: Reproductive (Obstetric) characteristics of the study participants (1)(3)(24)(6)

S.no	Questions	Possible Answers	Skip
1	What is your number of pregnancy?	----------pregnancy.	
2	How many ANC visits do you have?	1. Ones 2. Twice 3. Three and above 4. Not at all	
3	What is GA at first ANC visit?(compare with card)	1. First trimester 2. Second trimester 3. Third trimester	
4	What is your current stage of pregnancy? (compare with card)	1. First three months 2. Four - Six months 3. Seven month and above	
5	Do you have history of still birth?	1. Yes 2. No	

6	Do you have history of abortion?	1. Yes 2. No	
7	What is your birth interval?	----------months	
8	Do you get nutrition counseling during ANC visit?	1. Yes 2. No	
9	Source of nutrition information	1. Health professional 2. Family 3. Media 4. Friends 5. Others	
10	Do you take iron/folic acid supplementation?	1. Yes 2. No	
11	Do you sick in past 2 weeks prior to date of survey?	1. Yes 2. No	
12	What time it takes to reach health facility?	1. $<$ 1 hour 2. $\geq$ 1 hour	

Part III: Dietary practice of the study participants. (1)(3)(24)(23)

S.no	Questions	Possible Answers	Skip
1	Do you have food craving not normally consumed?	1. Yes 2. No	
2	Do you avoid any food items during current pregnancy?	1. Yes 2. No	If 'No' skip to Q4
3	What is reason of avoiding food items?	1. Personal dislike 2. Religion 3. Culture 4. Makes fetus big	

4	Do you follow specific dietary regime during current pregnancy?	1. Yes 2. No	
5	Do you have additional meal during current pregnancy?	1. Yes 2. No	If 'Yes' skip to Q7
6	What is the reason of not having additional meal?	1. Lack of information 2. Poor economy 3. Considered as adequate 4. Others ----------	
7	What is your meal frequency?	1. < = 2 meals 2. 3-4 meals 3. ≥ 5 meals	
8	Do you eat snack between meals during current pregnancy?	1. Yes 2. No	
9	Do you skipping any meal during current pregnancy?	1. Yes 2. No	If 'No' skip to Q11
10	Which meals do you Skipp?	1. Breakfast 2. Lunch 3. Dinner	
11	Do you eat protein rich foods like meat, fish, egg, butter, pea, bean, soya bean and others during current pregnancy?	1. Yes 2. No	
12	Do you have habits of eating fresh fruits and vegetables?	1. Yes 2. No	
13	Which type of salt do you use?	1. Canned salt 2. Not canned salt	
14	Time of adding salt into cooking food	1. At the end of cooking 2. At the middle of cooking 3. At the beginning of cooking 4. Cook without any salt	

15	What is your amount of fluid drink per day?	1. Less than a liter 2. 1–1.5 llitters 3. More than 1.5 litters	
16	Do you include the following in fluid usually in yours meal?	1. Milk 2. Borde tella 3. Fruit juice 4. Soup 5. Herbal tea/coffee 6. Others specify ----------	

Good dietary practice- women who have ≥ 75% of dietary practice, Poor dietary practice- women who have < 75% of dietary practice

Part IV: Dietary diversity and food groups consumed by of the study participants. (1)(3)(31)

S.no	Questions	Possible Answers	Skip
1	Cereals, white root and tubers, and plantains(maize, sorghum, enjera, bread, porrage, kita, wheat ,barley, enset, sweet potato, taro)	1. Yes 2. No	
2	Pulses/legumes (bean, pea, shiro wet, kolo, nifiro)	1. Yes 2. No	
3	Nuts and seeds (nut, pumpkin, suppi)	1. Yes 2. No	
4	Meat, fish and poultry (chicken)	1. Yes 2. No	
5	Dairy and milk products	1. Yes 2. No	
6	Egg	1. Yes 2. No	
7	Dark green leafy vegetables (kale, moringa leaf, pumpkin leaf)	1. Yes 2. No	

8	Vitamin A rich fruits and vegetables (avocado, Mango, papaya, carrots, tomatoes, sweet potato, peppers, pumpkin)	1. Yes 2. No	
9	Other fruits (banana, oranges, lemons, Guava)	1. Yes 2. No	
10	Other vegetables (cabbage, morringa leaf, lettuce, red bell peppers,)	1. Yes 2. No	

*WDDS-Good ≥ 5 $food\ groups\ consumed,$ Poor < 5 $food\ groups\ consumed$

Part V: Nutrition Knowledge of the study participants. (3)(6)

S.no	Questions	Possible Answers	Skip
1	Know those benefits of diversified diet? (Maternal health, child health and both)	1. Yes 2. No	
2	Know Vitamin A rich food source? (carrots, sweet potatoes, pumpkin, mango, oranges, avocado, fish, wheat, barley)	1. Yes 2. No	
3	Know Iron rich food source? (teff, lentils, egg, poultry, red meat, liver, kidney)	1. Yes 2. No	
4	Know iodine rich food source (fish, milk, egg, seafood, iodine salt)	1. Yes 2. No	
5	Know dietary sources of macronutrients (carbohydrates, EFA and proteins) ? (32) (33) (bread, injera, oil, butter, fish, egg, meat, milk, soya bean, pea, bean)	1. Yes 2. No	
6	Know dietary sources of micronutrients (iron, Vitamin A, iodine, Vitamin C)(32) (egg, milk, fish, seafood, vegetables, fruits, barley, wheat, guava, lemon, orange)	1. Yes 2. No	

7	Know the use of iodized salt during pregnancy? (34) (brain damage, goiter, fatigue, stillbirth, miscarriage)	1. Yes 2. No	
8	Know the fetal complication of maternal under-nutrition. (35) (fetal loss, low birth weight, stillbirth, abortion, wasting, developmental delays for child, child morbidity and mortality)	1. Yes 2. No	
9	Know maternal complication of undernutrition.(36),(37),(38) (tiredness with dizziness, pre-eclampsia, anemia, obstructed labour, postpartum hemorrhage, maternal death)	1. Yes 2. No	
10	Knowledge about Iodine source food.(39),(40) (milk, fish, egg, iodized salt, seafood)	1. Yes 2. No	
11	Food is important for fighting infection or disease.	1. Yes 2. No	
12	Food is important for growth and development of fetus	1. Yes 2. No	
13	Food is important for providing heat, energy and for the normal functioning of women's body	1. Yes 2. No	

Part VI: Attitude of pregnant women towards dietary practice of the study participants.

(23)(22)

S.no	Questions	Possible Answers	Skip
1	Eat additional frequency of food per day?	1. Agree 2. Disagree 3. Neutral	
2	Eat more carbohydrates?	1. Agree 2. Disagree 3. Neutral	

3	Eat more proteins source food such as beans, egg, nut . . . ?	1. Agree 2. Disagree 3. Neutral	
4	Prepare more milk and its products during pregnancy?	1. Agree 2. Disagree 3. Neutral	
5	Prepare meals with iron-rich foods?	1. Agree 2. Disagree 3. Neutral	
6	Like the taste of meat and other iron-rich food item or meals?	1. Agree 2. Disagree 3. Neutral	
7	Like Omega 3 rich foods like olive oils, fish . . . ?	1. Agree 2. Disagree 3. Neutral	
8	Like the taste of milk and milk products?	1. Agree 2. Disagree 3. Neutral	
9	Prepare meals with iodized salt?	1. Agree 2. Disagree 3. Neutral	

Part VII: Anthropometric measurements of pregnant women towards dietary practice of the study participants.

S.no	Questions	Possible Answers	Skip
1	Nutritional status (Result from MUAC screening)	**----------cm**	
2	Women weight in Kg	**1. Previous (use 1st visit measure from card) ----------kg** **2. Current ----------kg**	
3	Women height in m	**----------m**	

መግቢያ

ስሜ.....ሲሆን በሐዋሳ ዩኒቨርሲቲ የድህረ ምረቃ ተማሪ በሆነው በአቶ ወንዱ ቤራ ስም፣የህክምናና ጤና ሳይንስ ኮሌጅ፣ የህብረተሰብ ጤና ትምህርት ቤት ቃለ መጠይቅ ልሰጥሽ ነው። በአሁኑ ጊዜ በአጠቃላይ የህዝብ ጤና ውስጥ የማስተርስ ዲግሪውን በከፊል ለማሟላት ምርምር እያደረገ ነው። ይህ መጠይቅ በደቡብ ኦሞ ዞን ኢትዮጵያ በማሌ ወረዳ በ2015 ዓ.ም ውስጥ ነፍሰ ጡር ሴቶች ከአመጋገብ ልምምድ እና የተመጣጠነ ምግብ እጥረት ሁኔታ ጋር ተያይዘው የሚመጡ ሁኔታዎችን ለመገምገም የታሰበ ነው።

ዓላማው፡ የፕሮጀክቱ ዓላማ ከአመጋገብ ልምምድ እና ከነፍሰ ጡር ሴቶች የአመጋገብ ሁኔታ ጋር የተያያዙ ነገሮችን መለየት ነው። ሌላው ዓላማ በሕዝብ ጤና ውስጥ የማስተርስ ዲግሪን ለማሟላት ነው። እዚህ ያቀረቡት መረጃ የዚህ ጥናት መርማሪ የማስተርስ ፕሮግራምን ለማጠናቀቅ ለሚያስፈልጉት መስፈርቶች የጥናት ወረቀት ለመፃፍ በጣም ይረዳዋል። የዚህ ፕሮጀክት ግኝቶች የተሻሉ የእናቶች አመጋገብ መርሃ ግብሮችን ለማሟላት የሚያስችሉ የአመጋገብ ልምዶችን እና የአመጋገብ ሁኔታን ለማሻሻል ቅድሚያ የጣልቃ ገብነት ስልቶችን ለመንደፍ ይረዳል::

የጥናቱ ቆይታ፡ ከየካቲት እስከ መጋቢት 2015 ዓ.ም ድረስ ይሆናል።

ሂደቶች፡ ከአመጋገብ ልምምድ፣ እና ከምግብ እጥረት ሁኔታ ጋር የተያያዙ ሁኔታዎችን የሚገመግሙ ጥያቄዎች አሉ። በተላለፉት ጥያቄዎች ላይ እውነተኛ እና እውነተኛ መልስ እንድትሰጡኝ እጠይቃለሁ። ማብራሪያ ከፈለጉ እባክዎን ይጠይቁኝ። ይህን ዳሰሳ ለመጨረስ 20 ደቂቃ ያህል ይወስዳል።

ጥቅሞች እና አደጋዎች፡ በዚህ ጥናት ውስጥ በመሳተፍ እና ጥያቄዎቻችንን በመመለስ እርስዎ ማንኛውንም ቀጥተኛ ጥቅም አያገኙም። ይሁን እንጂ መረጃው ተመራማሪው ሊገኙ ከሚችሉ ችግሮች ጋር የተያያዙ የወደፊት ጣልቃገብነቶችን በትክክል ለመለየት እና ለመንደፍ ከአመጋገብ ልምምድ እና ነፍሰ ጡር ሴቶች የአመጋገብ ሁኔታ ጋር የተያያዙ ሁኔታዎችን እንዲገነዘብ ይረዳል። በዚህ ጥናት ውስጥ ያለዎት ተሳትፎ ምንም አይነት አደጋዎችን አያካትትም። አንድ ጥያቄ ምቾት የሚሰማዎ ከሆነ፣ መልስ ላለመስጠት ልትመርቺ ትቺያለሽ።

ምስጢራዊነት፡ የዳሰሳ ጥያቄዎችን ለመፃፍ ስምዎን አይጠየቁም። የምትሰጡን መረጃዎች በሙሉ ሚስጥራዊ ይሆናሉ። የሚያቀርቡት ማንኛውም መረጃ በጥብቅ ሚስጥራዊ ይሆናል። የሚሰጡት መረጃ በተቆለፈ የፋይል ካቢኔ ውስጥ ይቀመጣል። የሚሰጧቸውን መልሶች ለማየት

የሚቻለው ተመራማሪው ብቻ ነው። እርስዎን የሚለይ ምንም አይነት መረጃ ከዚህ የመረጃ አሰባሰብ እንቅስቃሴ ውጭ ለማንም አይለቀቅም።

ተሳትፎ፡ በዳሰሳ ጥናቱ ውስጥ መሳተፍ ሙሉ በሙሉ በፈቃደኝነት ነው። ማንኛውንም ጥያቄ(ዎች) ለመመለስ ካልተመችዎ ባዶ መተው ይችላሉ። ምክንያቱን ሳይገልጹ በማንኛውም ጊዜ መጠይቁን መሙላት ማቆም ይችላሉ እና ከማህበረሰቡ ወይም ከማንኛውም አካል ጋር ያለዎት ግንኙነት በምንም መልኩ አይነካም። የበለጠ ለማወቅ ከፈለጉ እባክዎን ያነጋግሩ፡ የተመራማሪው አድራሻ፡ ወንዱ ቤራ፡ 0916378639፡ ለጥያቄዎች መልስ ለመስጠት ጊዜዎን ስለወሰዱ አስቀድሜ አመሰግናለሁ። በጥናቱ ለመሳተፍ ፈቃደኛ ነዎት? አዎ ከሆነ፣ ልጠይቅዎ አስቀድሜ ነኝ። አይደለም ከሆነ፣ እባክዎ እዚህ ያቁሙ።

የተሣታፊዎ ስምምነት፡ እኔ በስሩ የተፈረመው የዚህ የምርምር ፕሮጀክት ዓላማ ተነግሮኛል። ከላይ ባለው መረጃ መሰረት በጥናቱ ላይ በፈቃደኝነት ለመሳተፍ ተስማምቻለሁ። የተሳታፊ ፊርማ ---------- ቀን ----------

ANNEX VIII: AMHARIC VERSION QUESTIONNAIRES

በጥናቱ ርዕስ ዙሪያ የተዘጋጁ የአማረኛ መጠይቆች

ቀበሌ----------የጠያቂው ስም---------- የተጠያቂዋ ስም (ኮድ) ---------

ወረዳ/ክፍለ ከተማ---------- የተጠየቁበት ቀን----------

<u>ክፍል አንድ፡- የጥናቱ ተሳታፊዎች ማህበረ-ሕዝብ እና ማህበራዊ-ኢኮኖሚያዊ ባህሪያት።</u>

ተ.ቁ	ጥያቄዎች	ሊሆኑ የሚችሉ መልሶች	ዝለል
1	ዕድሜዎ ስንት ነው? ዕድሜን በተጠናቀቀ ዓመት ያድርጉ ፣	----------ዓመት	
2	ሃይማኖትዎ ምንድነው ?	1. ኦርቶዶክስ 2. ሙስልም 3. ፕሮቴስታንት 4. ሌሎች	
3	የጋብቻ ሁኔታዎን ቢነግሩን	1. ያገባች 2. ያላገባች 3. የተፋቱ	
4	ብሄረሰብዎ ምንድነው ?	1. ማሌ 2. አማራ 3. ወላይታ 4. ጋሞ	
5	የትምህርት ደረጃዎ ምን ያህል ነው?	1. መደበኛ ትምህርት የለም 2. አንደኛ ደረጃ (1-8 ክፍል) 3. ሁለተኛ ደረጃ (9-12 ክፍል) 4. ከፍተኛ ደረጃ(ኮሌጅ ወይም ዩኒቨርሲቲ)	

6	የባልሽ የትምህርት ደረጃ ምን ያህል ነው?	1. መደበኛ ትምህርት የለም 2. አንደኛ ደረጃ (1-8 ክፍል) 3. ሁለተኛ ደረጃ (9-12 ክፍል) 4. ከፍተኛ ደረጃ(ኮሌጅ ወይም ዩኒቨርሲቲ)	
7	የእርስዎ ሥራ ምንድነው?	1. የቤት እመቤት 2. የመንግስተኛ ሠራተኛ 3. የግል ንግድ ሥራ 4. ተማሪ	
8	የባልዎ ሥራ ምንድነው?	1. ገበሬ 2. የመንግስተኛ ሠራተኛ 3. የግል ንግድ ሥራ 4. ተማሪ	
9	የቤተሰብ አስተዳዳሪ ማን ነው?	1. አባት 2. እናት 3. የወንድአያት	
10	የቤተሰብ ወርሃዊ ገቢዎ ምን ያህል ነው?	----------ብር	
11	የገንዘብ ውሳኔ ሰጪ ማን ነው?	1. አባት ብቻ 2. እናት ብቻ 3. አባት እና እናት	
12	የእርስዎ ቤተሰብ ብዛት ስንት ነው?	----------ሰው	
13	የቤት መገልገያዎች አሎት? የጤና ዜና ለመከታተል.	1. ሬዲዮ/ቴሌቪዥን የለም። 2. ሬዲዮ / ቴሌቪዥን አለ	
14	በግቢው ውስጥ መጸዳጃ ቤት አለዎት?	1. አዎ 2. አይ	
15	የመጠጥ ውሃ አማራጭ ምን ዓይነት ነው?	1. የቦኖ መስመር ውሃ 2. በእጅ የሚወዛወዝ ቧንቧ	

		3. ምንጭ ውሃ 4. ወራጅ ወንዝ ውሃ 5. የጉድጓድ ውሃ	
16	የውሃ መገኛ ከቤትዎ ያለው ርቀት?	1. < 1 ሰዓት በታች 2. ≥1 ሰዓት በላይ	
17	ምግብ ከመመገብዎ, ምግብ ከማዘጋጀትዎ እና ከሽንት ቤት መልስ እጅ የመታጠብ ልምድ አለዎት?	1. አዎ 2. አይ	
18	ከባልሽ ድጋፍ ታገኝያለሽ?	1. አዎ 2. አይ	
19	ከባልሽ ድጋፍ የምታገኝበት መንገድ ምንድን ነው?	1. የተለያዩ ምግቦችን/ተጨማሪ ምግቦችን በመግዛት። 2. የጤና ምርመራ ለማድረግ በመንከባከብ 3. እነዚህን ምግቦች/ማሟያዎችን እንዲመገብ በማሳሰብ 4. ሌሎች----------	

<u>ክፍል ሁለት: የጥናቱ ተሳታፊዎች የመራቢያ (የማህፀን) ባህሪያት</u>

ተ.ቁ	ጥያቄዎች	ሊሆኑ የሚችሉ መልሶች	ዝለል
1	የእርስዎ እርግዝና ስንተኛ ነው?	----------እርግዝና	
2	ስንት የቅድመ ወሊድ ጉብኝቶች አሉዎት?	1. አንድ ጊዜ 2. ሁለት ጊዜ 3. ሶስት እና ከዚያ በላይ 4. በጭራሽ የለም።	
3	በመጀመሪያ የእርግዝና ጉብኝት ጊዜ የጽንሱ ስንት ወር ነበር? (በካርድ	1. የመጀመሪያ ሶስት ወር 2. ሁለተኛ አጋማሽ	

	ያረጋግጡ)	3. ሦስተኛ አጋማሽ	
4	የእርግዝናዎ ደረጃ ስንት ነው? ወይም አሁን የጽንሱ ስንት ወር ነው? (በካርድ ያረጋግጡ)	1. የመጀመሪያ ሶስት ወር 2. ከአራተኛ ወር እስከ ስድስተኛ ወር 3. ሰባተኛው ወር እና በላይ	
5	ሞቶ የተወለደ ጽንስ ታሪክ አለዎት?	1. አዎ 2. አይ	
6	የፅንስ ማቋረጥ (ውርጃ) ታሪክ አለዎት?	1. አዎ 2. አይ	
7	ከመጀመሪያ ልጅዎ በስንት ዓመት ልዩነት አረገዙ?	---------- ወራት	
8	በቅድመ ወሊድ ጉብኝት ጊዜ ስለምግብ አመጋገብ ምክር አገልግሎት አግኝተዋል?	1. አዎ 2. አይ	
9	ስለምግብ አመጋገብ መረጃ ከየት አገኙ ?	1. ከጤና ባለሙያ 2. ከቤተሰብ 3. ከማህበራዊ ሚዲያ 4. ከጓደኛ 5. ሌሎች	
10	የብረት/ፎሊክ አሲድ ማሟያ ትወስጂያለሽ?	1. አዎ 2. አይ	
11	ከዳሰሳ ጥናቱ በፊት ባሉት 2 ሳምንታት ውስጥ ታምመዋል?	1. አዎ 2. አይ	
12	ወደ ጤና ተቋም ለመድረስ ምን ያህል ጊዜ ይወስዳል?	1. <1 ሰዓት 2. ≥1 ሰዓት	

ክፍል ሦስት: የጥናቱ ተሳታፊዎች የአመጋገብ ልምምድ ሁኔታ.

ተ.ቁ	ጥያቄዎች	ሊሆኑ የሚችሉ መልሶች	ዝለል
1	መደበኛ ያልሆነ ያልተለመደ የምግብ ፍላጎት አለዎት?	1. አዎ 2. አይ	
2	አሁን ባለው እርግዝና ወቅት ማንኛውንም ምግብ ያስወግዳሉ?	1. አዎ 2. አይ	መ “አይ” ከሆነ ወደ ጥ4
3	የምግብ ዓይነቶችን የመራቅ ምክንያት ምንድነው?	1. የግል አለመውደድ 2. ሃይማኖት 3. ባህል 4. ፅንሱን ትልቅ ያደርገዋል፣	
4	በአሁኑ እርግዝና ወቅት የተለየ የአመጋገብ ስርዓት ይከተላሉ?	1. አዎ 2. አይ	
5	በአሁኑ እርግዝና ወቅት ተጨማሪ ምግብ አለዎት?	1. አዎ 2. አይ	መ “አዎ” ከሆነ ወደ ጥ7
6	ተጨማሪ ምግብ የማይመገብበት ምክንያት ምንድን ነው?	1. የመረጃ እጥረት 2. ደካማ ኢኮኖሚ 3. በቂ እንደሆነ ተደርጎ ይቆጠራል 4. ሌሎች----------	
7	የምግብ ድግግሞሽዎ በቀን ስንት ነው?	1. < = 2 ምግቦች 2. 3-4 ምግቦች 3. ≥ 5 ምግቦች	
8	በአሁኑ እርግዝና ወቅት በምግብ መካከል መክሰስ ይበላሉ?	1. አዎ 2. አይ	
9	አሁን ባለው እርግዝና ወቅት ማንኛውንም ምግብ ይዘለላሉ?	1. አዎ 2. አይ	መ “አይ” ከሆነ ወደ ጥ11

10	የትኞቹን ምግቦች ይዘለላሉ?	1. ቁርስ 2. ምሳ 3. እራት	
11	በአሁኑ እርግዝና ወቅት በፕሮቲን የበለጸጉ ወይም ገንቢ ምግቦችን ለምሳሌ-ስጋ፣ዓሳ፣ እንቁላል፣ቅቤ፣አተር፣ባቄላ፣አኩር አተር እና ሌሎችን ይመገባሉ?	1. አዎ 2. አይ	
12	ትኩስ አትክልትና ፍራፍሬ የመብላት ልማድ አለዎት?	1. አዎ 2. አይ	
13	የትኛውን የጨው ትጠቀሚያሽ?	1. የታሸገ ጨው 2. ያልታሸገ ጨው	
14	ጨው ወደ ምግብ ማብሰል ጊዜ የሚጨምሩበት ሁኔታ?	1. ምግብ ማብሰል መጨረሻ ላይ 2. በማብሰያው መካከል 3. ምግብ ማብሰል መጀመሪያ ላይ 4. ያለ ጨው ምግብ ማብሰል	
15	በቀን የምትጠጪው ፈሳሽ መጠን ስንት ነው?	1. ከአንድ ሊትር ያነሰ 2. 1-1.5 ሊ 3. ከ 1.5 ሊትር በላይ	
16	በፈሳሽ ውስጥ ከሚከተሉት የትኞቹን በብዛት ያካትታሉ?	1. ወተት 2. ቦርዴ ጠላ 3. የፍራፍሬ ጭማቂ 4. ሾርባ 5. የእፅዋት ሻይ/ ቡና 6. ሌሎች----------	

ጥሩ የአመጋገብ ልምምድ -≥75% የአመጋገብ ልምድ ያላቸው ሴቶች, ደካማ የአመጋገብ ልምምድ - < 75% የአመጋገብ ልምምድ ያላቸው ሴቶች.

ክፍል አራት፡- በጥናቱ ተሳታፊዎች የሚጠቀሙባቸው የአመጋገብ ልዩነት እና የምግብ ቡድኖች::

ተ.ቁ	ጥያቄዎች	ሊሆኑ የሚችሉ መልሶች	ዝለል
1	ጥራጥሬዎች, ነጭ ሥር እና ሀረጎች, እና ዕጽዋቶች (በቆሎ፣ማሽላ፣ እንጀራ፣ ዳቦ፣ ገንፎ፣ ቂጣ፣ ስንዴ፣ገብስ፣እንሰት፣ስኳርድንች፣ጎደሬ)	1. አዎ 2. አይ	
2	ባቄላ/የአባዝርት እህሎች (ባቄላ፣አተር፣ሽሮ ወጥ፣ቆሎ፣ንፍሮ ያሉት)	1. አዎ 2. አይ	
3	ፍሬዎች እና ዘሮች(አቮሎኒ፣ዱባ ፍሬ፣የሱፍ ፍሬ ያሉት)	1. አዎ 2. አይ	
4	ሥጋ ፣ ዓሳ እና ዶሮ (ዶሮ)	1. አዎ 2. አይ	
5	የወተት እና የወተት ምርቶች	1. አዎ 2. አይ	
6	እንቁላል	1. አዎ 2. አይ	
7	ጥቁር አረንጓዴ ቅጠላማ አትክልቶች (ጎመን፣ ሃላኮ ቅጠል፣ ዱባ ቅጠል)	1. አዎ 2. አይ	
8	ቫይታሚን ኤ የበለጸጉ ፍራፍሬዎችና አትክልቶች (አቮካዶ፣ማንጎ፣ፓፓያ፣ካሮት፣ቲማቲም፣ስኳር ድንች፣በርበሬ፣ ዱባ ፍሬ)	1. አዎ 2. አይ	

9	ሌሎች ፍራፍሬዎች (ሙዝ፣ብርቱካን፣ ሎሚ፣ ዘይቶኒ)	1. አዎ 2. አይ	
10	ሌሎች አትክልቶች (ጎመን፣ሃላኮ ቅጠል፣ ሰላጣ፣ቀይ በርበሬ)	1. አዎ 2. አይ	

*WDDS-ጥሩ $\geq 5\ food\ groups\ consumed$, ደካማ$< 5\ food\ groups\ consumed$

ክፍል አምስት: <u>የጥናቱ ተሳታፊዎች የአመጋገብ እውቀት::</u> (3)(6)

ተ.ቁ	ጥያቄዎች	ሊሆኑ የሚችሉ መልሶች	ዝለል
1	የበለጸጉ ምግብ ያላቸው ጥቅሞች ያውቃሉ? (ለእናቶች ጤና፣ ለህፃናት ጤና እና ለሁሉም)	1. አዎ 2. አይ	
2	በቫይታሚን ኤ የበለጸጉ የምግብ ዓይነቶችን ያውቃሉ? (ካሮት፣ ስኳር ድንች፣ ዱባ፣ ማንጎ፣ ብርቱካን፣ አቮካዶ፣ ዓሣ፣ ስንዴ፣ ገብስ)	1. አዎ 2. አይ	
3	በብረት ንጥረ ነገር የበለጸጉ ምግብ ዓይነቶችን ያውቃሉ?(ጤፍ፣ ሚስር፣ እንቁላል፣ ዶሮ፣ ቀይ ሥጋ፣ ጉበት፣ ኩላልት)	1. አዎ 2. አይ	
4	የአዮዲን ንጥረ ነገር የበለጸጉ ምግብ ምንጮች ያውቃሉ? (ዓሣ፣ ወተት፣ እንቁላል፣ የባህርምግብ፣ አዮድን ጨው)	1. አዎ 2. አይ	
5	የማክሮ ኤለመንቶች (ካርቦሃይድሬትስ፣ ኢሴንሻል ፋቲይ አስድ(ልዩ ቅባታማ) እና ፕሮቲኖች) የአመጋገብ ምንጮችን ያውቃሉ? (ዳቦ፣ እንጀራ፣ ዘይት፣ ቅቤ፣ ዓሳ፣ እንቁላል፣ ስጋ፣ ወተት፣ አኩር አተር፣ አተር፣ ባቄላ)	1. አዎ 2. አይ	
6	የማይክሮ ኤለመንቶች (ብረት፣ ቫይታሚን ኤ፣ አዮዲን፣ ቫይታሚን ሲ) የምግብ ምንጮችን ያውቃሉ?(32) (እንቁላል፣ ወተት፣ ዓሣ፣ የባህር ምግብ፣ አታክሊቶች፣ ፍራፍሬዎች፣ ገብስ፣ ስንዴ፣ ዘይቶኒ፣ ሎሚ፣ብርቱካን)	1. አዎ 2. አይ	
7	በእርግዝና ወቅት አዮዲን ያለው ጨው መጠቀምን ያውቃሉ? (34) (የአዕምሮ ጉዳት፣ እንቅርት፣ ድካም ስሜት፣ ሞቶ የተወለደ፣ ውርጃ)	1. አዎ 2. አይ	
8	ከእናቶች አመጋገብ በታች ያለውን የፅንስ ውስብስብነት ያውቃሉ?(35) (ጽንሱን ማጣት፣ ዝቅተኛ ክብደት ያለው ውልደት፣ ሞቶ መወለድ፣ ውርጃ፣ ክሳት፣ ዝቅተኛ ዕድገት፣ የሕጻናት ሕመምና ሞት)	1. አዎ 2. አይ	

9	የተመጣጠነ ምግብ እጥረት የእናቶችን ውስብስብነት ያውቃሉ?	1. አዎ	
10	ስለ አዮዲን ምንጭ ምግብ እውቀት አለዎት? (39),(40) (ወተት፣ ዓሳ፣ እንቁላል፣ አዮዲን ጨው፣ ባህር ምግብ)	1. አዎ 2. አይ	
11	ምግብ ኢንፌክሽን ወይም በሽታን ለመዋጋት አስፈላጊ ነው?	1. አዎ 2. አይ	
12	ምግብ ለፅንስ እድገትና ጤንነት አስፈላጊ ነው?	1. አዎ 2. አይ	
13	ምግብ ሙቀትን, ጉልበትን እና ለሴቶች አካል መደበኛ ስራ አስፈላጊ ነው?	1. አዎ 2. አይ	

<u>ክፍል ስድስት፡ ነፍሰ ጡር ሴቶች በጥናቱ ተሳታፊዎች የአመጋገብ ልምምድ ላይ ያላቸው አመለካከት።</u>

ተ.ቁ	ጥያቄዎች	ሊሆኑ የሚችሉ መልሶች	ዝለል
1	በቀን ተጨማሪ ድግግሞሽ ምግብ ይበላሉ?	1. እስማማለሁ 2. አልስማማም 3. ገለልተኛ	
2	ተጨማሪ ካርቦሃይድሬት (ኃይልና ሙቀት ሰጪ ምግቦች) ይበላሉ?	1. እስማማለሁ 2. አልስማማም 3. ገለልተኛ	
3	እንደ ባቄላ፣ እንቁላል፣ ለውዝ ያሉ ተጨማሪ ፕሮቲኖችን ይበላሉ። . . ?	1. እስማማለሁ 2. አልስማማም 3. ገለልተኛ	
4	በእርግዝና ወቅት ተጨማሪ ወተት እና ምርቶቹን ያዘጋጃሉ?	1. እስማማለሁ 2. አልስማማም 3. ገለልተኛ	
5	በብረት ንጥረ ነገር የበለጸጉ ምግቦችን ያዘጋጃሉ?	1. እስማማለሁ 2. አልስማማም 3. ገለልተኛ	

6	የስጋ እና ሌሎች በብረት የበለጸገ ምግብ ወይም ምግብ ጣዕም ይወዳሉ?	1. እስማማለሁ 2. አልስማማም 3. ገለልተኛ	
7	እንደ ኦሜጋ 3 የበለጸጉ ምግቦችን ይወዳሉ እንደ የወይራ ዘይት፣ ዓሳ . . .ወዘተ ያሉትን?	1. እስማማለሁ 2. አልስማማም 3. ገለልተኛ	
8	የወተት እና የወተት ተዋጽኦዎችን ጣዕም ይወዳሉ?	1. እስማማለሁ 2. አልስማማም 3. ገለልተኛ	
9	በአዮዲድ ጨው ምግብ ያዘጋጃሉ?	1. እስማማለሁ 2. አልስማማም 3. ገለልተኛ	

<u>ክፍል ሰባት፡ የነፍሰ ጡር ሴቶች የአንትሮፖሜትርክ ልክታ ውጤት</u>

ተ.ቁ	ጥያቄዎች	ሊሆኑ የሚችሉ መልሶች	ዝለል
1	የምግብ እጥረት ሁኔታ (በላመክዙል ልየታ የተገኘ ውጤት ይመዝግቡ)	----------ሣ.ሜ	
2	የእናቶች ክብደት ልክታ በኪ..ግ	1. የመጀመሪያው (በ1ኛ ዙር ክትትል ወቅት የተመዘገበውን ክብደት መጠን) ----------ኪ.ግ 2. የአሁን የተለካ ክብደት ----------ኪ.ግ	
3	የእናቶች ቁመት ልክታ በሜትር	----------ሜትር	