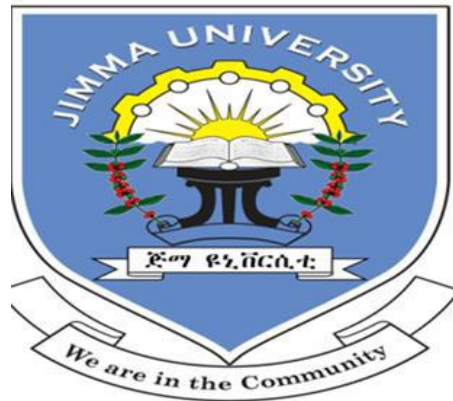


**OPTIMAL DIETARY PRACTICE AND
ASSOCIATED FACTORS AMONG
PREGNANT MOTHERS IN DEDO WOREDA,
JIMMA, OROMIA, ETHIOPIA, 2021**



BY: - NEJIB MOHAMMED

**THESIS SUBMITTED TO JIMMA UNIVERSITY,
INSTITUTE OF HEALTH, DEPARTMENT OF
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June, 2021

JIMMA, ETHIOPIA

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June, 2021

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ABSTRACT

Back ground: Adequate maternal dietary practices play important roles in determining the long-term health and nutritional status of both the mother and her growing fetus. Poor dietary practices may result in increased risk of having a preterm birth, low birth-weight, intrauterine growth retardations, and facing with several threats to mothers' health and life. There was no sufficient data on assessment of dietary practices and associated factors during pregnancy in this study area.

Objective: To assess the optimal dietary practices and associated factors among pregnant mothers in Dedo woreda, Jimma zone, Oromiya region, Ethiopia.

Method: Community based cross-sectional study was conducted from April 01 to May 01/2021. Simple random sampling technique was applied to selected 12 kebeles out of total 36 kebeles. The data were collected by using pretested questionnaire that prepared in English and translated to Afan Oromo. The data were also entered SPSS windows versions 23.0. Both Bivariate and multivariable logistic regression were used to determine factors associated with dietary practice at p-value of <0.05.

RESULTS: The prevalence of optimal dietary practice was found to be 27.9%. Pregnant mothers who had nutrition information (AOR: 2.183 with 95%CI of 1.280, 3.723), mothers with family size of 3-4/three to four (AOR: 0.451with 95%CI of 0.204, 0.994), pregnant mothers whose age in the range of 27-35 year (AOR: 0.050 with 95%CI of 0.024, 0.104) and having daily laborer husbands (AOR: 0.192 with 95%CI, 0.042, 0.889) were significantly associated with dietary feeding practice.

CONCLUSIONS AND RECOMMENDATION: The Dietary practice of the pregnant mothers in the study area was suboptimal. The factors associated with dietary practice were nutrition information, family size, age of pregnant mother and mother's husband occupation. Awareness should be created on maternal nutrition during pregnancy by the governmental and concerned non-governmental bodies.

Key Words: Dedo, Dietary practice, Ethiopia, Jimma, pregnant woman, meal.

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ACRONYMS AND ABBREVIATIONS

ANC	ANTE NATAL CARE
ENA	ESSENTIAL NUTRION ACTION
HC	HEALTH CENTER
HF	HEALTH FACILTY
HH	HOUSEHOLD
HP	HEALTH POST
NCDs	NON COMMUNICABLE DISEASES
PI	PRICIPAL INVESTIGATOR
PW	PREGNANT WOMEN
SDG	SUSTAINABLE DEVELOPMENT GOAL
SNNPR	SOUTHERN NATION NATIONALITIES PEOPLE’S REGION
WCBA	WOMEN CHILD BEARING AGE
WHO	WORLD HEALTH ORGANIZATI

CHAPTER ONE

INTRODUCTION

1.1. Back ground

Pregnancy is a vital phase in a woman's life when the expecting mother needs optimal nutrients of superior qualities to support the developing fetus naturally, the urge to eat more is expected by nearly all pregnant women (1).

It is the most critical nutritionally demanding period of every woman's life. The highest 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 mother more vulnerable to malnutrition (2)

Good dietary habits of pregnant mother, proper food, adequate and good quality of maternal nutrition are important for the health and reproductive performance of women, for the proper progression of pregnancy, for survival, physical growth and mental development of the unborn child (3, 4, and 5).

Eating a nutritious diet during pregnancy is linked to good brain development and a healthy birth weight and can reduce the risk of many birth defects. A balanced diet will also reduce the risks of anemia, as well as other unpleasant pregnancy symptoms such as fatigue and morning sickness (6).

Maternal nutritional status is considered to be an important factor that affects the successful completion of pregnancy. In extreme cases of chronic undernutrition, low energy intake during pregnancy was associated with low birth weight. Malnutrition prevents individuals and even the whole country from achieving full potential and is closely related to survival, poverty, and development (7).

Malnutrition in all its forms is closely linked, either directly or indirectly, to major causes of death and disability worldwide. Globally, in 2011 about 101 million children under 5 years of age were underweight and 165 million stunted. This

situation applies to prenatal and infectious diseases as well as chronic ones. The causes of malnutrition are directly related to inadequate dietary intake as well as disease, but indirectly to many factors, among others household food security, maternal and child care, health services and the environment. (8)

Malnutrition accounts for 7% of the global disease burden and contributes to an increased probability of poor pregnancy outcomes. It has been strongly linked to increased risk of adverse pregnancy outcomes, poor infant survival, and risk of chronic diseases at later stages of life(9).

Poor maternal nutrition during gestation negatively affects offspring postnatal growth, potentially through impaired stem and satellite cell function. Satellite cells, muscle stem cells, have altered expression of myogenic factors in offspring from restricted-fed mothers. Bone marrow derived mesenchymal stem cells, multipotent cells that contribute to development and maintenance of several tissues including bone, muscle, and adipose, have a 50% reduction in cell proliferation and altered metabolism in offspring from both restricted- and over-fed mothers (3).

As study conducted in Ethiopia, northwest Gojam was denoted only 19.9% of respondents had appropriate dietary practices (3) and also about 54.8% of the pregnant women had poor dietary practice and 19.5% were undernourished as the study conducted in north east Ethiopia, Dessie indicated (10).

Sufficient women's nutrient requirement during pregnancy increases as the result of enormous biological changes and play important roles in determining the long-term health and nutritional status of both the mother and her growing , so mothers should get sufficient and diversified food stuffs which contain energy, protein, vitamins, minerals and water (14, 18, 19, 20, 24).

1.2. Statement of the Problem

Maternal malnutrition in pregnancy increases the risk of gestational anemia, hypertension, miscarriages and fetal deaths during pregnancy, pre-term delivery and

maternal mortality and also on the fetus it can cause low birth weight, fetal intrauterine growth retardation that may have long life consequences on newborn development, has an adverse effect on the development of the immune system of the newborn, quality of life and health care costs. (14).

Maternal and child undernutrition is a serious developmental challenge and contributing a large share to the global disease burden, affecting nearly half of the world's population and responsible for the death of 3.5 million mothers and children annually, Ethiopia also has unacceptably high burden of malnutrition and its' consequences, and yet little is known about the determinants and responses to undernutrition during pregnancy (10, 11).

Suboptimal /poor dietary practices of pregnant women was recognized to have an association with different negative effects, apparently contributed to increased risk of maternal and prenatal death and also notably increase the risk of stillbirths, premature birth, low birth weight and stunting (24, 25).

Even though the existence of government health sector development programs, it was recognized that poor nutritional status of children and women continues to be a serious problems in Ethiopia, for this reason the study conducted in Gondar town, north western Ethiopia showed the good dietary practice during pregnancy was to be found 41.1%. Mother's education, monthly income, nutrition information and dietary knowledge had significant association with pregnant mothers' dietary practices / $p < 0.001$ / (1, 10, and 13).

Another study conducted in Ethiopia, Oromiya, west Shoa zone, Ambo district shows out participants participated in there were only 26.9% had to have good dietary practices by having their meal consumed more than three times per day and 26% of the respondents had habits of food aversion during this pregnancy. Among factors were prohibited pregnant mothers from getting the craved food 41.9% economic issue and 58.1 unavailability were reported (26).

In Ethiopia, majority of pregnant mothers (59.9%) had a poor dietary practice during pregnancy. They lacked the basic and the essential practice to consume vegetables, fruits, egg and others which are the basic sources of most of the types of vitamins and minerals. Besides unhealthy food practice was observed among them (1) and majority (75.2 %) of pregnant women did not take additional meal during pregnancy; about 69.3 % of the pregnant women were skipping one or more of their regular meals (2).

Study conducted in north western part of Ethiopia indicated that 33% of the study participants avoid certain foods, of which 74.4% avoids food due to religious reason. In that study 61.7% participants found to be skipping their usual meal and the most commonly skipped meal was breakfast. As that study generalized 60.7% of the study participants had poor dietary practices and the remaining 39.3% of the study participants had good dietary practices (13).

In Ethiopia several studies have concerned with nutritional status of pregnant women. However, little studies done on dietary practice among pregnant women in Ethiopia. Taking this into thoughtfulness it will be identifying the magnitude of dietary practices and its associated factor among Ethiopian pregnant mothers. Therefore this study aimed to assess dietary practices and associated factors of pregnant women.

1.3. Significance of the Study

For planning and intervention aimed to reduce maternal and child malnutrition having relevant information about dietary practice is vital. Hence this study is important for ministry of health, Oromia Health Bureau, Jimma one, Dedo woreda and other governmental and nongovernmental organizations working on promotion of maternal health to implement programs that aimed at improving dietary practice among pregnant women. The study is also utilized by researchers and planners for the secondary source of data. There was not the same study done in the study area previously so this study has also contribution to gain knowledge about dietary practice and associated factors for individuals.

CHAPTER TWO

LITERATURE REVIEW

Malnutrition in all its forms is closely linked, either directly or indirectly, to major causes of death and disability worldwide. Globally, in 2011 about 101 million children under 5 years of age were underweight and 165 million stunted. This situation applies to prenatal and infectious diseases as well as chronic ones. The causes of malnutrition are directly related to inadequate dietary intake as well as disease, but indirectly to many factors, among others household food security, maternal and child care, health services and the environment (8).

Poor maternal nutrition during gestation negatively affects offspring postnatal growth, potentially through impaired stem and satellite cell function. Satellite cells, muscle stem cells, have altered expression of myogenic factors in offspring from restricted-fed mothers. Bone marrow derived mesenchymal stem cells, multipotent cells that contribute to development and maintenance of several tissues including bone, muscle, and adipose, have a 50% reduction in cell proliferation and altered metabolism in offspring from both restricted- and over-fed mothers (3). Malnutrition accounts for 7% of the global disease burden and contributes to an increased probability of poor pregnancy outcomes. It has been strongly linked to increased risk of adverse pregnancy outcomes, poor infant survival, and risk of chronic diseases at later stages of life(9).

On the other hand many researches indicate that, women's bodies undergo tremendous anatomical physiological and biochemical changes and what pregnant mother eats is the main source of nutrients for her baby so pregnancy is a very important time to think about pregnant mother's lifestyle, habits and diet and how they affect herself and her future child and so it is a time to consider practicing healthy habits and practices will be beneficial to herself and her baby both at the present and in the upcoming times (15, 16, 17).

However researches show this, the reality on the ground depicts that large numbers of pregnant mothers in developing countries have inadequate nutrient intakes when compared the standard recommendation of the World Health Organization (22, 23).

The result of the study conducted in north western part of Ethiopia / Bahir Dar town/ indicated only 39.3% of the study participants had good dietary practices (12), while the study done in southern nation nationalities people's region, Gedeo zone depicts, the prevalence of good dietary practice during pregnancy is only 32.2% and maternal education, monthly income, ANC visit, knowledge, and attitude have shown significant association with the outcome variable (13).

The other study also explains that, age at first marriage, meal frequency, educational status, occupation of the head of household, religion, maternal age, and marital status, were discovered as predictors of maternal nutritional status which in turn influence dietary practices of mothers (14).

The result of the other study has been conducted in Ethiopia, Oromiya; west Sho'a zone, Nono district has shown 31% prevalence of good 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 (27)

The study done in Jimma town southwest Ethiopia reveals that involvement of women in household decision making was found to be independent determinant of global acute malnutrition. As it was explored by this study only 32.1% participant can you decide by themselves about their own health, 38.5% can decide about materials/ foods to be purchased for the household and 52.6 % participants can decide by themselves to visit their family/relatives. Thus to strengthen women's empowerment in decision making giving necessary emphasis is required (31).

Autonomy of women and involvement of men come in to view in jalopy with better child anthropometric outcomes. Nutrition interventions in such setting should amalgamate smartening women's autonomy over resource and men's involvement in childcare and feeding, in addition to food security measures (46).

Generally studies done in Ethiopia show that below optimal dietary practices. Educational status of the mother, women's husband occupation, monthly income, family size, age of pregnant women, ANC visit, dietary knowledge, marital status, previous breastfeeding, nutrition knowledge/information, health-seeking behavior, food, positive attitude to dietary intake during pregnancy, possessing radio, history of illness, were associated with the dietary practice of mothers. To alleviate the factors and improve dietary practices of pregnant mothers, increasing family income, improving knowledge on nutrition, increasing health services, prevention and treatment of illness during pregnancy, awareness creation by heath sector and stakeholders, using of mass media for awareness creation and further researches followed by recommendations should be implemented by concerned bodies at all levels and places (1, 14, 18, 26, 27, 41).

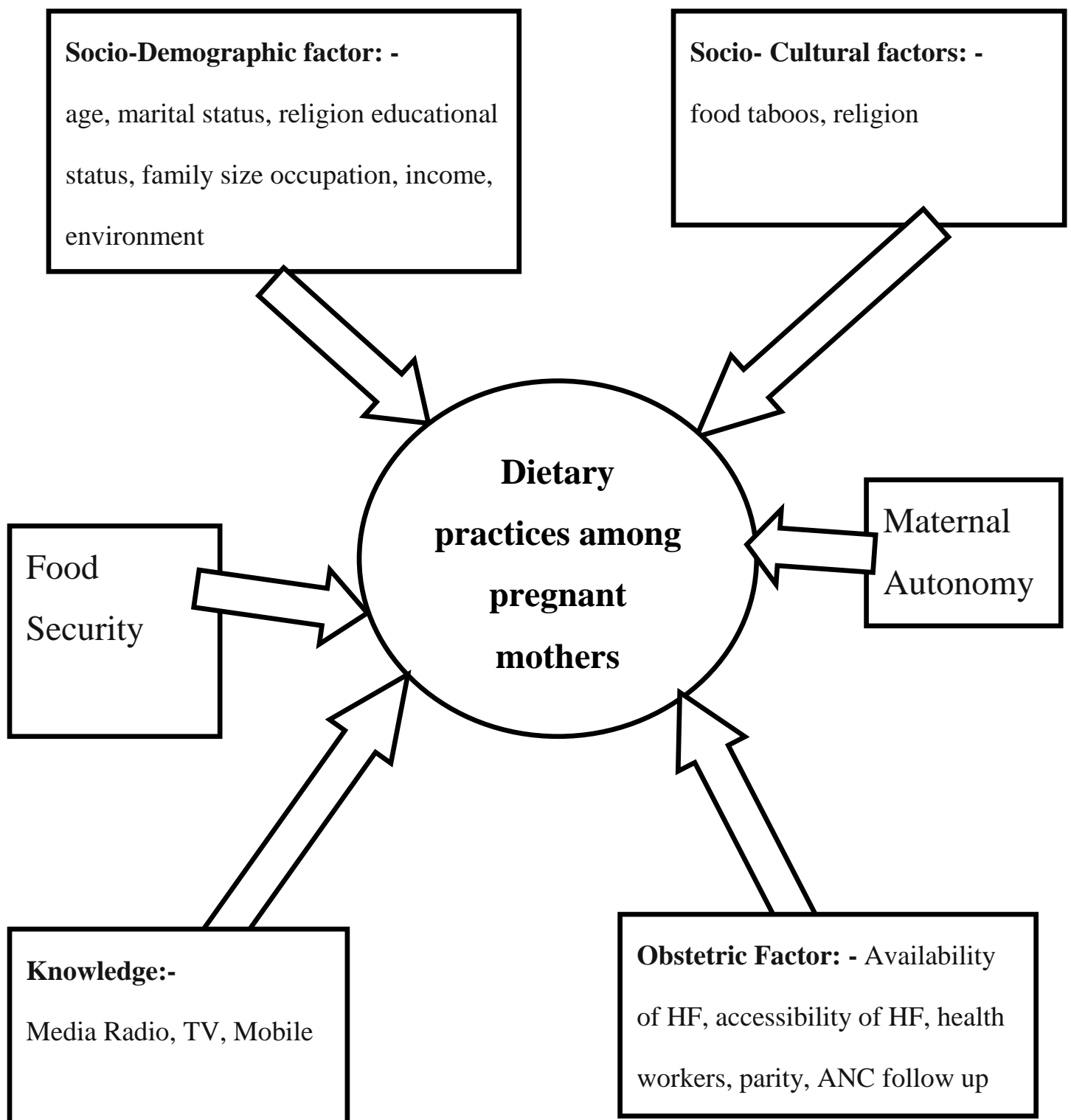


Figure 1: Conceptual frame work adapted to assess the dietary Practices and associated factors among pregnant women in Dedo Woreda, Jimma zone, Oromia, Ethiopia 2021.

CHAPTER THREE

OBJECTIVES

3.1. General Objective:-To assess the optimal dietary practices and associated factors among pregnant mothers in Dedo woreda, Jimma zone, Oromiya region, Ethiopia, 2021.

3.2. Specific objectives

To assess the optimal dietary practices among pregnant mothers in Dedo woreda, Jimma zone, Oromia region, Ethiopia, 2021

To identify factors associated with the optimal dietary practices of pregnant mothers in Dedo woreda, Jimma zone, Oromia region, Ethiopia, 2021.

CHAPTER FOUR

METHODS AND MATERIALS

4.1. Study Area

The study was conducted in Dedo Woreda. Dedo is found in Oromiya regional state, Jimma zone and it found 366 km from Addis Ababa city. Dedo woreda has a population of male 122032 Female 122521 Total 244554. Out of this population it was projected for 2013 Ethiopian Fiscal Year as number of HH /households/ 50949, WCBA /women child bearing age/ 45560, PW /pregnant women/ 8486, under 1year infants 7875, under year children 40180. It was structured by 3 urban and 33 rural Total 36 administrative kebeles. Regarding health facilities the woreda has 1 Hospital, 8 HCs and 36 HPs (52).

4.2. Study Design and Period

Community based cross-sectional study design was conducted from April 01 to May 01/ 2021.

4.3. Population

4.3.1. Source Population

The source populations were pregnant mothers who reside in Dedo woreda during the study period.

4.3.2. Study Population

The study populations were all pregnant women who live in randomly selected kebeles during the study period.

4.3.3. Inclusion and Exclusion criteria

All pregnant women who had permanent resident/resided at least for six months in the study kebeles were participate in the study. Pregnant mothers who were too sick and did not cooperative to participate in the study are excluded.

4.4. Determination and Sampling procedure

The sample size was determined, using the single proportion formula based previous prevalence of good dietary practice which is 31% on dietary practice during pregnancy with 5% marginal error and 95% confidence level and 5% non response rate. According the prevalence of 31% (27) the desired sample size of pregnant mother to be included in the study was 499/including design effect and allocated proportionately across twelve kebeles. The subjects in each kebele were enrolled sequentially until the required sample size was reached.

The sample size was calculated using the following formula

$$n = Z (\alpha/2)^2 * \frac{p(1-p)}{d^2}$$

Where

n = the desired sample size

P = prevalence of good dietary practice (31%)

$Z (\alpha/2)^2$ = Critical value at 95% confidence level of certainty (1.96)

d^2 = Margin of error between the sample and population which is (5%)

Non response rate =10%

$$n=(1.96)^2 \times \frac{0.31(1-0.31)}{(0.05)^2} =329$$

Again using the following formula if N/entire population/ is less than 10,000 correction has been done.

Where:-

n_f = desired sample size (with population <10,000)

n = desired sample size (when population >10,000)

N = the estimate of the sample size

$$\frac{n}{N} = \frac{329}{8486}$$

$$n_f = 1 + \frac{n}{N} = n_f = 1 + \frac{329}{8486} = 317$$

Considering 5% non-response rate the final sample size was

$$n = 317 * 0.05 = 16, \text{ so } 317 + 16 = 333.$$

$$DEFF = 1.5 * 333 = 499$$

Thus the sample size will be 499.

Sample Size of the Second objective

Variable	% of outcome in non exposed	CI	Power	Ratio of an exposed to non exposed	Odds Ratio	Sample size	Reference
Nutrition knowledge	61.9%	95	80	1.59	3.12	158	Nana, A., Zema, T., 2018
Education status	52.5%	95	80	1.2	2.18	121	Mekonnen Sisay., et al,2014
Average income	36.3%	95	80	1.4	2.53	123	BekeleTolera,Samson Mideksa,Nagasa, 2018

As a result the first sample size 499 was used for the final sample size of this study.

Sampling technique/procedure

Dedo woreda has 36 kebeles. From the total kebeles 12/twelve kebeles were selected by simple random sampling. All pregnant mothers of the selected kebeles were included in the sampling frame. To select study subjects from each kebele, systematic sampling was applied by using the regular Health Extension Workers pregnant mother registration lists, for the purpose to get ANC care and delivery service during the data collection period. Then every 6th person as they registered was included in the sample at each kebele the desired sample size was attained.

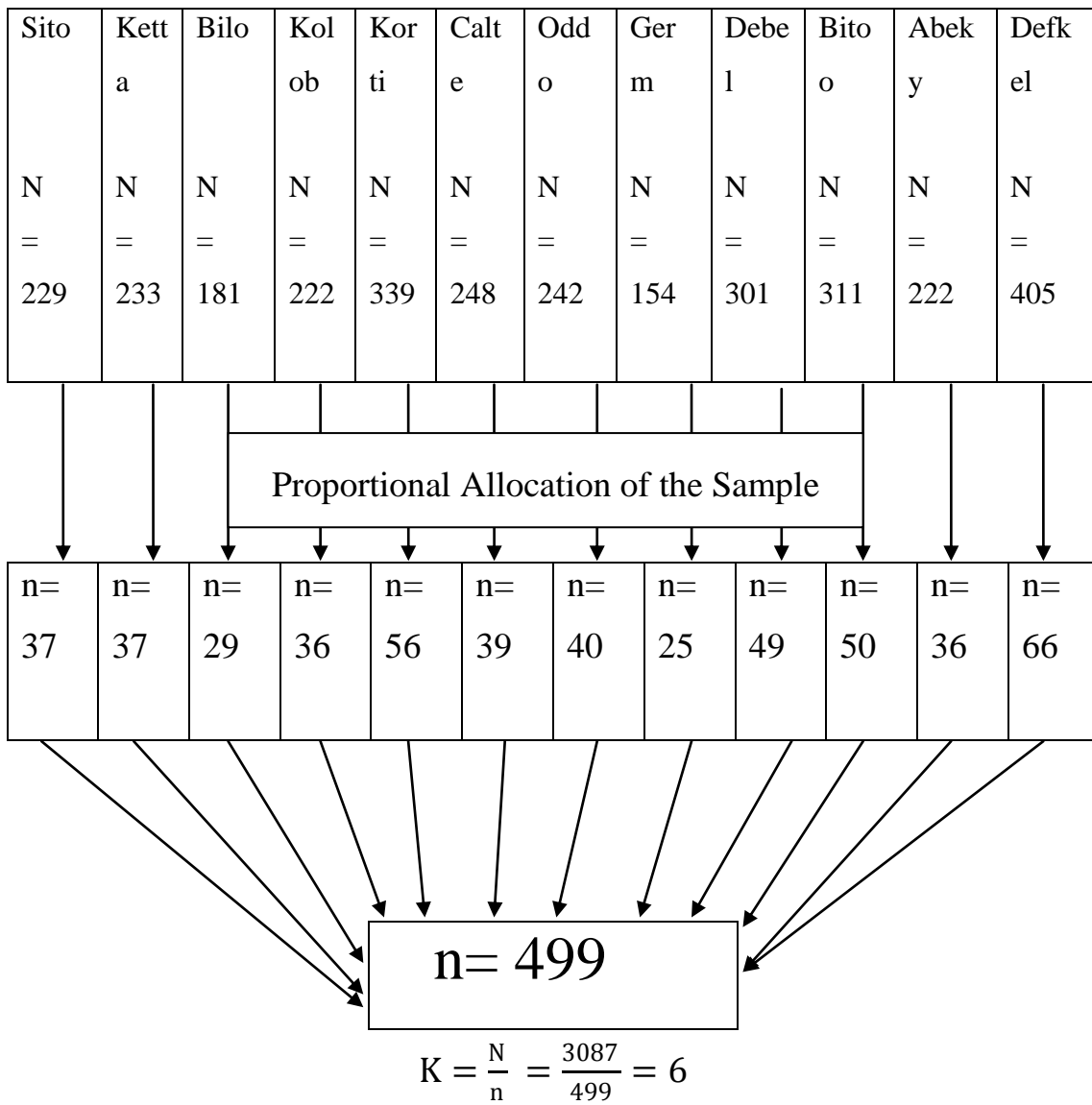
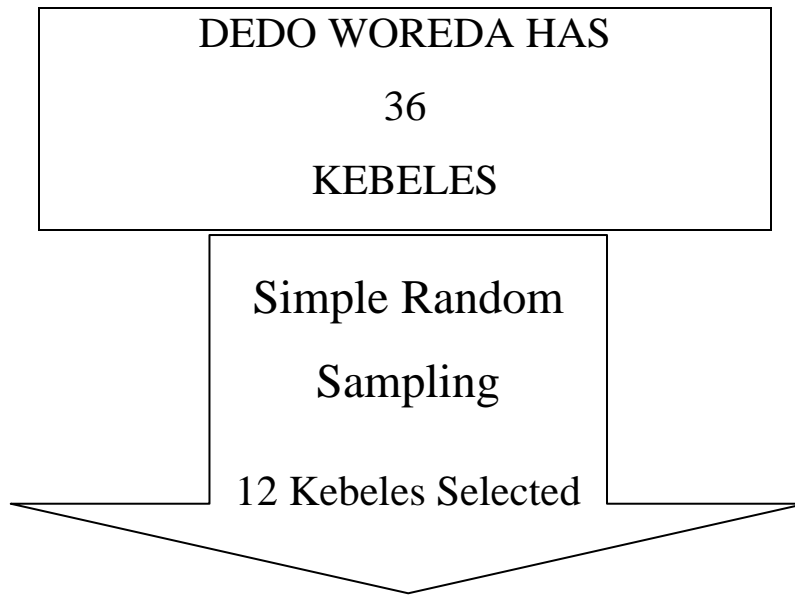


Figure 2: Schematic Presentation of Sampling Procedure

4.5. Study variables

4.5.1. Independent variables

Socio-Demographic

- Age of mothers
- Religion
- Mothers' educational status
- Husband education Status
- Husband' occupation
- Mother' occupation
- Marital status
- Family size
- Monthly income

Knowledge

- Nutrition information of mother
- Health information of mother

Obstetric characteristics

- ANC follow up
- Parity

Dietary

- Family meal frequency before pregnancy
- Food taboo
- Food aversion
- Food craving

Autonomy

- Decision autonomy of a mother about her health
- Decision autonomy of a mother about the food to be purchased
- Decision autonomy of a mother about the crop to be cultivated
- Decision autonomy of a mother about to visit her siblings

4.5.2. Dependent variables

- Optimal Dietary Practice of pregnant mother

4.6. Operational definitions and terms

Dietary Practices: The observable actions of pregnant mother that could affect her meal frequency per day (26).

Good dietary practice /meal pattern is defined as pregnant mother who eat more than three meals (breakfast, lunch and dinner) or eating additional two or more snacks per day according to the recommendation of Institute of Medicine (21, 26).

Poor dietary practice /meal pattern is defined as pregnant mother who have not consumed additional meal apart from the usual three meals during pregnancy (21, 26).

Knowledge: it refers to pregnant mother's understanding of nutrition including the intellectual ability to remember and recall food and nutrition -related terminology, specific pieces of information and facts (29).

Food taboo: is a cultural beliefs and practices also influence the strategies of energy intake among the pregnant mothers (28).

Antenatal Care: health care given to the pregnant women as to ensure the birth of healthy baby with minimal health risk to the mother (28).

Additional Meal: Consumption of one additional (3+) meal per day during pregnancy to ensure proper nourishment for both the mother and fetus (43).

Dietary Diversity Scores: Is the number of food types used up by the pregnant mothers during the period of pregnancy. The calculations were considered nine food groups with a potential score of 0 to 9. The participants scored ≥ 6 out of nine were taken as good dietary practice and those scored < 6 were taken as poor dietary practice. The food groups considered include: - cereal, white roots and tubers; dark green leafy vegetables; vitamin A rich fruits, vegetables and tuber; other fruits and vegetables; meat and fish; eggs; legumes, nuts, and seeds; milk and milk products (28, 43)

Optimal Dietary Practice

Pregnant mothers were considered to have an optimal dietary practice if they had a DDS of ≥ 6 and reported consumption of additional meals during pregnancy (+3 meals per day) and otherwise considered to have a sub-optimal dietary intake (43).

Good dietary practice: if pregnant mother's dietary practice score was 75% and above out of all dietary practices assessment questions score (50).

Ever heard about good nutrition: - If the pregnant mother heard information concerning balanced, safe, adequate and diversified (50).

Women's Autonomy:- Pregnant Mother's ability to make and execute independent decisions pertaining to personal matters of importance to their lives and their families (55).

4.7. Data collection

4.7.1. Data collection instrument

Data were collected using structured interviewer administered questionnaire having four parts, containing socio-demographic information, obstetric characteristics, dietary practices pattern of the pregnant mother and maternal decision autonomy. Food frequency questionnaire (FFQ) method was to collect dietary data. Dietary practice questions were designed to assess practices of mothers on nutrition during pregnancy, as was in this document at annex two. Scores of dietary practices were obtained by summation of each question. Each question was given one mark/Yes/ if

the answer was correct, favorable or healthy for dietary practice. Zero mark/No/ was given whenever the responses were wrong, unfavorable or unhealthy for dietary practice (26, 39, 43, 54).

Dietary diversity score: was taken by sum of 9 food groups eaten by the pregnant mother during pregnancy serves as a proxy of nutrient adequacy. For women dietary diversity practice the following nine food groups were included: 1) Cereals, roots and tubers such as maize, rice, wheat, rye, sorghum, or other food made from such /bread, porridge, atmit, etc/), white potato, white yams, white sweet potato etc. 2) Vitamin-A-rich fruits and vegetables such as ripe mango, peach, apple, pumpkins, carrot, salads, cabbages 3) Other fruit such as orange, lemon, Avocado, banana etc 4) Other vegetables such as onions, tomato etc 5) Legumes and nuts such as beans, peas, lentils, nuts, kidney beans etc 6) Meat, poultry, fish 7) Fats and oils / added to food 8) Dairy products and 9) Eggs. In such a way the women were asked about the frequency of consumption of each food per day, per week or per month by taking the variation of dietary intakes within days of the week into consideration, if the pregnant women' scores summation is equal to or greater than six (≥ 6) were given YES /taken as had optimal dietary diversity practice and if it is less than six (< 6) were given NO//taken as had sub-optimal dietary diversity practice. Finally those pregnant mothers who scored "YES" by both eating additional meals during pregnancy (3 meals per day+) and having optimal dietary diversity practice together were taken as having optimal dietary practice and good dietary practice, whereas those scored "NO" by both were taken as having suboptimal dietary practice and poor dietary practices (3, 12, 39, 43, 54).

Aiming to assess whether the pregnant mother had enough information about the nutrients, advantage of diversified food and cause of malnutrition nutrition information data were collected using open-ended question that require respondents to provide short answers in their own words, accompanied by a list of correct answers /from the listed possible components of balanced diet. Each component's list has 1(one/yes) point for correct answer and 0(zero/no) point for incorrect answer and the

score was taken “correct if she answered $\geq 60\%$ and incorrect if she answered $< 60\%$. The data collector asked the question and he/she wrote down the response provided in Afan Oromo using the respondent words and matched with the food items listed then ticked as yes or no and summation was taken accordingly (3, 12, 39, 43, 54).

Interviewers introduced themselves and explained the purpose of the study using specific statements/which was attached at the proximal part of this document.

4.7.2. Data collection procedures /techniques

Pre tested structured questionnaire that developed in English language and translated to Afan Oromo was used. Data were collected by interviewer Diploma health workers, who can fluently speak local language, Afan Oromo as well as Amharic and supervised by Degree holder health workers. Two days data collection training was given for data collectors and supervisors.

4.8. Data quality control

Quality of data was safeguarded through pre-testing the questionnaire, training of data collectors and supervisors. Also from total expected sample size 5% was pretested in other kebeles where the study not done to prove whether the tools could be generate the information needed with precision and time duration required.

4.9. Data Processing and analysis procedure

Data were monitored and checked for completeness on daily basis during data collection. Also the data were coded and checked for any missing and entered in to Epi-data version 3.1 versions and exported to the Statistical Package for Social Sciences (SPSS) 23.0 version for analysis. The descriptive statistics such as frequency, percentage, mean and standard deviation were generated. Also descriptive results were presented using tables and narrated by percentages. Binary logistic regression analysis was used to identify associations between variables at significant level < 0.25 . Multicollinearity between the independent variable was checked by a

variance inflation factors (VIF), and multivariable logistic regression analysis was done to control possible effects of confounders and to identify the predictor of the study variables. The association between dietary practices and independent variables was determined using crude odds ratio (COR) and adjusted odds ratio (AOR) at 95% confidence interval and variables with probability value (p-value) less than 0.05 were considered as statistically significant predictor of dietary practices. Model fitness test were done using Hosmer and Lemeshow test.

4.10. Ethical consideration

Prior to starting of the work by having a letter from Jimma University the study was explained to the officials of health and administrative offices of Dedo woreda for their permission and support. The nature of the study was fully explained to all pregnant women subjects included in the study to obtain their verbal consent. Information was collected after getting consent from study participants. Data obtained from each study participants were kept confidential and all who were participated in the study were acknowledged.

4.11. Dissemination plan

After the completion of the study the result will be submitted to the Jimma University, department of Human Nutrition and Dietetics and disseminated to the population of the department, government, nongovernment and other concerned bodies.

CHAPTER FIVE

RESULT

5.1 Participants Socio Demographic Characteristics

Initially 499 pregnant women were put forward and out of these 480 interviewed for this study and complying with their response rate of 96.2%. The mean age of pregnant women was 27.78 years (+/- 4.485). The age category of the respondents found to be of 18-26(46.9%), 27-35(42.1%) and ≥ 36 (11%). From total study participants 410 (85.4%) of the respondent were Muslim, 47(9.8%) were Orthodox and 23(4.8%) were Protestant. Regarding marital status (94.6%) were married, (4.8%) were widowed and (0.6%) were divorced. Maternal educational status was reported 282(58.8%) unable to read and write, 99(20.6%) able to read and write, 74(15.4%) primary education and 25(5.2%) secondary education. Also husband educational status was reported 167(36.8%) unable to read and write, 143(31.5%) able to read and write, 94(21.4%) primary education, 22(4.8%) secondary education and 25 (5.5%) college and above. Among the study subjects 309 (68.1%) of husband occupation were farmer, 71 (15.6%) were merchant/trader, 48 (10.6%) were employed and 26(5.7%) were daily laborer. Also among the study participants 333(70.2%) of mother's occupation were farmer/house wife, 71 (14.8%) were merchant/trader, 24 (5%) were employed and 48(10%) were daily laborer. Regarding family size of the respondent 239(49.8%) have ≥ 5 /equal to five or greater than/, 144(30%) have 3-4/three to four/ and 97(20.2%) have ≤ 2 /less than or equal to two/ family members. Concerning average monthly income of the participant's family 181(37.7%) were found to have <2000 birr, 240(50%) 2000 – 4000 birr and 59(12.3%) ≥ 4000 birr (table 1).

Table: 1 Socio-demographic characteristics of pregnant mothers in Dedo woreda, Jimma zone, Oromia region, Ethiopia, June 2021

Variables	Category	Frequency	Percent
Age (years)	18-26	225	46.9
	27-35	202	42.1
	=,>36	53	11.0
Religion of respondents	. Muslim	410	85.4
	Orthodox	47	9.8
	Protestant	23	4.8
Marital Status	Married	454	94.6
	Widowed	23	4.8
	Divorced	3	.6
Husband Educational status	Unable to read and Write	167	36.8
	Able to read and Write	143	31.5
	Primary	97	21.4
	Secondary	22	4.8
	College and above	25	5.5
Husband occupation	Farmer	309	68.1
	Merchant	71	15.6
	Daily laborer	26	5.7
	Employee	48	10.6
Maternal Educational status	Unable to read and Write	282	58.8
	Able to read and Write	99	20.6
	Primary	74	15.4
	Secondary	25	5.2
Maternal occupation	Farmer/Housewife	337	70.2
	Merchant	71	14.8
	Daily laborer	48	10.0
	Employee	24	5.0
Family size of the respondent	<, = 2	97	20.2
	3-4	144	30.0
	=,> 5	239	49.8
Average monthly income	<2000	181	37.7
	2000-4000	240	50.0
	=,>4000	59	12.3

5.2. Obstetric characteristics of the participants

During the study period, about 137 (28.5%) of study participants were gravid less than three. Majority, 379 (79.0%) of the participants were between live birth range 1-4 children. Of total study participants 313 (65.2%) had no history of abortion. From

total study respondents the majority, 406 (84.6%) women had ANC (Antenatal care) follow up during current pregnancy; of which 343 (69.6%) had visits of 1-2, and 72 (15.0) had greater than or equal to three (3) times visits (table 2).

Table: 2 Obstetric characteristics of pregnant mothers in Dedo woreda, Jimma zone, Oromia region, Ethiopia, June 2021

Variables	Category	Frequency	Percent
Category of Pregnancy	1-3 pregnancy	137	28.5
	>3 pregnancy	343	71.5
No_ of children born alive	No child	8	1.7
	1-4 child	379	79.0
	> 4 child	93	19.4
Number and category of abortion	No abortion	313	65.2
	1 time	95	19.8
	2 times	72	15.0
Antenatal care visit	Yes	406	84.6
	No	74	15.4
Antenatal care visit number category	No visit	74	15.4
	1-2 visit	334	69.6
	=, >3 visit	72	15.0

5.3. Dietary Pattern of Pregnant mothers

On the other hand this study identified that, 134 (27.9%) pregnant mothers had consumed additional meal per day than usual during this pregnancy. Out of these 48(35.8%) had eaten extra meals within a day twice, whereas 86(64.2%) had eaten extra meals within a day once. For not having additional meals reasons mentioned by respondents are lack of information 87(25.1%), poverty 156(45.1%) and considered usual meal as adequate 103(29.8%). Regarding to regular family meal number/meal frequency 407(84.8%) of the respondents had history of three meals consumption, whereas 73(15.2%) reported that they consumed two meals within a day before the current pregnancy.

One fourth only, 120(25%) of the respondents had habits of food aversion during this pregnancy. Out of participants averted food 11(9.2%) cultural belief/taboo “ that states as it makes the baby big and labor difficult” and the rest 109(90.8%) were due to personal dislike of which (15.8%) egg, (13.3%) cheese, (10.8%) yogurt, (8.3%) butter (7.5%) milk, (7.5%) onions, (7.5%) coffee, (5.8%) tea, (5%) meat, (5%) garlic and (4.2%) doqqo/ qochqocha/ data/ avoid foods during pregnancy. Also 263 (54.8) of respondents had experienced food craving. Out of these 190 (72.4%) had got the food they craved, however 73(27.6%) respondents had not get the food they craved. The identified factors as impeding pregnant mothers from getting craved food were inability to afford/economic issue 32(43.8%) and unavailability of the food items craved 41(56.2%).On the subject of meal skipping only few of respondents 55 (11.5%) had habits of meal skipping. The factors that coerce them to skip their regular meal were poor economy 36(65.5%) and personal dislike 19(34.5%)

Regarding to the question of eating more carbohydrates between meals 135(28.1%) of the mothers responded yes. On the matter of eating fresh citrus fruits the report showed that 120(25%) of the pregnant mothers had eaten daily, 28(5.8%) 4-6 times/week, 4(0.8%) 3 times/week and 328(68.3%) some times. In eating fresh vegetables the report showed that 126(26.3%) of the pregnant mothers had eaten daily. In eating Plant source protein 126(26.3%) of the pregnant mothers had eaten daily. In having non hydrogenated oil for cooking nearly one fourth 120(25%) of the pregnant mothers had eaten daily. Concerning animal source foods consumption, 118(24.6%) of the pregnant mother were drunk milk daily, 21(4.4%) of them eaten egg daily and only 1(0.2%) of them daily eaten meat during pregnancy.

One hundred thirty four 134(27.9%) mothers found mothers found having good/optimal dietary practice (table 3).

Tables: 3 Dietary pattern of pregnant mothers in Dedo woreda, Jimma zone, Oromia region, Ethiopia, June 2021

Variables	Category	Frequency	Percent
Additional meal consumed	Yes	134	27.9
	No	346	72.1
Number of extra meals within a day	Once	86	64.2
	Twice	48	35.8
Reason of not having additional meal	Lack of information	87	25.1
	Poverty	156	45.1
	Considered as adequate	103	29.8
Family's regular meal number status quo of respondent	< 3times	73	15.2
	3 times and greater	407	84.8
skipping meal	Yes	55	11.5
	No	425	88.5
Reason of meal skipping	Personal dislike	19	34.5
	Poverty	36	65.5
Type of the meal skipped	Breakfast	18	32.7
	Lunch	4	7.3
	Dinner	33	60.0
Habit of eating fresh citrus fruits	Daily	120	25.0
	4-6 times/week	28	5.8
	3 times/week	4	.8
	Some times	328	68.3
Situation/time of eating fruits	While eating or immediately after eating	378	78.8

	food		
	2 hrs after eating food	95	19.8
	Other	7	1.5
Habit of eating fresh vegetables	Daily	126	26.3
	4-6 times/week	22	4.6
	3 times/week	4	.8
	2 times/week	69	14.4
	Some times	259	54.0
Eating more carbohydrates eating between the meals	Yes	135	28.1
	No	345	71.9
Custom of eating Plant source protein	Daily	126	26.3
	4-6 times/week	5	1.0
	3 times/week	4	.8
	2 times/week	35	7.3
	Some times	310	64.6
Habit of drinking milk during pregnancy	Daily	21	4.4
	4-6 times/week	6	1.3
	3 times/week	56	11.7
	2 times/week	52	10.8
	Some times	292	60.8
	Never	53	11.0
Custom of eating dairy products	Daily	118	24.6
	4-6 times/week	13	2.7
	3 times/week	4	.8
	2 times/week	17	3.5
	Some times	310	64.6
	Never	18	3.8
Having non hydrogenated oil for cooking	Daily	120	25.0

	4-6 times/week	21	4.4
	3 times/week	4	.8
	2 times/week	25	5.2
	Some times	306	63.8
	Never	4	.8
Habit of eating egg	Daily	21	4.4
	3 times/week	59	12.3
	2 times/week	50	10.4
	Some times	335	69.8
	Never	15	3.1
Tendency of eating Meat	Every day	1	.2
	4-6 times/month	20	4.2
	3 times/month	1	.2
	2 times/month	63	13.1
	Once/month	50	10.4
	Some times	328	68.3
	Never	17	3.5
Aversion /avoiding any food during pregnancy	Yes	120	25.0
	No	360	75.0
For what reason does she avoid avoiding food	Personal dislike	109	90.8
	Not recommended for Pw/cultural	11	9.2
Food avoided due to cultural beliefs “as it makes the baby big and labor difficult”	Sugar cane	11	9.2
Food avoided due to Personal dislike during pregnancy	Egg	19	15.8
	Cheese	16	13.3

	Yogurt	13	10.8
	Milk	9	7.5
	Butter	10	8.3
	Meat	6	5.0
	Onion	9	7.5
	Coffee	9	7.5
	Tea	7	5.8
	Garlic	6	5.0
	Doqqo,	5	4.2
	Qoch qocha,		
	Data		
Craving for food during pregnancy	Yes	263	54.8
	No	217	45.2
Reason for food craving during pregnancy	Color of food	26	9.8
	Oder of food	95	36.3
	I do not know the reason	142	53.9
Has she got the food that craved	Yes	190	72.4
	No	73	27.6
Reasons for not getting the food she craved	Not affordable	32	43.8
	Not available	41	56.2
Optimal Dietary Practice	Yes	134	27.9
	No	346	72.1

5.4. Diet linked Practice of pregnant mother

During this study only all participants responded that they add salt in food of the family, out of them 122(25.4%) of the respondents were using iodized salt while 263(54.8%) had been using non iodized salt and the rest 95(19.8%) answered as they don't know/no answer. Out of the participants 408(85%) of the respondents reported as they drink coffee or tea and 72(15%) don't drink during this study.

Majority of the participants 265 (55.2%) had not nutrition information and also participants had health information were 162 (33.8) whereas 318 (66.2%) did not had. Majority of the participants 385(80.2%) of the pregnant women have iron and folic supplement tablets and out of these only 240(62.2%) were taking the supplement appropriately and 145(37.8%) were not taking appropriately. The reasons mentioned for not taking the supplement are because think I am healthy (55.2%), I didn't know its benefit (33.1%) and (11.7%) is other reasons.

From the total participants 380(79.2%) responded that they fast during pregnancy. The reasons presented for fasting are I didn't like to compensate after 236 (62.1%), I think obligatory even in pregnancy 120 (31.6%), and I think hasn't negative effect on pregnancy 24(6.3%).

Out of the total participants 238 (49.6%) responded, they do follow-up of their weight during pregnancy while the rest 242 (50.4%) do not follow their weight (table 4).

Table: 4 Diet linked practice among pregnant mothers in Dedo woreda, Jimma zone, Oromia region, Ethiopia, June 2021

Variables	Category	Frequency	Percent
Habit of adding salt into food	Yes	480	100.0
	No	0	000.0
Type of the salt added on into food	Iodized	122	25.4
	Not iodized	263	54.8
	Don't know/no answer	95	19.8
Does she drink coffee or tea	Yes	408	85.0
	No	72	15.0
At what time does she drink coffee or tea	With foods	116	28.3
	Immediately after foods	292	71.7
Having Iron and folic acid supplement	Yes	385	80.2

	No	95	19.8
Why she does not have iron and folic acid	Not given by HF	11	11.6
	Didn't know it's benefit	38	40.0
	I think I am healthy	46	48.4
Taking iron and folic acid supplement daily	Yes	240	62.2
	No	145	37.8
Why she does not take iron and folic acid daily	Didn't know it's benefit	48	33.1
	Think I am healthy	80	55.2
	Other	17	11.7
When did she start taking the supplement	Within the first trimester	169	43.8
	Later	216	56.2
Fasting habits during pregnancy	Yes	380	79.2
	No	100	20.8
Reason for fasting	Didn't like to compensate after	236	62.1
	I Think obligatory even in pregnancy	120	31.6
	I think hasn't negative	24	6.3

	effect		
Follow-up of her weight during pregnancy	Yes	238	49.6
	No	242	50.4
Nutrition Information /having	Yes	215	44.8
	No	265	55.2
Health Information of pregnancy risks/having	Yes	162	33.8
	No	318	66.3

5.5 Women's Autonomy

Pregnant women's were interviewed regarding decision making autonomy, 214(44.6%) responded that the can decide by their own about the food items to purchased for the household and 211(43.9%) respondents also told that they can decide by themselves about their own health issues. On other hand out of 480 participants only 143 (29.8%) and 91(19.8%) were informed that they can decide by themselves about the type of crops sources of food to be cultivated for the household and to visit their siblings or relatives respectively (as table 5).

Table: 5 Maternal Decision-Making Autonomy of pregnant women in Dedo woreda, Jimma zone, Oromia region, Ethiopia, June 2021

Variables	Category	Frequency	Percent
Can decide by herself about her own health	No	269	56.1
	Yes	211	43.9
Can decide by herself about foods to be purchased for the household	No	266	55.4
	Yes	214	44.6
Can decide by herself about CROP, sources of food to be cultivated	No	337	70.2
	Yes	143	29.8
Can decide by herself to visit her siblings or relatives	No	369	80.2
	Yes	91	19.8

FACTORS AFFECTING MOTHERS DIETARY PRACTICE DURING PREGNANCY

Both binary and multivariate logistic regression models were used to identify factors associated with dietary practices. In consequence, factors that were associated with dietary practices of pregnant mothers under binary logistic regression were, age of pregnant women, occupation of husband, occupation and family size of pregnant women, average monthly income of the family/household, regular family meal number/before pregnancy, food avoiding/aversion and craving for food during pregnancy, nutrition information and decision autonomy of the women for the type of food to purchased.

As a result the variables that showed significant association with dietary practice during pregnancy were adjusted, after adjusting confounding factors, in multivariate logistic regression model.

Age of pregnant mothers, family size of the mother, nutrition information and occupation of the husband became independent predictor for dietary practice (table 6).

Table: 6 Bivariate and Multivariate analysis of dietary practice and associated factors among pregnant mothers in Dedo woreda, Jimma zone, Oromia region, Ethiopia, June 2021

	Optimal Dietary Practice		COR(95%CI)	AOR(95%CI)
	Yes	No		
Age /in years/				
18-26	18	207	1	
27-35	88	114	0.113 (0.065, 0.196)	0.050(0.024, 0.104)***
=,>36	28	25	0.078 (0.038, 0.160)	0.019(0.007, 0.051) ***
Occupation of the Mother				
Farmer	92	245	0.533(0.177, 1.600)	1.158(0.234, 5.729)
Merchant	29	42	0.290(0.090, 0.936)	0.231(0.042, 1.277)
Daily laborer	9	39	0.867(0.237, 3.165)	2.755(0.457, 16.616)
Employee	4	20	1	
Husband Occupation				
Farmer	76	233	1.533(0.797, 2.947)	1.559(0.638, 3.808)
Merchant	24	47	0.979(0.451, 2.127)	0.842(0.299, 2.370)
Daily laborer	11	15	0.682(0.255, 1.821)	0.192(0.042, 0.889) *
Employee	16	32	1	
Family size category of respondent				
<, = 2	25	72	1	
3-4	58	86	0.515(0.293, 0.905)	0.451(0.204, 0.994) *
=,> 5	51	188	1.280(0.738, 2.219)	1.334(0.644, 2.765)
Average Monthly Income				

<2000	55	126	1	
2000-4000	55	185	1.468(0.948, 2.273)	1.420(0.780, 2.586)
>4000	24	35	0.637(0.346, 1.170)	0.482(0.211, 1.100)
Regular family Meal number/before pregnancy				
< 3times	15	58	1	
3 times and greater	119	288	0.626(0.341, 1.148)	0.575(0.220, 1.501)
Avoiding/aversion of food during pregnancy				
Yes	28	92	1	
No	106	254	0.729(0.451, 1.178)	0.896(0.466, 1.723)
Craving for food during pregnancy				
Yes	180	183	0.758 (0.506, 1.136)	0.993(0.557, 1.769)
No	54	163	1	
Having Nutrition information				
Yes	42	173	2.190(1.437, 3.339)	2.183(1.280, 3.723) **
No	92	173	1	
Mother's decision making AUTONOMY to purchase types of foods item				
No	91	175	1	
Yes	43	171	2.068(1.359, 3.146)	0.960(0.523, 1.763)

*Reveals p-value <0.05 **Reveals p-value <0.005, ***Reveals p-value <0.001

In agreement with this pregnant mothers whose age in the range of 27-35 year were 95% less likely had optimal dietary practices than those who were aged 18-26 years (AOR: 0.050 with 95%CI of 0.024, 0.104). Similarly those pregnant women whose age greater than or equals to 36 years 98.1% had less likely optimal dietary practice than those who were aged in the range of 18-26 years (AOR: 0.019 with 95% CI of 0.007, 0.051).

Pregnant women who had family size of 3-4/three to four/ 54.9% had less likely optimal dietary practice than pregnant women who had ≤ 2 /less than or equal to two family size (AOR: 0.451with 95%CI of 0.204, 0.994)

Also pregnant mothers had nutrition information also had about two times more likely had optimal dietary practices than those who had no nutrition information (AOR: 2.183 with 95%CI of 1.280, 3.723).

Lastly findings of this study showed that pregnant mothers having daily laborer husbands had 80.8% less likely to have optimal dietary practices than pregnant mothers having employee husbands (AOR: 0.192 with 95%CI, 0.042, 0.889).

CHAPTER SIX

DISCUSSION

The finding of this study showed that 72.1% of the pregnant mothers were found to come up with suboptimal dietary practice and the rest 27.9% were found having optimal dietary practice during their pregnancy. This finding is lower than the findings of the studies conducted in Bahir Dar town, northwest Ethiopia, Gondar town, Northwestern Ethiopia, which are 39.3%(12) and 40.1%(1) respectively and nearly similar with those of conducted in Misha Woreda, south Ethiopia, Jille Tumuga district, North East Ethiopia, Gedeo zone, South Ethiopia and Guto Gida Woreda, East Wollega zone, Oromia, Ethiopia which are 29.5%(38), 31.4%(52), 32.2%(13) and 33.9%(41) respectively, whereas is greater than those of conducted in West Gojjam Zone, Northwest Ethiopia, Mettu Karl Referral Hospital, Southwest Ethiopia and Ambo district west Shoa Zone, Oromia region, Ethiopia which are 19.9%(3), 22%(43) and 26.9%(26) respectively.

Concerning the regular family meal number/usual meal frequency the majority 84.8% of the respondents had been eaten three meals consumption, whereas 15.2% reported that they had been consumed two meals within a day before the current pregnancy. This report of meal frequency is greater than of the study done in Nono Woreda west shoa, Oromia, Ethiopia by 37.2%(27) while it is less than in Wendo Genet District, southern Ethiopia and Dessie town, northeastern Ethiopia by 12%(2,51).

On the other hand this study identified that, 27.9% pregnant mothers had consumed additional meal per day than usual during this pregnancy. This result is lower than the results of the studies conducted in Bahir Dar town, northwest Ethiopia by 11.4%(12) and Gondar town, Northwestern Ethiopia by 12.2%(1) and it is also greater than the results of the studies conducted in West Gojjam Zone, Northwest Ethiopia by 8%(3) and Mettu Karl Referral Hospital, Southwest Ethiopia by 10.5%(43).

The discrepancy may be due to educational status, socio-economic, environmental condition, socio-demographic and geographical location variation.

Family size of the pregnant mother, nutrition information mother, age of pregnant woman, and husband occupation were identified as a predictor for dietary practice of pregnant mothers during pregnancy.

The result of this study identified that family size of the pregnant mother had statistical association with dietary practice during pregnancy (p -value <0.05). Pregnant women who had family size of 3-4/three to four/ had less likely optimal dietary practice than pregnant women who had ≤ 2 /less than or equal to two/family size.

The finding of this study shows nutrition information had significant statistical associations with dietary practice during pregnancy. Pregnant mothers had nutrition information had about two times more likely to come up with optimal dietary practices than those who had no nutrition information.

The result of this study also distinguished age of pregnant mother had strong statistical association with dietary practice. The pregnant mothers whose age in the range of 27-35 year were less likely had optimal dietary practices than those who were aged 18-26 years, as well as those pregnant women whose age greater than or equals to 36 years had less likely optimal dietary practice than those who were aged in the range of 18-26 years.

Similarly this study Picked out that pregnant woman husband's occupation had statistical association with dietary practice during pregnancy/it signified daily laborer husbands had less likely optimal dietary practice of pregnant mother than employee husbands.

Despite the fact husband occupation was statistically significant to dietary practices here there were no references or rarely befall which shore up or deny the results. Therefore it needs further assessment to recognize whether husband occupation has association or not with optimal dietary practice during pregnancy.

Limitation

There might be social desirability bias during answering average monthly income questions.

CHAPTER SEVEN

CONCLUSIONS AND RECOMMENDATION

7.1. CONCLUSIONS

Construing the findings of this study it can be concluded that the prevalence of suboptimal dietary practice among pregnant mothers was very high. It is thinkable that pregnant mothers found in the study area are being suffered from suboptimal dietary practice by reason of not having additional meal and diversified diet during pregnancy. In line with the study result factors affecting dietary practice were nutrition information, family size, age of pregnant women and women's husband occupation.

7.2. RECOMMENDATION

Hence based on the distinguished gaps governmental bodies, especially Dedo woreda health office should use this as base line for maternal health planning.

Primary Health care units or HCs has to increase awareness creation on pregnant mother's dietary practices improvement by using the opportunity of Antenatal care service EPI service, delivery service etc.

Health workers found in the woreda, at hospital level and HCs level should use this evidence and make heath education and counseling on dietary practice of pregnant mothers.

Health extension workers in the woreda are urged to take it in to consideration, making their best efforts to maximize the prevalence of optimal dietary practice by awareness creation of pregnant mothers at facility level and also in their household level programs.

In the same way on account of grasping the findings of this study it is expected from Jimma zonal health office to actualize the issued recommendation in the study area as well as other districts under its catchment area.

Jimma University is welcomed to take responsibility for further assessments on dietary practice to detect additional factors affecting dietary practices of pregnant mothers.

In similar way I would like to recommend for other governmental and nongovernmental bodies heartily governed by the health policy of the country to take it into account and play their roles of initiating this mission by boosting up all necessary activities.

ANNEX – ONE

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ANNEX – TWO
QUESTIONNAIRES
English Version

JIMMA UNIVERSITY

FACULTY OF PUBLIC HEALTH QUESTIONNAIRE FOR DIETARY
PRACTICE AND ASSOCIATED FACTORS AMONG PREGNANT MOTHERS

Dear Sir/Madam; _____

My name is _____ I am from Jimma University.

I am Master's Degree student from Jimma University. As part of my academic requirements, I am going to conduct study on health and health related problems in Dedo woreda, your kebele and design possible intervention strategies to tackle them. Thus, this interview is prepared for this purpose to get appropriate information on health and health related problems regarding pregnant mothers.

This information will be used only for research purpose and your confidentiality will be assured. Therefore; I politely request your cooperation to participate in this interview. You have the right not to respond at all or withdraw in the meantime,

But your input has great value for all the success of study objective.

Agree _____ (If agree continue)

Do not agree _____ (If do not agree stop)

Thank you for your cooperation!!!

Questionnaire adopted for the assessment of dietary practice and associated factors among pregnant mothers in Dedo Woreda Jimma Zone, Oromia region, Ethiopia, 2021.

Part One: - Socio-Demographic characteristics

No_	Question	Response
1	Age of Pregnant mother in years	_____
2	Age category of Pregnant mother in years	1. 15-24 2. 25-29 3. 30-35 4. > 35
3	Religion of respondent	1. Muslim 2. Orthodox 3. Catholic 4. Protestant 5. Wakeffeta 6. Other
4	Marital Status of respondent	1. Married 2. Widowed 3. Divorced 4. Single
5	Occupation of the mother	1. Farmer 2. Merchant 3. Daily laborer 4. Employee 5. House wife 6. Other
6	Educational status of the mother	1. Unable to read and Write 2. Able to read and Write 3. Primary 4. Secondary 5. College and above
7	Educational status of the husband	1. Unable to read and Write 2. Able to read and Write 3. Primary 4. Secondary 5. College and above
8	Occupation of the husband	1. Farmer 2. Merchant 3. Daily laborer 4. Employee 5. Other
9	Number of the family	_____
10	Family size category of respondent	1. <, = 2

11	Average monthly income of family	2. 3-4 3. =, > 5
		1. <, = 2000 2. 2000-4000 3. =, >4000

Part Two: Obstetrics characteristics

No_	Question	Response
12	Number of pregnancy	_____
13	Number of pregnancy	1. 1-3 pregnancy 2. >3 pregnancy
14	No_ of children born alive	1. No child 2. 1-4 child 3. > 4 child
15	Abortion history of abortion	1. Yes 2. No
16	How many times She had abortion	1. 1 time 2. 2 times 3. 3 times 4. 4 times and above
17	ANC Did she antenatal care visit	1. Yes 2. No
18	No_of_ANC_Visit	1. 1-2 visit 2. =, >3 visit

Part Three: Dietary practices pattern of the mothers

No_	Questions	Responses
19	Did she consume additional meals	1. Yes 2. No
20	Number of additional meals she consumed	1. Once 2. Twice 3. Three times 4. Four times and above
21	Reason for not having additional meals	1. Lack of information 2. Poverty 3. Considered as adequate 4. Other

22	Regular meal number of family/before pregnancy	<ol style="list-style-type: none"> 1. < 3times 2. 3 times 3. > 3times
23	Did she skipped meal	<ol style="list-style-type: none"> 1. Yes 2. No
24	What type of meal does she skip	<ol style="list-style-type: none"> 1. Breakfast 2. Lunch 3. Dinner
25	Reason for skipping meal	<ol style="list-style-type: none"> 1. Personal dislike 2. Poverty 3. Fear, makes fat baby 4. Fear, makes me fat 5. Being busy 6. Other
26	Is salt added into family food	<ol style="list-style-type: none"> 1. Yes 2. No
27	Type of the salt added on into food	<ol style="list-style-type: none"> 1. Iodized 2. Not iodized 3. Don't know/no answer
28	How frequent does she eat fresh citrus fruits	<ol style="list-style-type: none"> 1. Daily 4. 4-6 times/week 3. 3 times/week 2. 2 times/week 5. Some times 6. Never
29	At what time does she eat fruit	<ol style="list-style-type: none"> 1. 2 hrs before eating food 2. While eating or immediately after eating food 3. 2 hrs after eating food 4. Other/specify
30	How frequent does she eat fresh vegetables	<ol style="list-style-type: none"> 1. Daily 4. 4-6 times/week 3. 3 times/week 2. 2 times/week 5. Some times 6. Never
31	Does she eat more carbohydrates b/n the meals	<ol style="list-style-type: none"> 1. Yes 2. No
32	How frequent does she eat plant source protein	<ol style="list-style-type: none"> 1. Daily 4. 4-6 times/week 3. 3 times/week 2. 2 times/week 5. Some times 6. Never

33	How frequent does she drink milk	<ol style="list-style-type: none"> 1. Daily 4. 4-6 times/week 3. 3 times/week 2. 2 times/week 5. Some times 6. Never
34	How frequent does she eat dairy	<ol style="list-style-type: none"> 1. Daily 4. 4-6 times/week 3. 3 times/week 2. 2 times/week 5. Some times 6. Never
35	Zaitii nyaataa /nonhydrogenated oils/ nyaataaf yeroo hangamii hangamiitti fayyadamta?	<ol style="list-style-type: none"> 1. Daily 4. 4-6 times/week 3. 3 times/week 2. 2 times/week 5. Some times 6. Never
36	How frequent does she eat egg?	<ol style="list-style-type: none"> 1. Daily 2. 4-6 times/week 3. 3 times/week 4. 2 times/week 5. Once/week 6. Some times 7. Never
37	How frequent does she eat meat?	<ol style="list-style-type: none"> 1. Daily 2. 4-6 times/month 3. 3 times/month 4. 2 times/month 5. Once/month 6. Some times 7. Never
38	Having Optimal dietary practice	<ol style="list-style-type: none"> 1. Yes 2. No
39	Does she drink coffee or tea?	<ol style="list-style-type: none"> 1. Yes 2. No
40	At what time does drink coffee or tea	<ol style="list-style-type: none"> 1. 2 hrs and more before or after eating food 2. Immediately before food 3. With foods 4. Immediately after foods 5. Other /specify

41	Does she avoid any food during pregnancy?	1. Yes 2. No
42	For what reason does she avoid avoiding food?	1. Personal dislike 2. Not recommended for Pw/cultural 3. Fear, hurts the child 4. Fear, hurts me 5. Other specify
43	If it is duet culture/belief, what type of cultural believes?	1. Makes the baby big and labor difficult 2. Will be adhered on baby's head 3. Fear of evil eye 4. Other specify
44	What type of the food avoided? /if avoided _____ _____	
45	Had she food craving during pregnancy?	1. Yes 2. No
46	Reason of food craving during pregnancy?	1. Color of food 2. Oder of food 3. I do not know the reason
47	Has she got the food that craved?	1. Yes 2. No
48	Reasons for not getting the food she craved	1. Not affordable 2. Not available 3. Other/specify
49	Does she fast while she is pregnant?	1. Yes 2. No
50	Why does she fast during pregnancy	1. Didn't like to compensate after 2. I think obligatory even in pregnancy 3. I think hasn't negative effect 4. I feel uncomfortable socially, if am not fasting 5. Not fasting is discouraged by family 6. Other/specify
51	Does she have iron and foci acid supplement?	1. Yes 2. No 3. Don't know/ no answer

52	Why she does not have iron and folic acid	1. Not given by HF 2. Didn't know it's benefit 3. Think I am healthy 4. Other/specify
53	Does she take iron and folic acid supplement daily	1. Yes 2. No
54	Why she does not take iron and folic acid/if not?	1. Not given by HF 2. Didn't know it's benefit 3. Think I am healthy 4. Other/specify
55	When she started taking the supplement?	1. Before pregnancy 2. Within the first Trimester 3. Later 4. Don't know
56	Does she follow-up her weight during pregnancy?	1. Yes 2. No 3. Don't know
57	Does she have nutrition information?	1. Yes 2. No

Nutrition knowledge tool of the pregnant mothers

- 1) Cereals, roots and tubers, such maize, rice, wheat, rye, sorghum, or other food made from such /bread, porridge, atmit, etc/), white potato, white yams, white sweet potato etc.
- 2) Vitamin-A-rich fruits and vegetables, such as ripe mango, peach, apple, pumpkins, carrot, salads, cabbages
- 3) Other fruit, such as orange, lemon, Avocado, banana etc
- 4) Other vegetables, such as onions, tomato etc
- 5) Legumes and nuts, such as beans, peas, lentils, nuts, kidney beans etc
- 6) Meat, poultry, fish
- 7) Fats and oils / added to food
- 8) Dairy products and
- 9) Eggs

58	Does she have health information of pregnancy risks?	1. Yes 2. No
----	--	-----------------

- | | |
|---|-------------------------------------|
| 1- Vaginal bleeding | 4- Fever too weak to get out of bed |
| 2- Convulsions/fits | 5- Severe abdominal pain |
| 3- Severe headaches with blurred vision | 6- Fast or difficult breathing |

Part Four: Maternal Decision-Making role Question

No_	Question	Response
59	Can she decide by herself about her own health	1.No 2. Yes
60	Can she decide by herself about foods to be purchased for the household	1.No 2. Yes
61	Can she decide by herself about crops, sources of food to be cultivated	1.No 2. Yes
62	Can she decide by herself to visit her family or relatives	1.No 2. Yes
63	Having good dietary practice	1.Yes 2. No

Thank you for your cooperation!

Questionnaires

Afan Oromo Version

K/tu Adde _____

Duraan dursee nagaan isin gaafadha.

Ani maqaankoo _____ jedhama. Yunivaristii Jimmaatiin dhufe. Ogummaa fayyaatiin Digrii lammaffaa yunivarsitii jimmaatti barataa jira. Bu'uura barumsichi barbaadu irratti hundaahuun waa'ee rakkoo fayyaa haadholee ulfaa ilaalchisee aanaa Dedoo, ganada keessan keessatti qorannoo gaggeessuu fi akkasumas tofta fala rakkoo ittin cabu kaa'uuf /dhaamsa gochuuf/jecha gaafannoo isiniif gochuufin dhufe. Kaayyoon gaafannoon kun qophaa'eef rakkoo haadholee ulfaa kan fayyaa fi fayyaan walqabateef rgaa/informeeshiniin sirrii ta'e argachuuf barbaadameeti.

Ragaan /informeeshiniin argamu kunas hiccitiin isaa eegamee kaayyoo qorannoo gofaaf kan oola. Kanaafuu akka isin gaaffannoo kana keessatti hirmaattanu kabajaan atooma keessan isin gaafadha. Mirga gaafiile hunduma deebisuu yoo feetanis karaatti kuttanii dhiisuu qabdu. Haa ta'u gaaffille hunduma deebisuu keessaniin galteen argamu kaayyoo qorannonchaaf gatii gudda qabaata.

Waliingala _____ (Ittifufi yoo waliigalan)

Walii hingalu _____ (Dhiisi yoo walii hingalin)

Atooma keessaniif isinin galateeffadha!!

GAAFANNOOLEE

Gaafannolee bara 2021 A.L.A. qorannoo /reesarchii waa'ee gocha nyaataa qabatamaa haadhoolee ulfaa aana Dedoo, godina Jimmaa, naannoo Oromiyaa, Itoophiyaa, keessatti argamanu biratti mullatu qorachuuf gaggeeffamuuf qophaa'e.

Kutaa Tokkoffaa:- Haalowwan hawaas-dinagdee /Socio-Demographic characteristics

No_	Gaffii	Deebii
1	Umurii haadha hamlii /ulfaa qabduu waggaadhaan meeqa?	_____
2	Umurii haadha hamlii /ulfaa qabduu waggaadhaan Luuccaadhaan?	1. 15-24 ____ 2. 25-29 ____ 3. 30-35 ____ 4. 35 ol _____
3	Amantii hirmaattuu	1. Muslima ____ 2. Ortodoxii ____ 3. Kaatolikii ____ 4. Pirotestaantii ____ 5. Waaqeffataa ____ 6. Kan biroo _____
4	Haala Gaa'elaa	1. Heerumee ____ 2. Haadhahiyyeessaa ____ 3. Hiikamtuu ____ 4. Hin heerumne ____
5	Ogummaa Hirmaattuu	1. Qonnaan bultuu ____ 2. Daldaltuu ____ 3. Hojii humnaa ____ 4. Qacramtuu ____ 5. Haadhamana ____ 6. Kan biroo _____
6	Sadarkaa barumsaa hirmaattuu	1. Dubbisuu barreessuu hin dandeessu 2. Dubbisuu barreessuu ni dandeessi 3. Sadarkaa 1ffaa ____ 4. Sadarkaa 2ffaa ____ 5. Kollejji fi sanaa ol ____
7	Sadarkaa barumsaa abbaa manaa	1. Dubbisuu barreessuu hin danda'u ____ 2. Dubbisuu barreessuu ni danda'a 3. Sadarkaa 1ffaa ____ 4. Sadarkaa 2ffaa ____ 5. Kollejji fi sanaa ol ____
8	Ogummaa abba manaa	1. Qonnaan bulaa _____

		2.Daldalaa _____
		3.Hojii humnaa _____
		4.Qacramaa _____
		6.Kan biro _____
9	Baayyinni miseensa maatii keetii meeqa?	_____
10	Baayyinni miseensa maatii keetii Luuccaadhaan?	1. 2 fi sanaa gadi _____ 2. 3-4 _____ 3. 5 fi sanaa ol _____
11	Galii ji'aa argattanu qarshiidhaan meeqa?	_____
		1. <, = 2000 2. 2000-4000 3. =, >4000

Kutaa Lammaffaa: Haalowwan Dahumsaan walqabatanu

No_	Gaffii	Deebii
12	Yerroo meeqa hamliin/ulfi garaa si taa'e?	_____
13	Luuccaa ulfaa?	1. 1-3 _____ 2. 3 fi sanaa ol _____
14	Ulfa meeqatu Lubbuun dhalate?	1. Kan lubbuun dhalate hin jiru _____ 2. Daa'ima 1 hanga 4 _____ 3. Daa'ima 4 fi sanaa ol _____
15	Hamliin/ulfi sittii bahee beekaa?	1. Eeyyee _____ 2. Hin baane _____
16	Eeyyee yoo ta'ee ala meeqa?	1. Al 1 _____ 2. Al 2 _____ 3. Al 3 _____ 4. Al 4 fi ol _____
17	Kunuunsa ulfa/hamlii isa kanaaf gara dhaabbilee fayyaa deemteetaa?	1. Eeyyee _____ 2. Hin deemne _____
18	Eeyyee yoo ta'e ala maeqaaf deemte?	1. Al 1 hanga 2 _____ 2. Al 3 fi sanaa ol _____

Kutaa Sadaffaa: Haalowwan Qabatamaa gocha nyaataa haadholee

N	Gaffii	Deebii
o_		
19	Yennaa hamlii/ulfa taate jirtu ciree, laaqana fi irbaataa irratti dabalataan yedduu yedduutti /ebellesoo wohii / hin nyaattaa?	1. Eeyyee _____ 2. Hin nyaadhu _____
20	Deebiin gaaffii 17ffaa Eeyyee yoo ta'e guyyaatti ala meeqa /dabalataan/ nyaattaa?	1. Al 1 _____ 2. Al 2 _____ 3. Al 3 _____ 4. Al 4 fi sanaa _____

21	Deebiin gaaffii 17ffaa hin nyaadhuu yoo ta'e sababani kan duraanii irratti dabalataan akka hin nyaanne sigodhe maali?	1. Hubannoo dhabuu ____ 2. Hiyyummaa/ dhabiinsa ____ 3. Gahaadhaatti waanan yaadeef 4. Kan biro ____
22	Yennaa Hamlii hin qabne guyyaatti ala meeqa nyaattu turtan?	1. Al 3 gadi __ 2. Al 3 __ 3. Al 3 ol_
23	Yennaa hamlii qabdu kanatti "Yeroon Maaddii" nyaata utuu hin nyaatin dhiiftee irra dabarfattu jiraa ?	1. Eeyyee ____ 2. Miti__
24	Deebiin gaaffii 21ffaa Eeyyee yoo ta'e "yeroon Maaddii" utuu hin nyaatin dhiiftu kami?	1. Ciree/Qursii _____ 2. Laaqana _____ 3. Ebellesoo _____ 4. Irbaata ____
25	Ammoo Deebiin gaaffii 21ffaa Eeyyee yoo ta'e sababni ati utuu hin nyaatin irra dabarfattuuf maanni?	1. Woma najibbisiiseef _____ 2. Hiyyummaa /dhabiinsa ____ 3. Sodaa mucaa furdisaa ____ 4. Sodaa ana furdisaa ____ 5. Ko'eessummaa ____ 6. Kan biro/ibsi _____
26	Nyaata qopheeffattanutti soogidda itti naqattan moo hin naqattan?	1. Eyyee ____ 2. Hin naqannu ____
27	Yoo eeyyee ta'e soogidda gosa kam fayyadamtu?	1. Iodized _____ 2. Not iodized _____ 3. Hin beeku/deebiin hin jiru _____
28	Muduraalee lafa hinturin ykn ho'aa /fresh citrus fruits/ kanneen akka Avocadoo, Burtukaanaa, Loomii, Mangoo bilchaataa, f.f.k. yeroo kam kam yaattaa/ cuunfaa sanirraa cuunfame dhugda?	1. Guyyaa hunda 4. Torbanitti ala 4-6 3. Torbanitti alsadii 3 2. Torbanitti ala 2 5. Darbee darbee 6. Gonkumaa
29	Muduraalee kana yeroo kam, kam nyaatta?	1. Sa'aa 2 nyaata dura _____ 2. Nyaataa waliin ykn nyaataa duukaa takkatuu _____ 3. Sa'aa 2 nyaata booda _____ 4. Kan biro/ibsi _____
30	Kuduraalee lafa hinturin ykn ho'aa /fresh Vegetables/ kanneen akka Buqqee, Kaarotii, Salaaxaa, Raafuu fi kkf yeroo kam kam yaattaa?	1. Guyyaa hunda 4. Torbanitti ala 4-6 3. Torbanitti alsadii 3 2. Torbanitti ala 2 5. Darbee darbee 6. Gonkumaa

<p>31 Nyaata Kaarboohaydireetii kanneen akka dinnichaa, sukkaar dinnichii, boqqolloo, daabboo, paastaa, ruuzii fi muduraalee irra caalaan yedduu yedduu maaddii idileetti ni nyaattaa? /Do you have the habits of eating more carbohydrates between meals daily?</p>	<p>1. Eeyyee _____ 2. Hin nyaadhu lakki _____</p>
<p>32 Nyaata Pirootiinii /qaama ijaaru/ kanneen madda midhaanii irraa argamanu kan akka Baaqela, Aaato, Shumburaa, Ocholonii, Otongora, Argubbee/Fondorraa/fi kkf yeroo kam kam nyaattaa? / How frequent does she eat plant source protein?</p>	<p>1. Guyyaa hunda 4. Torbanitti ala 4-6 3. Torbanitti alsadii 3 2. Torbanitti ala 2 5. Darbee darbee 6. Gonkumaa</p>
<p>33 Aannan yoom yoom dhugda?</p>	<p>1. Guyyaa hunda 4. Torbanitti ala 4-6 3. Torbanitti alsadii 3 2. Torbanitti ala 2 5. Darbee darbee 6. Gonkumaa</p>
<p>34 Qacceewwan aannanii/ ittoo, dhama, dhadhaa kff yoom yoom nyaatta? /How frequent do you eat milk products?</p>	<p>1. Guyyaa hunda 4. Torbanitti ala 4-6 3. Torbanitti alsadii 3 2. Torbanitti ala 2 5. Darbee darbee 6. Gonkumaa</p>
<p>35 Zaitii nyaataa /nonhydrogenated oils/ nyaataaf yeroo hangamii hangamiitti fayyadamta?</p>	<p>1. Guyyaa hunda 4. Torbanitti ala 4-6 3. Torbanitti alsadii 3 2. Torbanitti ala 2 5. Darbee darbee 6. Gonkumaa</p>
<p>36 Hanqaauu yeroo kam kam nyaatta?</p>	<p>1. Guyyaa hunda 2. Torbanitti ala 4-6 3. Torbanitti alsadii 3 4. Torbanitti ala 2 5. Torbanitti al tokko 6. Darbee darbee 7. Gonkumaa</p>
<p>37 Foon yoom yoom nyaattaa?</p>	<p>1. Guyyaa hunda 2. Ji'atti ala 4-6 3. Ji'atti alsadii 3 4. Ji'atti ala 2 5. Ji'atti al tokko 6. Darbee darbee 7. Gonkumaa</p>

38	Nyaani ishee olaanaa/optimal dha?	1. Eeyyee _____ 2. Miti _____
39	Buna ykn Shaayee nidhugdaa?	1. Eeyyee _____ 2. Hindhugu _____
40	Eeyyee yoo ta'e Buna/Shaayee yeroo kam, kam dhugda?	1. Sa'aa 2 ykn sanaa ol nyaata dura ykn nyaata booda _____ 2. Takkatuu nyaata dura _____ 3. Nyaataa waliin _____ 4. Takkatuu nyaata booda _____ 5. Kan biro/ibsi _____
41	Yennaa Hamlii garaa qabduu nyaatni ati gonkuma nyaachuu dhaabdu (dhiiftu) jiraa?	1. Eeyyee _____ 2. Hin jiru _____
42	Eeyyee yoo ta'e sababni dhiifteef maanni?	1. Waan najibbisiiseef _____ 2. Dubartii ulfaaf hin heyyamamu/dhorkaa aadaa _____ 3. Soda mucaa miidhaa _____ 4. Sodaa ana miidhaa _____ 5. Kan biraa/ibsi _____
43	Sababa aadaatiin wanti itti amanamuuf/dhorkamuuf maaliif?	1. Mucaa gudda godhee ciniinfuu irratti nama rakkisa _____ 2. Mataa mucaatti maxxana _____ 3. Sodaa budaa _____ 4. Kan biroo/ibsi _____
44	Gosti nyaataa dhiifamu sun maanni? /yoo nidhiifama ta'e	_____
45	Yennaa hamlii /ulfa garaa qabdutti gosti nyaataa baayyee si kajeelsise/dharraasise wohii tureeraa?	1. Eeyyee _____ 2. Hin jiru _____
46	Eeyyee yoo ta'e sababni gosoota nyaatowwan kana si kajeelsise/dharraasise maanni?	1. Bifa nyaataa _____ 2. Foolii nyaataa _____ 3. Sababuma isaa hin beeku _____
47	Nyaata kajeelte sana argatteettaa?	1. Eeyyee _____ 2. Hin arganne _____
48	Hin argannee yoo ta'e sababni nyaata kajeelte /dharraate sana argachuu dhabdeef maanni?	1. Humnan dhabe _____ 2. Nyatichatu dhabame _____ 3. Kan biro /ibsi _____
49	Hamlii /ulfa taatee sooma ni soomtaa?	1. Eeyyee _____ 2. Hin soomu _____

- 50 Eeyyee yoo ta'e maaliif soomta? 1. Booda qadaa baasuu jibbeetani ____
2. Dubartii ulfa irrattis dirqama jedheen yaada
3. Soomus rakkoo hin qabu jedhee waanan yaaduuf ____
4. Jireenya hawaasummaatti waan natti hin tolleef ____
5. Soomuu dhiisuukoo maatiin waan jibbuuf
6. Kan biro /ibsi _____
- 51 Kiniina qaama abeessaa Ayranii fi fooliik asiidii qabdaa? /Do you have Iron and folic acid supplement? 1. Eeyyee _____
2. Hin qabu _____
3. Hin beeku/Deebiin hin jiru _____
- 52 Sababni hinqabneef maali/yoo hinqaneef? 1. Dhaabbilee fayyaa irraa naaf hin kennamne
2. Faaydaasaa hin barre _____
3. Ani fayyaadha jedhee waanin yaaduuf __
4. Kan biro/Ibsi _____
- 53 Eeyyee yoo ta'e guyyaa guyyaan nifudhattaa? 1. Eeyyee _____
2. Miti/ hnifudhu _____
- 54 Miti/hinfudhuu yoo ta'e sababa hin fudhanneef maanni? 1. Dhaabbilee fayyaa irraa naaf hin kennamne
2. Faaydaasaa hin barre _____
3. Ani fayyaadha jedhee waanin yaaduuf__
4. Kan biro/Ibsi _____
- 55 Eeyyee yoo ta'ee kiniinii qaama kana fudhachuu yoom eegalte? 1. Hamliin/ulfi utuu hin taa'in _____
2. Ji'oota 3 duraanii keessa _____
3. As siqeeti _____
4. Kan biro/ibsi _____
- 56 Yennaa Hamlii/ulfa garaa qabdutti jijjirama ulfaatina qaama keetii ni hordoftaa? 1. Eeyyee _____
2. Hin hordofu _____
3. Deebii hin beeku _____
- 57 Waa'ee nyaata madaala'waa ni beektaa? 1. Eeyyee _____
2. Hin beeku _____

Waan beektu mee natti himi/ni beekta yoo ta'e

** Haati ulfaa gaafiilee wa'ee nyaataa yennaa deebiftu gosoota nyaataa isiin himtu as irraa ilalaalla.

1) Cereals, roots and tubers/ midhaan agadaa fi huubaa fi hiddaa; (Boqqolloo, Ruuzii, Qamadii, Onborii, Bisingaa, ykn nyaata kanneen irraa hojjataman /fkn. furnoo, daabboo, marqaa, mooqaa, xegge, affeellaa, fi kkf/), Dinnicha, Goodarree,

Mixaaxishii, fi kkf.

- 2) Vitamin-A-rich fruits and vegetables / muduraa fi kuduraalee biroo Vitamin A dhaan badhaadhan; (Maangoo bilchaataa Kukoo, Apilii, Buqqee, Kaarotii, Salaaxaa, Raafuu fi kkf)
- 3) Other fruit/muduraalee biroo; (Burtukaana, Loomii, Avocaadoo, Muuzii fi kkf)
- 4) Other vegetables /kuduraalee biroo; (Qullubbii, Timatimii, Kotte harree fi kkf)
- 5) Legumes and nuts/midhaan falfalamu (Baaqela, Aatoo, Shumburaa, Ocholonii, Otongora, Argubbee/Fondorraa/fi kkf.)
- 6) Meat, poultry and fish/ foon hoolaa fi reettii, foon hindaaqqoo fi qurxummii
- 7) Fats and oils/dhadhaa fi zayit nyaatatti dabalamu
- 8) Dairy; and /qaccee aannanii- ittoo sa'aa, Itittuu, dhama, dhadhaa
- 9) Eggs/ hanqaaquu

58 Rakkoolee fayyaa haati hamli /ulfa 1. Eeyyee _____
 garaadhaa qabdu irratti yoo mullatan 2. Hin beeku _____
 hatattamaan gara dhaabbilee fayyaa
 akka deemu dirqisiisanu beektaa?

Eeyyee yoo ta'e waan beektu mee natti himi

Dhiigni irraa yaa'uu, Rommisiisuu, Bowwuu /dhukkubbii mataa cimaa, Ija dura calaqqisu/waa facaasuu, Gubaa qaamaa siree /ciisa irraa ka'uu baayyiee nama dahabsiisu, Dhukkubbii garaa cimaa, Afuura kutuu ykn hargansiisuu

Kutaa Afraffaa: Aangoo murteeffannaa dubartittiin maatii keessatti qabdu.

No_	Gaffii	Deebii
59	Waa'ee fayyaa keetii ilaalchisee ofii keetiif murteessu ni dandeessaa?	1. Hin danda'u _____ 2. Nan danda'a _____
60	Waa'ee wontootaa fi gosoota nyaatowwanii maatihaaf akka bitamanu /argamuu qabau ilaalchisee ofii keetiif murteessu ni dandeessaa?	1. Hin danda'u _____ 2. Nan danda'a _____
61	Waa'ee gosoota midhaanii adda adda akka faca'u ykn oomishamuuf ofii keetiif murteessu ni dandeessaa?	1. Hin danda'u _____ 2. Nan danda'a _____
62	Fira kee dubbisuuf /arguuf yoo barbaadde ofii keetiif murteeffattee deemu ni dandeessaa?	1. Hin danda'u _____ 2. Nan danda'a _____
63	Gocha nyaataa qabatamaa gaarii qabdii	1. Eeyyee 2. Mit

Atooma Keessaniif Galatooma!

Declaration

I, Nejob Mohammed declared that this thesis was my original work in partial fulfillment for the requirement for the degree of masters in Human Nutrition. All source of material used for this thesis work and all people and institution who gave support during this thesis work were fully acknowledged. The advisors and examiners' comments have been accordingly taken in to account.

Name of principal investigator: Nejob Mohammed

Date ____/____/____ signature _____

Name of Main advisor: _____

Date ____/____/____ signature _____

Name of Co- advisor: _____

Date ____/____/____ signature _____

Name of External Examiner: _____

Date ____/____/____ signature _____

Name of Internal Examiner: _____

Date ____/____/____ signature _____

Name of chairman: _____

Date ____/____/____ signature _____