#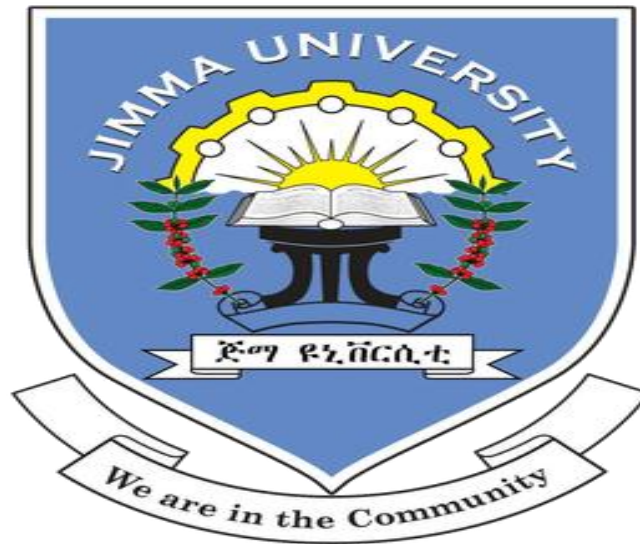 POOR DIETARY PRACTICE AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN AGED 15-49 YEARS IN PASTORALIST COMMUNITY OF MOYALE DISTRICT, SOMALI, ETHIOPIA.

BY: - GIRUM PETROS ABIRE (BSc)

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JIMMA UNIVERSITY

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DEPARTMENT OF EPIDEMIOLOGY

POOR DIETARY PRACTICE AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN AGED 15-49 YEARS IN PASTORALIST COMMUNITY OF MOYALE DISTRICT, SOMALI, ETHIOPIA 2018.

By: - Girum Petros Abire (Bsc)

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ABSTRACT

Background: Poor dietary practice is common in developing countries, often resulting in permanent impairment, pregnancy complications and poor obstetric outcomes. The magnitude of poor dietary practice during pregnancy and its associated factors remains unknown in pastoralist community of Ethiopia, particularly in Ethiopian Somali Region, to put direction of prevention and interventions that will benefit populations of pregnant women and their babies.

Objectives: To assess dietary practice and associated factors among pregnant women aged 15-49 years in pastoralist community of Moyale District, Somali region, Ethiopia.

Methods: Community based cross sectional study was conducted on **729** pregnant women in pastoralist community of Moyale district of Ethiopian Somali Region. Data were collected using a structured pre-tested questionnaire from pregnant women in household level. The data were checked, cleaned and entered into EpiData software version 4.1 and analyzed using SPSS version 20. The descriptive analysis such as frequency and percentages distribution, measures of central tendency and measure of dispersion were used. Bivariate logistic regressions were used to select candidate variables and multivariable logistic regression was done to identify independent predictors of poor dietary practices of pregnant women. Model fitness was checked by using Hosmer and Lemeshow goodness of fit test with degree of freedom 8 and significance level of p-value 0.11. Adjusted odds ratio with its 95% confidence interval was used to measure strength of association and statistical significance respectively.

Result: From sampled pregnant mothers, 56.2% had poor dietary practice. Having relatively high family size (AOR=3.213, 95% CI: 1.803-5.723), having less family income (AOR=3.270, 95% CI: 1.927-5.547), living in food in-secured household (AOR=2.169, 95% CI: 1.236-3.804), not having nutrition information (AOR=7.246, 95% CI: 4.917-10.678), were found to be independently associated with poor dietary practice.

Conclusion: High proportion of pregnant women had poor dietary practice in this study. Pregnant mothers having relatively high family size, less family income, living in food in-secured households, not having nutrition information needs special attention in order to make them have good nutritional practice.

Key Words: Dietary Practice, Pregnant Women, Pastoralist Community, Moyale District.

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ACRONYMS

BMI…………… Body Mass Index

BSc ……………Bachelor of Science

CSAOE………..Central Statistical Agency of Ethiopia

ENA …………..Essential Nutrition Action

ESRHB ……….Ethiopian Somali Regional Health Bureau

ETB…………...Ethiopian Birr

FMOH ………..Federal Ministry Of Health

HEWs …………Health Extension Workers

IDA ……………Iron Deficiency Anemia

LBW…………..Low Birth Weight

LMICs………..Low And Middle Income Countries

MDD-W……... Minimum Dietary Diversity Of Women age 15-49 years.

MOH………… Ministry Of Health

NCDs………… Non-Communicable Diseases

PW…………… Pregnant Women

SD……………Standard Deviation

SNNPR……… Southern Nations, Nationalities and Peoples Region

SPSS………... Statistical Package for Social Science

SSA………….. Sub Saharan Africa

TTBA………. Trained Traditional Birth Attendant

CHAPTER ONE: INTRODUCTION

1.1 Background

Dietary practices play a significant role in determining the long-term health status of both the expectant mother and the growing fetus. Improper dietary practices of pregnant women have apparently led to increased rates of poor birth outcomes(1).Appropriate dietary practice plays a vital role in reducing some of the health risks associated with pregnancy such as risk of fetal and infant mortality, intrauterine growth retardation, low birth weight and premature births, decreased birth defects, cretinism, poor brain development and risk of infection. Adequate nutrition regarding quantity and quality is essential for a woman throughout her life cycle to ensure proper development and prepare the reproductive life of the woman. Pregnant women require varied diets and increased nutrient intake to cope with the extra needs during pregnancy. Use of dietary supplements and fortified foods should be encouraged for pregnant women to ensure adequate supply of nutrients for both mother and fetus(2).

The intra-uterine environment seems to "program" for the developing fetus to be able to deal with a postnatal environment similar to the intrauterine one. If the postnatal environment is discordant with the intrauterine one, diseases could establish. The mother is the source of all molecules that allow a regular development and growth of the embryo until birth, therefore nutrition plays a key role, both before and during pregnancy(3,4).

Even though there is enough food for everybody on earth, to overcome problems associated with under nutrition, yet maternal and child under nutrition is still common and associated with millions of deaths globally every year. In most developing countries, maternal under nutrition during pregnancy is persistent and an important contributor to morbidity, mortality, and poor birth outcomes(5). Poor nutritional status is common in developing countries, often resulting in pregnancy complications and poor obstetric outcomes. Pregnant women in Sub-Saharan Africa (SSA) are at particular nutritional risk as a result of poverty, food insecurity, political and economic instabilities, frequent infections, frequent pregnancies and bad dietary practices like restriction of important food groups during pregnancy due to various forms of taboos, misconceptions, and cultural beliefs towards certain foods exist in various countries and hinder the pregnant women from consuming diversified/nutritionally rich food groups (6–8). In **India,** Papayas and mangoes are said to cause abortion, In **Niger** Camel meat is said to result in a one-

year pregnancy, In **Tanzania** Meat is said to cause late and difficult delivery, and the child will acquire the characteristics of the animal consumed, In **Kenya** Food containing beans is

believed to cause constipation and discomfort, In **Ethiopia** Green pepper is said to cause the baby to be born hairless(9–11). Many of these food taboos are related to animal-source foods or fruits and vegetables which contain most diversified food groups. Restriction of these foods during pregnancy can be very harmful for both the mother and fetus, as essentials nutrients such as protein and vitamins are lacking in the diet. Maternal nutrition/dietary practice is a fundamental determinant of fetal growth, birth weight and infant morbidity; poor nutrition/poor dietary practice often leads to long-term, irreversible and detrimental consequences to the fetus (12).

1.2 Statement of the problem

Failure to address maternal nutrition during pregnancy has profound negative consequences for current and future generations. Global burden of multiple micronutrient deficiencies during pregnancy has not results only in women's mortality, morbidity and reproductive health outcomes, but also has inter-generational effects on both the mother and her children's health especially in terms of intellectual and physical development and the later incidence of Non Communicable Diseases(NCDs)(13,14).

Studies done in Ogun state of Nigeria and Rawalpindi state of Pakistan showed that meal frequency of the pregnant women is less than four times per day were (54%) and 42.8% respectively. Even 17.3% of pregnant women in Rawalpindi state of Pakistan reported as reduced their meal frequency from pre state of pregnancy (1,13).

Different studies showed that prevalence of poor dietary practice during pregnancy were high in Ethiopia (20,21). National food consumption survey conducted in 2013 showed that Somali region is relatively the lowest from all other regions by consumption of diversified food group among women of reproductive age group.

Different studies in different countries have shown that inadequate dietary intake in pregnancy can lead to unfavorable outcomes for both the mother and foetus(22).Worldwide, 20 million babies are born with low birth weight each year. Many of these babies are born too early, before the full nine months of pregnancy. Others are full term but they are small because of poor growth in the mother's womb due to poor dietary practice before and during pregnancy(23).

Damage suffered in early life due to poor dietary practice during pregnancy leads to permanent impairment, and might also affect future generations(15,24). Maternal under nutrition due to poor dietary practice during pregnancy contributes to 800,000 neonatal deaths annually; stunting, wasting, and micronutrient deficiencies are estimated to underlie nearly 3·1 million child deaths annually(25).

Nutritional problems resulted due to poor dietary practice affect half or more of women in many Low and Middle Income Countries (LMICs,) with disproportionate risk among the poorest. Different studies showed that anemia Prevalence in women of reproductive age, Body Mass Index (BMI) < 18.5, Current estimates of short stature <150 cm among reproductive age women still high in India, Nigeria, and Ethiopia(19–22).

Federal Ministry of Health (FMOH) has established different policies and strategies to overcome problems associated with poor dietary practice and malnutrition. Improving dietary practice of pregnant women by using different components of Essential Nutrition Action(ENA) like, Promotion of iodized salt consumption by all families, Promotion of improved women's nutrition (increased food intake during pregnancy, increased iron intake), Prevention of vitamin A deficiency and different other activities (26,27)

 Key contributing factors for poor dietary practice during pregnancy are diverse: socio cultural factors, socioeconomic factors and some traditional dietary practices, continue to challenge women's health and nutritional practices during pregnancy (12). Even though different studies conducted on dietary practice of pregnant women in Ethiopia, there were limited studies conducted in pastoralist communities of Ethiopia, Particularly in pastoralist community of Ethiopian Somali Region.

Assessment of common dietary practices during pregnancy and the associated factors in this study will inform the direction of preventative practice and interventions that will benefit populations of pregnant women and their offspring. Therefore the aim of the current study is to determine the magnitude of poor dietary practice and associated factors among pregnant women in Moyale District of Ethiopian Somali Region and provide basic information that will help health workers and other stakeholders to prevent and control the problem of poor dietary practice during pregnancy in the study area and similar setting.

CHAPTER TWO: - LITERATURE

2.1. Prevalence of dietary practice during pregnancy

Adequate nutrition is essential for a woman throughout her life cycle to ensure proper development and prepare the reproductive life of the woman. Pregnant women require varied diets and increased nutrient intake to cope with the extra needs during pregnancy. Poor dietary practice during pregnancy often leads to long-term, irreversible and detrimental consequences to the mother as well as the fetus(2).

Study conducted in Rawalpindi, Pakistan revealed that Change in food intake practices by increasing frequency of meal, the amount or both were reported by about 57.3% participants, 17.3% reported reduced intake, while 25.5% pregnant women had no change in food consumption. About 22% avoid taking some food during their pregnancy period, such as beef, chicken, egg, salt, fruits, fried food, milk, oil, rice, tea, and butter(19).

Study conducted in Ogun state of Nigeria revealed that (46%) of pregnant women ate more than three times a day, 38% ate just three times while the rest respondents ate once or twice daily. This indicates that majority of the study participants (54%) they don't have extra meal during pregnancy in the study area. Study conducted in Aleta Chuko District of South Nations Nationalities People Representatives (SNNPR), Ethiopia: The frequency of one additional food from any type of food within the last 24 hours was 8%. However, the frequency of regular fed 3times per day was 92%, (1, 29).

The study conducted on pregnant women in Hadiya zone of southern Ethiopia indicates that over half (65 %) avoided at least one type of food during pregnancy. According to this report milk and cheese were regarded as taboo foods by nearly half of the women (44.4%) followed by linseed and fatty meat (16%, 11.1%) respectively. Food restrictions to most foods were found to be more prevalent during the last trimester, except for linseed which was said to be prohibited throughout pregnancy(30).

Study conducted in Gondar, east Wollega zone of Guto Gida District and in Bahir Dar town, Northwest Ethiopia showed that poor dietary practice of pregnant women were found to be 59.1%, 66.1% and 60.7% respectively, which indicates that majority of women's had experienced poor dietary practice during their pregnancy. Concerning meal frequency, pregnant women in Gondar, about 89 (15.5%) of the respondents had meal frequency of 1-2 per day

during their pregnancy. Majority of pregnant mothers, 445 (77.5%) had meal frequency of 3-4 times per day. Concerning the meal frequency per day, most of the respondents of Guto Gida district pregnant women (66.1%) had meal frequency of 1-2 per day during their pregnancy. The rest (20.3%) and (13.6%) had diet frequency of meals 3- 4 and >5 per day respectively during their pregnancy for the nutritional practice assessing question.

The result from Bahir Dar town study indicated that 203(33%) study participants avoid certain foods, About 61.7% skip their usual meal and the most commonly skipped meal was breakfast (20,21,31).

Study conducted in Wondo Genet district of SNNPR revealed that, regarding meal frequency majority about three fourth (75.2 %) of the respondents had no additional meal during Pregnancy. Only 21.6 %of the subjects reported that they eat at least one additional meal during pregnancy. About 43.8% commonly skipped lunch and 24.2 % reported that they skip breakfast. Nearly all (98%) of the study participants used rock salt for food preparation(32).

2.2. Factors associated with dietary practice

In Sudan, pregnant women often have restricted food intake mainly due to morning sickness which is prevented and treated by eating little and limited items of food: and due also to the belief that a large fetus causing obstructed labor will result from eating unrestricted amount of food. In Sokoto state of Nigeria, the untrained traditional midwifes advice pregnant women to avoid sugar and honey as they cause prolonged painful labor. They also advise pregnant ladies not to take local soda which is supposed to make the fetus slim (11).

Qualitative study conducted in Arsi Negel, Ethiopia, stated that pregnant women did not change the amount and type of foods consumed to take into account their increased nutritional need during pregnancy. The consumption of meat, fish, fruits, and some vegetables during pregnancy remained as low as the pre-pregnancy state, irrespective of the women's income and educational status. However, the frequency and extent of the practice varied by maternal age, family composition, and literacy level.

(7,11)

The study conducted in Hadia Zone revealed that the reason for avoiding food during pregnancy was fear of difficulty during delivery (51%), disclosures of the fetus (20%) and fear of abortion (9.75%) are the main reasons. Study conducted in Guto Gida district of east wollega zone identified that family size and information about nutrition during pregnancy have strong statistical association with nutrition practices of mothers during pregnancy.

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Women who had no information about nutrition during pregnancy had 6.3 times more likely poor nutritional practice than women who had nutrition information during pregnancy(21,30). Nutrition information on which foods to eat during pregnancy came from health care providers, husbands, mothers-in-law, friends, and neighbors, as well as the Internet and television, which mothers acknowledged as affecting choices of foods eaten during the antenatal period.

Mothers most often reported valuing and trusting the advice from medical doctors, who provide routine antenatal care, on the *"best"* foods to eat and which foods to avoid during pregnancy(33).

Study conducted in Gondar showed that there was statistically significant association between family income and dietary practices of mothers. This study also identified that educational status had strong statistical association with dietary practices of mothers during pregnancy. Beside these the study identified that information about nutrition during pregnancy and nutritional knowledge had strong statistical association with dietary practices of mothers during pregnancy (20).

Similar study conducted in Behir Dar town revealed that husband income, ownership of radio, history of illness and dietary knowledge had significant association with dietary practices of pregnant women in the study area. Study conducted in Gambela town 2014, revealed that statistically significant association between Pregnant women who were from food insecure households and under nutrition (31,34).

The extra energy needed during pregnancy and lactation represents a small percentage 5% of total household food energy needs. However, when household food insecurity is persistent, even these small amounts of extra food may be unavailable. Even when enough food is available at the household level, the majority of women do not receive adequate nutrients intake during pregnancy. Key contributing factors, including entrenched poverty, gross food insecurity, gender discriminatory food allocation, food avoidances, and lack of access to adequate health services, continue to challenge women's health and nutritional practices(5).

Similar Study conducted in Wondo Gent District of SNNPR state that the frequency of meal among the pregnant women in the study area was taking no additional meal was significantly associated with family size, growing khat, not growing vegetables and fruits, and no consumption of white vegetables and roots. Skipping meal was reported by the study participants, and it was significantly associated with family size and number of pregnancy (32). Nutrition deserves special attention during pregnancy because of the high nutrient needs and the

critical role of appropriate nutrition for the mother and the foetus. Physiological adaptations during pregnancy partly shield the foetus from inadequacies in the maternal diet, but even so these inadequacies can have consequences for both the short and long-term health and development of the foetus.

The emphasis on achieving and maintaining a nutritionally adequate diet is important, and a poor maternal diet should be improved during pregnancy to maintain the mother's and foetus health(35). Different studies showed that the dietary practice of most pregnant mothers was poor and there are different independent factors behind their poor practice.

2.4. Conceptual frame work

Socio demographic factors

Age

Residence

Marital status

Educational level

Occupation

Family size

Religion

Living in polygamy

Poor Dietary Practice during Pregnancy

Individual factors

ANC follow up

Nutrition information

Nutritional knowledge

Food restriction

Socio economic factors

House hold food security

Family income

Figure 1- Conceptual framework of dietary practice and associated factors among pregnant women aged 15-49 years in pastoralist community of Moyale district, Somali, Ethiopia, 2018. (Adapted from different literatures)

Label:　　➡　　　= Direct association

　　-----> 　　　= Indirect association (not studied in this study)

2.5. Significance of the Study

The finding of this study is used to give deep insight on the magnitude of poor dietary practice and associated factors among pregnant women in pastoralist community of Ethiopian Somali Regional State of Moyale district. The findings from this study is useful for Ethiopian Somali Regional Health Bureau, Moyale District health office and other stakeholders by providing important information needed in designing appropriate interventions to improve the dietary practice of pregnant women. It will also makes an important empirical contribution to the growing body of literature on dietary practice and associated factors during pregnancy for suboptimal nutritional status in pastoralist communities in Ethiopia.

CHAPTER 3: OBJECTIVES

3.1 General Objective:

To assess maternal poor dietary practice and associated factors among pregnant women aged 15-49 years in pastoralist community of Moyale District, Somali region, Ethiopia 2018.

3.2 Specific objectives

To determine prevalence of poor dietary practice among pregnant women aged 15-49 years in pastoralist community of Moyale District of Somali region, Ethiopian2018.

To identify factors associated to poor dietary practice among pregnant women aged 15-49 years in pastoralist community of Moyale District of Somali region, Ethiopian2018.

CHAPTER 4: METHODS AND MATERIALS

4.1. Study area and period

Moyale is one of the districts in the Somali Region of Ethiopia which is located 771 KMs away from Addis Ababa, capital city of Ethiopia. It is bounded on the south by Kenya, on the west by the Oromia Region, on the north by Oromia Region and Hudet District of Ethiopian Somali Region, on the northeast by Mubarak District of Ethiopian Somali Region and on the southeast by Kadaduma District of Ethiopian Somali Region. The elevations of this District range from about 500 meters to 1500 meters above sea level. The ecological classification of the District is 10% mid-highland and 90% lowland. Population of the district earns their lives by rearing animals (pastoralist). The district has the total of 25 kebeles (small administrative units). Based on the 2007 Census conducted by Central Statistics Agency of Ethiopia (CSAOE) with annual population growth rate of 2.6% of the Ethiopian Somali Region, the current an estimated population of the District is 200,209.From this total population 102,107 are males and 98,102 are females and estimated annual pregnancy is (3.14%) 6287. The district has three public health centers and twenty five health posts. The study was conducted from March.1 -30/2018.

4.2. Study design

A community based cross-sectional study was conducted.

4.3. Population

4.3.1 Source population

All pregnant women aged 15-49 years, in pastoralist community of Moyale district of Ethiopian Somali Region.

4.3.2 Study population

All sampled pregnant women in selected kebeles with known pregnancy aged, 15-49 years, in pastoralist community of Moyale district of Ethiopian Somali Region.

4.3.2 Study unit

Each sampled pregnant woman 15-49 years old in household level, who knows her pregnancy status (self-reported as pregnant or with Antenatal Care (ANC) follow up).

4.4 Inclusion and exclusion criteria

4.4.1 Inclusion criteria

All pregnant women aged 15-49 years, who know their pregnancy status (self-reported as pregnant or with ANC follow up).

4.4.2Exclusion criteria

Pregnant women who resided for less than six month

Seriously ill and/or known mentally ill pregnant women

4.5.1 Sample size determination

Sample size was determined by using both single and double population proportion formula.

For the first objective:

The sample size required for the study was calculated using the formula to estimate a single population proportions.

$$ni = \frac{[(Z\alpha/2)2\ p\ (1-p)]}{d^2} = \frac{[(1.96)2*\ 0.599\ (0.401)]}{(0.05)^2} = 369$$

To determine the exact sample size, correction formula was used.

Calculated as follows: **nc = n i X N/n i + N**, Where **n i** = calculated sample size, nc = Sample size with correction factor, N=source population, nc= (369x6287)/ (369+6287)

=2319903/6656**=349**

Sample size with correction factor was **n_c= 349**

Assumption: Based on the previous study in Gondar, the prevalence of poor dietary practice was 59.9% (20)

Where: n = required sample sizes

10% = non - respondent rate

$Z\alpha/2$ = critical value for normal distribution at 95% confidence interval which equals to 1.96

(Z value at alpha = 0.05)

d = an absolute precision (margin of error) = 5%

Design effect =2

By considering the above assumptions and population correction factor since the source population is 6287 which is less than 10,000 , the final sample size for first objective, **n=733**

For the second objective:

The sample size required for the study was calculated by using epi-info 7.1.1 by double population proportion formula. By assumption of 80% power of test, 95% Cl. as follows
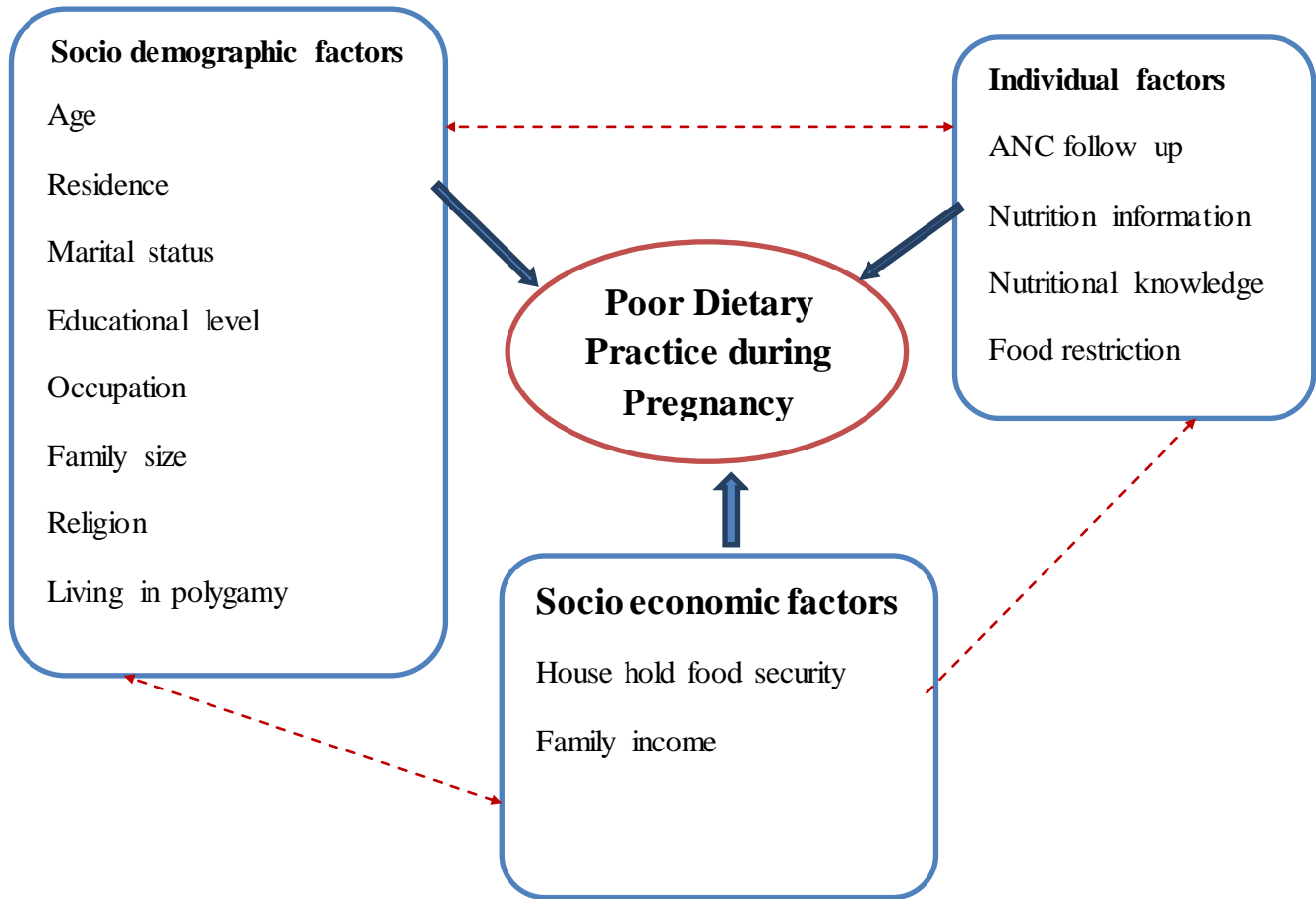
Table 1-Sample size determination of dietary practice and associated factors among pregnant women aged 15-49 years in pastoralist community of Moyale district, Somali, Ethiopia, 2018.

Variables	Proportion	Reference	Sample size	10% non-response rate	Design effect	Final sample size
Nutrition information	(P3)1 =21.5% (P3)2 =43%	(21)	182	10%	2	400
Residence	(P4)1 =5.6 (P4) =35.2	(21)	152	10%	2	334

Where:

P31= 21.5% pregnant women poor dietary practice among who receive nutrition information during pregnancy.

P32 =43% pregnant women poor dietary practice among who didn't received nutrition information during pregnancy.

P41 = pregnant women poor dietary practice among urban residents.

P42 = 35.2% pregnant women poor dietary practice among rural residents.

Therefore the largest sample size from both objectives was, **n= 733 were taken.**

4.5.2 Sampling techniques

A total of 25 kebeles were stratified in to 5 semi urban and 20 rural kebeles respectively. Then from each residences30% (2 kebeles from semi urban and 6 from rural kebeles) were selected by using simple random sampling. Following this the estimated sample size was proportionally allocated to the selected kebeles and pregnant women were traced by health extension workers and community volunteers with an initial short survey assessment in their respective kebeles by Using 2 criteria's: Self-reported as they are pregnant and with ANC follow up card prior to data collection period and the sampling frame was developed. During the initial survey specific code was given for each pregnant women and the code was written in their gates to make data collection easy. Finally simple random sampling technique was applied by using list of all

pregnant women; each pregnant woman was given specific number which starts from PW(1) to total number of PW(n) for each Kebeles and these numbers were written on small pieces of paper. All written papers were put in a box, after which the box was shaken vigorously, to ensure randomization. Then, the determined sample size papers for each Kebele were taken out of the box, and the numbers were recorded. The pregnant woman belonging to these numbers was included as a respondent/participant for the study.
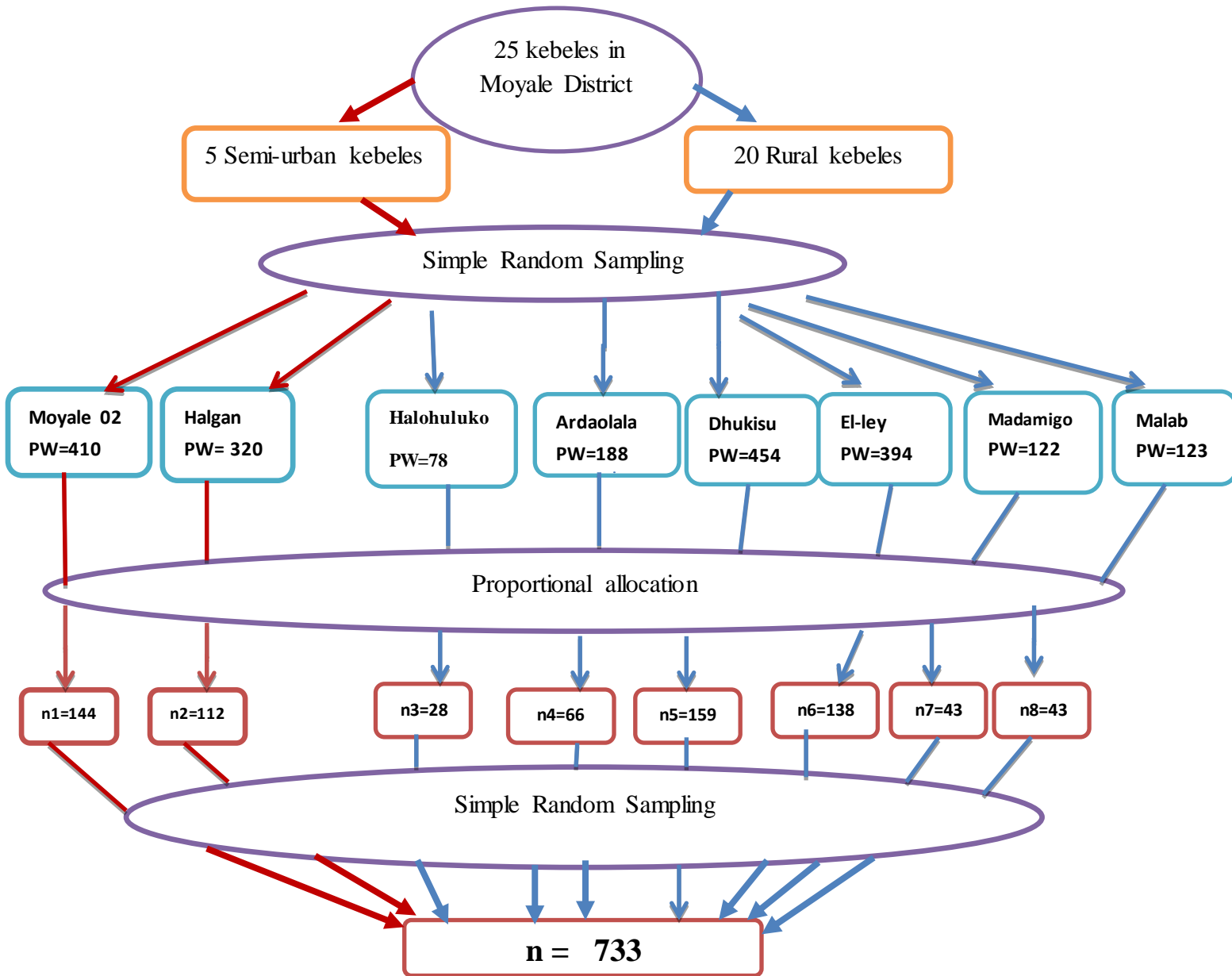
Figure-2: Schematic presentation of sampling technique of the dietary practice and associated factors among pregnant women aged 15-49 years in pastoralist community of Moyale district, Somali, Ethiopia, 2018.

4.6. Data collection tools and procedures.

4.6.1 Data collection tools

The data was collected using a structured and pre-tested interviewer guided questionnaire which was prepared by reviewing similar literatures and adapted from Food and Agriculture Organizations (FAO)/FANTA(36).The questionnaire contains 4sections, the first part containing socio-demographic information. The second part of the questionnaire was about socio economic factors. The third part individual factor and the fourth part were dietary practices and which was classified in to two, (dietary diversity and meal frequency).

The questionnaire of dietary practice was used in this study to determine the dietary practice of pregnant women weather poor or good. Ten food groups were designed to assess the practices (consumption) of mother's diversified diet during pregnancy. Scores of dietary practices were obtained by summation of ten food groups of Minimum Dietary Diversity for reproductive age Women (**MDD-W)** questions.

Each question was given 1 mark if the pregnant women respond as she consumed each food group and Zero score was given if she didn't consume. The score of the respondents was taken and classified as having diversified diet and not having diversified diet for those who respond as they consume at least five food groups and above out of ten and below five food groups within 24 hours respectively. Meal frequency was also assessed for extra one meal during pregnancy (meal frequency >=4 and meal frequency <4 by using 24 hours meal frequency questions) (36,37).

4.6.2 Data collection procedures

Data was collected using structured interviewer administered questionnaire having four parts by using five female diploma nurse and midwife professionals of data collectors and two degree in Bachelor of Science (BSc) /public health experts for supervision were recruited. Each study subject was visited from house to house in order to get their responses and revisit of household for absent candidates in the first visit was done. Interviewers had introduced themselves and explain the purpose of the study using specific statements in a standard procedure. Consent to participate was obtained from each interviewee before conducting each interview. The data was collected from March 10-30/2018.

4.7. Study variables

❖ **Dependent variable**

Dietary practice during pregnancy

❖ **Independent variables include**:

Socio-demographic factors

Age

Residence

Marital status

Type of marriage

Religion

Ethnicity

Family size

Educational level

Occupation

Husband educational level

Husband occupation

Living in polygamy

Socio economic status

Family income

Household food security status

Individual Factor

ANC follow up

Nutrition information

Nutritional knowledge of PW

Food restriction

4.8. Operational definitions.

Dietary Practice: -is a Consumption pattern of pregnant mother regarding diversified food and meal frequency. In this study it was categorized into good and poor dietary practices.

A woman who ate at least five foods out of the ten food groups and at least four times within the 24 hours, (during previous day and night, prior to data collection was considered as having good dietary practice otherwise poor dietary practice(36).

Food restriction: - Is restriction of pregnant women from consuming certain kinds of food which is usually rich in the required nutrients due to different reasons.

Household food insecurity: - If pregnant women responded yes for eight questions which are used to measure household food insecurity during the last 4weeks prior of data collection period:

- ✓ Feelings of uncertainty or anxiety over food (situation, resources, or supply);

- ✓ Perceptions that food is of insufficient quantity,

- ✓ Perceptions that food is of insufficient quality (includes aspects of dietary diversity, nutritional adequacy, preference);

- ✓ Reported reductions of food intake.

- ❖ If the pregnant women respond **yes** at least for one question out of eight which is prepared to measure the above expression, the household is **not secured for food.** If she responds **No** for all questions the household is **secured for food.**(38)

Pregnant woman: pregnancy status was based on woman self-reported as she is pregnant or with ANC follow up card during an initial short survey assessment prior to data collection period.

Income level: - Estimated average all monthly income, benefits and gains of every kind and from every source of the family.

Nutrition information: -If the pregnant woman has informed about the benefit of iron, folic acid and need of extra meal during pregnancy from any media or health professionals, She has nutrition information otherwise not.

Nutritional Knowledge: If pregnant women respond 3 or more correct answers out of 5 questions which were prepared to assess the nutritional knowledge of pregnant women like(women's nutrition during pregnancy, micronutrient supplements for pregnant women, recommendations of folic acid supplements, health risk for low-birth-weight babies and benefit of family planning/birth spacing) she recorded as knowledgeable otherwise not knowledgeable(39).

4.9. Data processing and analysis plan

Data processing was done starting from data collection period by categorizing, coding, and summarizing the data in data master sheets. Then the data were checked, cleaned and entered into EpiData software manager version 4.1 by the principal investigator and exported to SPSS version 20 for analysis. The descriptive analysis such as proportions, percentages, frequency distribution, measures of central tendency, measure of dispersion and exploration of data for missing values was done. Analytical statistics like: bivariate and multivariate analysis were done. Bivariate analysis was performed to select candidates' variables for multivariable analysis.

All variables with $p<0.25$ in bivariate analysis were inserted in to the multivariable logistic regression model to identify factors independently associated with dietary practice of pregnant women. Backward method was used to select the final independent predictors' at Odds ratio with 95% CI and statistical significance was declared by $p< 0.05$. Hosmer and lemeshow goodness of fit test was done and the model is fit with significance level of 0.110 and 8 df. Multicollinearity was checked using VIF and the maximum value was 3.838

4.10. Data quality management

For administering of structured questionnaire, five female diploma nurse and midwife professional of data collectors and two degree in Bachelor of Science (BSc) /public health experts for supervision were recruited. Training was given for two days on the objective, relevance of the study, confidentiality of information, respondent's right, time of data collection and reorganization of the collected data from respective kebeles and submission on due time. The questionnaires were translated in to local language (Somali) to facilitate understanding of the respondents and back to English by different persons to check the consistency of meaning. In addition pre-test was conducted on 5% of the actual sample size (37 pregnant women) to assess its clarity, length, completeness and Consistency outside of the study area which is Ketama kebele of Kadaduma district of Ethiopia somali Region with similar setting of the study area.

4.11. Ethical consideration

Ethical clearance and permission was obtained from Jimma University Institutional Review Board. Permission was secured from Moyale District health office and Kebele administrations. The objective of the study and data confidentiality was fully explained and verbal informed consent was taken prior to the interview from each respondent /participants.

4.12. Dissemination plan

The findings will be presented to Jimma University scientific community in a defense and the result will be submitted to the department of Epidemiology, institute of health, faculty of public health. The findings will also be communicated to both the District health office and other relevant stakeholders at national, regional, and zonal levels to enable them to take and apply research recommendations during their planning process. Publications in international journals will also be considered.

CHAPTRE FIVE: RESULT

5.1 Socio Demographic Characteristics

Seven hundred twenty nine women were interviewed yield a response rate of 99.4%. The mean ($\pm$ SD) age of the women was 27.57 ($\pm$ 7.32) years. Among them 707 (97.0%) were Somali by ethnicity and 725 (95.5%) of them were Muslim by their religion. From the total respondents, 417 (57.2%) of the respondents had no formal education. 547 (75.0%) were monogamous and 618 (86.1%) were house wife (See table 2 below).

Table 2: Socio Demographic and Economic Characteristics of the study participants of pastoralist community of Moyale district, Somali, Ethiopia, 2018. (n=729)

Variables	Variable categories	Number (frequency)
Age	15-24	280(38.4%)
	25-34	308(42.2%)
	35-49	141(19.3%)
Resident	Rural	476(65.3%)
	Urban	253(34.7%)
Marital status	Married /living together	727(99.7%)
	Widowed	1(.1%)
	Separated	1(.1%)
Living in polygamy	Yes	182(25%)
	No	547(75%)
Religion	Muslim	725(99.5%)
	Orthodox	3(.4%)
	Others(protestant)	1(.1%)
Ethnicity	Somali	707(97%)
	Gabra	12(1.6%)
	Gurage	8(1.1%)
	Oromo	2(.3%)
Family size	Two	136(18.7%)
	Three	133(18.2%)
	Four	198(27.2%)
	five and above	262(35.9%)

Participant Educational status	No formal education	417(57.2%)
	Primary	232(31.8%)
	Secondary	65(8.9%)
	College and above	15(2.1%)
Husband educational status	No formal Education	447(61.3%)
	Primary	180(24.7%)
	Secondary	82(11.2%)
	College and above	20(2.7%)
Family income	less than 1000	177(24.3%)
	1000-2000	316 43.3%)
	Greater than 2000	236(32.4%)
House hold food security status	Secured	611(83.8%)
	Not secured	118(16.2%)

5.2 Individual characteristics of the study participants

Individual characteristics of the pregnant women in the study area 323(44.3%) were not attending ANC, 303(41.6%) of them have no nutrition information, almost half 355(48.7%) of them are nutritionally not knowledgeable, and 204(28.0%) of them avoid at least one food group during their pregnancy. These findings were supplemented with qualitative finding of key informants of the study area. See table 3

Table 3 Individual Characteristics of the study participants in pastoralist community of Moyale district, Somali, Ethiopia, 2018. (n=729)

	Variable categories	Number (frequency)
PW heard about nutrition information	Yes	426(58.4%)
	No	303(41.6%)
Nutritional Knowledge of pregnant women	Knowledgeable	374(51.3%)
	Not Knowledgeable	355(48.7%)
Restriction of any food during current Pregnancy	Yes	204(28.0%)
	No	525(72.0%)
ANC follow up in the current	Yes	406(55.7%)

pregnancy	No	323(44.3%)

Three hundred thirty six (46.1%) of pregnant women in the study area their meal frequency was <=3meal/day, see table 4.

Table 4 Meal frequency of pregnant women aged 15-49 years in pastoralist community of Moyale District of Ethiopian Somali Region before data collection of previous 24 hours.

Category	Frequency
<=2 meal/day	4(.5%)
3meals/day	332(45.5%)
4meals/day	242(33.2%)
5meals/day	148(20.3%)
>=6meals/day	3(.4%)

Out of ten food groups of Dietary diversity majority 575(78.9%), 661(90.7%) and 292(40.1%) of pregnant women in the study area were not consumed eggs, Dark green leafy vegetables and Vitamin A-rich vegetables, roots and tubers and Vitamin A-rich fruits respectively within 24 hours prior to data collection. See table 5

Table 5 Minimum Dietary Diversity of Pregnant Women 15-49 years of age in pastoralist community of Moyale District, Somali, Ethiopia

Food groups	Consumed within 24 hours before data collection	Frequency
Foods made from grains, White roots and tubers and plantains	Yes	729(100%)
	No	0(0%)
Pulses (beans, peas and lentils)	Yes	626(85.9%)
	No	103(14.1%
Nuts and seeds	Yes	101(13.9%)
	No	628(86.1%)
Milk and milk products	Yes	682(93.6%)
	No	47(6.4%)
Organ meat, Meat and poultry,	Yes	364(49.9%)

Fish and seafood	No	365(50.1%)
Eggs	Yes	154(21.1%)
	No	575(78.9%)
Dark green leafy vegetables	Yes	68(9.3%)
	No	661(90.7%)
Vitamin A-rich vegetables, roots and tubers, Vitamin A-rich fruits	Yes	437(59.9%)
	No	292(40.1%)
Other vegetables	Yes	418(57.3%)
	No	311(42.7%)
Other fruits	Yes	106(14.5%)
	No	623(85.5%)

336(46.1%)of pregnant women in the study area their meal frequency was three times or less within 24 hours previous data collection and 263(36.1%) of their dietary diversity was poor/less than five food groups consumed within 24 hours before data collection.

5.3 Prevalence of Poor Dietary Practice

This study shows that 410 (56.2%) of pregnant women had poor dietary practice.
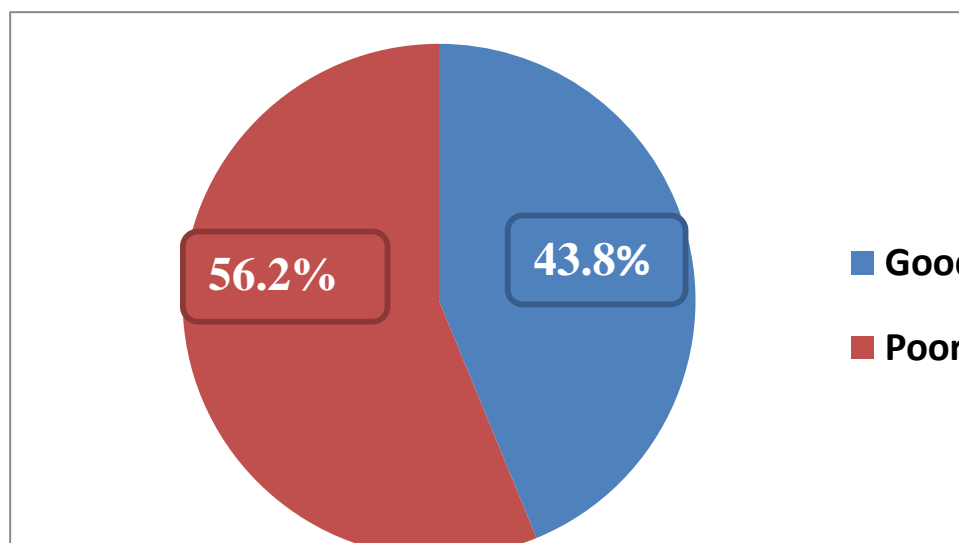
Figure 3 : Dietary practice among pregnant women aged 15-49 years in pastoralist community of Moyale district, Somali, Ethiopia, 2018.

5.4 Factors Associated with Poor Dietary Practice

5.4.1. Bivariate results

On bivariate analysis (Resident, Participant age, Living in polygamy, Family size, Participant Educational status, Husband education, Participant Occupation, Husband Occupation, Family income, HH Food insecurity, ANC visit, Nutrition information (current pregnancy), Nutritional Knowledge, Any type of food avoided) were candidate for multivariable logistic regression, having p-value less than 0.25.(See table 4)

Table 6: Bivariate analysis of dietary practice and associated factors among pregnant women aged 15-49 years in pastoralist community of Moyale district, Somali Region, Ethiopia, 2018.

Factors	Variables categories	Dietary Practice		COR(95% C.I)	P-Value
		Poor	Good		
Residence	Rural	283(59.5%)	193(40.5%)	1.455(1.070-1.977)	.017
	Urban	127(50.2%)	126(49.8%)	1	
Participant age	15-24	143(51.1%)	137(48.9%)	1	
	25-34	172(55.8%)	136(44.2%)	1.21(.876-1.677)	.247
	35-49	95(67.4%)	46(32.6%)	1.979(1.296-3.020)	.002
Living in polygamy	Yes	119(65.4%)	63(34.6%)	1.662(1.173-2.355)	.004
	No	291(53.2%)	256(46.8%)	1	
Family size	Two	55(40.4%)	81(59.6%)	1	
	three	77(57.9%)	56(42.1%)	2.025(1.246-3.291)	.004
	four	115(58.1%)	83(41.9%)	2.041(1.309-3.180)	.002
	five and above	163(62.2%)	99(37.8%)	2.425(1.587-3.705)	.000
Participant Educational status	No formal education	271(65.0%)	146(35.0%)	5.104(1.597-16.314)	.006
	Primary	114(49.1%)	118(50.9%)	2.657(.822-8.586)	.103
	Secondary	21(32.3%)	44(67.7%)	1.312(.373-4.613)	.672
	College and above	4(26.7%)	11(73.3%)	1	
Husband	No formal	275(61.5%)	172(38.5%)	2.969(1.162-7.589)	.023

education	Education				
	Primary	97(53.9%)	83(46.1%)	2.170(.827-5.694)	.115
	Secondary	31(37.8%)	51(62.2%)	1.129(.406-3.135)	.816
	College and above	7(35.0%)	13(65.0%)	1	
Participant Occupation	House wife	374(59.6%)	254(40.4%)	4.417(1.184-16.475)	.027
	Private business	33(37.1%)	56(62.9%)	1.768(.447-6.996)	.417
	Employed	3(25.0%)	9(75.0%)	1	
Husband Occupation	Raising livestock	229(67.4%)	111(32.6%)	4.126(1.509-11.282)	.006
	Private business	175(47.2%)	196(52.8%)	1.786(.656-4.859)	.256
	Employed	6(33.3%)	12(66.7%)	1	
Family income	< 1000	134(75.7%)	43(24.3%)	5.963(3.855-9.223)	.000
	1000-2000	195(61.7%)	121(38.3%)	3.084(2.170-4.383)	.000
	> 2000	81(34.3%)	155(65.7%)	1	
HH Food Security	Not Secured	92(78.0%)	26(22.0%)	3.260(2.051-5.182)	.000
	Secured	318(52.0%)	293(48.0%)	1	
ANC	Not Attended	238(73.7%)	85(26.3%)	3.809(2.776-5.227)	.000
	Attended	172(42.4%)	234(57.6%)	1	
Nutrition information	No	249(82.2%)	54(17.8%)	7.590(5.330-10.807)	.000
	Yes	161(37.8%)	265(62.2%)	1	
Nutritional Knowledge	Less Knowledgeable	272(76.6%)	83(23.4%)	5.604(4.056-7.743)	.000
	Knowledgeable	138(36.9%)	236(63.1%)	1	
Food avoided	Yes	130(63.7%)	74(36.3%)	1.537(1.102-2.144)	.011
	No	280(53.3%)	245(46.7%)	1	

5.4.2 Factors Independently Associated with Poor Dietary Practice

Multiple binary logistic regressions were fitted to assess factors independently associated with poor dietary practice. Accordingly four variables, (Having big family size, having less family income, House hold food insecurity and not having nutrition information) were positively associated with poor dietary practice among pregnant women.

The chance of poor dietary practice is 3.2 times more likely among pregnant mothers having family size of five and above when compared to pregnant mothers having family size of two (AOR=3.205, 95% CI: 1.913-5.367).Pregnant women from household having monthly family income of less than 1000 ETB (Ethiopian Birr) was nearly 3 times more likely to have poor dietary practice when compared to pregnant women having family income of greater than 2000 ETB (AOR=3.270, 95% CI: 1.927-5.547). Pregnant women from household with food insecurity were nearly two times more likely to have poor dietary practice as compared to pregnant women from food secured (AOR=2.169, 95% CI: 1.236-3.804). Chance of poor dietary practice is 7.2 times more likely among pregnant mothers not having nutrition information when compared to pregnant mothers having nutrition information (AOR=7.246, 95% CI: 4.917-10.678).(See table5)

Table 7: Independent predictors of poor dietary practice and associated factors among pregnant women aged 15-49 years in pastoralist community of Moyale district, Somali, Ethiopia, 2018.

Factors	Variables categories	Dietary Practice		Odds Ratio with 95% C.I	
		Poor	Good	COR	AOR
Family size	Two	55(40.4%)	81(59.6%)	1	1
	Three	77(57.9%)	56(42.1%)	2.025(1.246-3.291)	3.213(1.803-5.723)**
	Four	115(58.1%)	83(41.9%)	2.041(1.309-3.180)	2.722(1.601-4.626)**
	five and above	163(62.2%)	99(37.8%)	2.425(1.587-3.705)	3.205(1.913-5.367)**
Family income	< 1000	134(75.7%)	43(24.3%)	5.963(3.855-9.223)	3.270(1.927-5.547)**
	1000-2000	195(61.7%)	121(38.3%)	3.084(2.170-4.383)	2.018(1.358-3.000)*
	> 2000	81(34.3%)	155(65.7%)	1	1

HH Food Security	Not Secured	92(78.0%)	26(22.0%)	3.260(2.051-5.182)	2.169(1.236-3.804)*
	Secured	318(52.0%)	293(48.0%)	1	1
Nutrition information	No	249(82.2%)	54(17.8%)	7.590(5.330-10.807)	7.246(4.917-10.678)**
	Yes	161(37.8%)	265(62.2%)	1	1

** P-value<0.001,*P-Value<0.05, 1-Reference category

CHAPTER SIX- DISCUSSION

More than half 410(56.2%) of pregnant mothers in pastoralist community of Moyale district, Somali, Ethiopia have poor dietary practice. This result is comparable with study done in Ogun state of Nigeria where majority (54%) of the respondents ate less than three times a day.This finding was high when compared with study conducted in Rawalpindi, Pakistan where 42.7% of pregnant woman ate less than or equal to three times per day.This discrepancy might be due to socio cultural difference, socio economic and individual factors of the study participants of the two countries.

Study conducted in Gondar and Bahir Dar town, Northwest Ethiopia showed that prevalence of poor dietary practice were 59.9% and 60.7% respectively, which is nearly similar with this study finding(20,31).Similar studies conducted in Guto Gida district of east Wollega zone in 2013,reveald that poor dietary practice was 66.1% , which is higher when compared to this study(21).The reason might be due to time variation related to provision of nutritional information and interventions by government and nongovernment organization to overcome problems related to malnutrition and especial attention for pastoralist communities(27).

Even though health sectors developing different health and nutrition programs through different strategies, this result have shown that poor dietary practices and malnutrition during pregnancy is still problem in Ethiopia. In this particular study, maternal nutrition regarding specific dietary practices such as dietary diversity and meal frequency of pregnant women were sub optimal and which shows that there is gap on implementation of currently running nutrition programs(40). Beside this the presence of hard-to-reach areas, inaccessibility of health facilities by pregnant women for ANC service and nutrition information due to poor infrastructures in pastoralist community of the study area might be contributed the highest portion for their poor dietary practice.

This study revealed that having relatively high family size, having less family income , living in food in-secured household, not having nutrition information were significantly associated with poor dietary practice.

The finding of this study revealed that having relatively high family size were significantly associated with poor dietary practice. Pregnant women from house hold with family size of 3 was nearly three time more likely to have poor dietary practice as compared to pregnant women from family size of two. Odd of poor dietary practice is 2.7 times more likely among pregnant mothers having family size of four when compared to pregnant mothers having family size of

two. The chance of poor dietary practice is 3.2 times more likely among pregnant mothers having family size of five and above when compared to pregnant mothers having family size of two.

This is comparable with study done in Wondogent district of SNNPR in 2015 and study conducted in Guto Gida district of east Wollega zone, in which increased family size had strong statistical association with poor dietary practice of pregnant women in their respective study area. This finding supported by qualitative study conducted in Arsi Negel of Oromia region, Ethiopia, in which family composition was directly related with meal reduction of the pregnant women. (7,21,32)

.This might be when the family size increases the need for sharing small amount of food in the family increases and leaving nothing for the mother to take additional food during meal time reduces the meal frequency of the pregnant women. Besides this ability to buy diversified foods group also reduced.

The finding of this study revealed that average monthly income was found to be significantly associated with Poor dietary practice of pregnant women in the study area. Pregnant women from household having monthly family income of less than 1000 ETB (Ethiopian Birr) was nearly 3 times more likely to have poor dietary practice when compared to pregnant women having family income of greater than 2000 ETB. Poor dietary practice is 2 times more likely among pregnant mothers having family income of 1000-2000 ETB when compared to pregnant mothers having family income of greater than 2000 ETB. This finding is supported with study conducted in Nigeria ANC clinic, in which family income had strong statistical association with the dietary practice of pregnant women. The finding is also consistent with the Study conducted in Gondar which revealed positive association of family income and poor dietary practice (20,41).

This might be due to the fact that, the less family income, the less they invest on family nutrition and improved nutritional status of pregnant women. This in turn attributes to poor dietary practices of family in general and pregnant women in particular, due to extra need of the growing baby in the uterus. Furthermore, less income of the family can influence availability of resources which in turn affects access to a diversified food and increased meal frequency of pregnant women. This can be explained as getting diversified food groups and increasing meal frequency of pregnant women might depend on the income of the family.

Household food insecurity is significantly associated with poor dietary practice of pregnant women in the study area. Odd of poor dietary practice is nearly 2 times more likely among pregnant mothers living in household which had food insecurity when compared to pregnant mothers living in household which is food secured. This study has similar finding with study conducted in Gambela town(34).This under nutrition of pregnant mothers and poor dietary practice were independently associated with household food insecurity. Similarity of the finding indicate that while the house hold is food in-secure, it is difficult to look for diversified food groups and increasing meal frequency to have good dietary practice. The extra energy needed during pregnancy represents a small percentage (5 %) of total household food energy needs. However, when household food insecurity is persistent, even these small amounts of extra food may be unavailable(5).

According to this study nutritional information during the current pregnancy is significantly associated with the dietary practice of the expectant women. Chance of poor dietary practice is 7.2 times more likely among pregnant mothers not having nutrition information when compared to pregnant mothers having nutrition information. This result is comparable with study done in Guto Gida district of east Wolega zone of Oromia region, Ethiopia and Study done in Gondar Town North West, Ethiopia, 2014 in which not having nutrition information during pregnancy had a positive association with poor dietary practice of pregnant mother (20,21). Pregnant women trust and value nutrition information (advice) received on which foods to eat during pregnancy came from health care providers and physicians the most, and other sources like, internet, television, family members and community for better pregnancy outcome(33).

In this study Residence, Participant age, living in polygamy, Participant Educational status, Husband education, Participant Occupation, Husband Occupation, ANC visit, Nutritional Knowledge, Any type of food avoided are not independently associated with poor dietary practice of pregnant women in the study area.

Strength of the study

Achieving a high response rate of 729(99.4%) in pastoralist community with poor infrastructure and poor road access to reach the villages.

Limitation of the study

Exclusion of unknown pregnancy

Including all visible pregnancy and not confirming the pregnancy status.

Social desirability bias: This may affect the magnitude of dietary practice by responding favorable answers for dietary diversity and meal frequency.

CHAPTER SEVEN – CONCLUSSION AND RECOMENDATION
7.1. CONCLUSSION

In this study poor dietary practice is unacceptably high and having relatively high family size, less family income, living in food unsecured households, not having nutrition information where found to be independently associated with poor dietary practice of the pregnant women.

7.2. RECOMMENDATIONS

High poor dietary practice of pregnant women in the study area and all significantly associated factors need special attention from all concerned governmental and non governmental bodies in designing intervention plan to reduce poor dietary practice during pregnancy in the study area.

To Ethiopian Somali Regional Health Bureau (ESRHB)

To strengthen the existing nutrition programs in all pastoralist community of the region on improving the dietary practice of pregnant women.

Availing nutrition guidelines in all health facilities.

Increasing micronutrients supplies for all health facilities in the region to overcome problems associated with poor consumption of dietary diversity during pregnancy in pastoralist community.

To district health office and partner Organizations

Integration of different sectors like, agricultural, education and women affairs to overcome problem related to household food insecurity, low nutritional information and high family size which are positively associated with poor dietary practice during pregnancy.

Facilitate training for health care workers on how to integrate nutrition information with other services.

Creating high linkage between health care workers, health extension workers and women's development armies to trace pregnant women from the community and give nutrition information during ANC follow up

To: Researchers – Explorative qualitative studies should be done to have more information which may be directly associated with the culture and beliefs of the community related to poor dietary practice of pregnant women.

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Annexes

Annex 1. Information Sheet

Information sheet and Consent form for pregnant women (English Version)

Jimma University, institute of health, faculty of public health department of Epidemiology

I. Information sheet

1. Name of the study area (District) _____

2. Questionnaire identification no. _____

INTRODUCTION: Good morning/afternoon? My name is _____.

In this Study which is undertaken by Jimma University, institute of health, faculty of public health, department of Epidemiology you and me would have a short discussion of about 20-25 minutes only and I am asking you to help us. Before we go to our discussion, I will request you to listen carefully to what I am going to read to you about the purpose and general condition of the study and you will tell me whether you agree or disagree to participate in this study at the end.

The purpose of this study is to assess maternal Dietary practices and associated factors among pregnant women in Moyale District of Ethiopian Somali Region, March 2018. The study will be conducted through interviews. The results of this study will provide basic information that would assist nutrition/health workers; pregnant women make a better choice of diet during pregnancy and other helpful intervention.

I would like to assure you that privacy will be maintained strictly throughout. A code number will identify every participant and no name will be used. Your responses to any of the questions will not be given to anyone else and no reports of the study will ever identify you. If a report of results is published, only information about the total group will appear.

The interview is voluntary and your participation / non-participation, or refusal to respond or stop responding to the questions will have no effect now or in the future in your life.

Are you willing to participate in this study?

1. Yes. 2. No Thank you!!!

NB: 1. If the study subjects agree to participate in the study, go to consent form

2. No need of enforcing the clients to be included in the study

Annex 2. Consent

Section II. Consent form for pregnant women (English Version)

I undersigned have been informed about the purpose of this particular research project. I have been informed that I am going to respond to this question by answering what I know concerning the issue. I have been informed that the information I give will be used only for the purpose of this study and my identity as well as the information I give will be treated confidentially. I have also been informed that I can refuse to participate in the study or not to respond to questions if I am not interested. Furthermore I have been informed that I can stop responding to the questions at any time in the process. Based on the above information I agree to participate in this research voluntarily. Signature: _____Date: _____

NB: 1. If the study subject is voluntary to participate in the study, start the interview.

2. Interviewer signature certifying that informed consent has been given verbally by the respondent. Name_____Signature _____Date _____ Tele. _____

3. If there are things that require clarification please don't hesitate to ask the Interviewer or the principal investigator for clarification.

Address of the principal investigator **Girum Petros** Jimma University, institute of health, faculty of public health department of Epidemiology Mobile: 09-10-51-49-55 Email: girum67@gmail.com

SECTION I: SOCIO-DEMOGRAPHIC AND ECONOMIC INFORMATION.

No	Questions	Coding categories	Skip to
101	Age	_____years	
102	Residence	1.Semi Urban 2.Rural	
103	Marital status	1. Single 4. widowed 2. Married 5. Separated 3. Divorced	1,3,4,5 =>104
104	If married, type of marriage	1.Monogamy 2.Polygamy	
105	Religion	1. Muslim 2. Orthodox 3. Others(specify)	
106	Ethnicity	1.Somali 3.Gurage 2. Oromo 4. others specify	
107	Family size	1.One 4. four 2. Two 5. Five and above 3. three	
108	Educational level	1. No formal education 3. secondary 2. primary school 4. College and above	
109	Husband educational level	1. No formal education 3. secondary 2. primary school 4. College and above	
110	Occupation	1. Housewife 3. Employee 2. Private business 4. Other specify	
111	Your husband occupation	1. Raising livestock 3. Employee 2. Private business 4. Other specify	
112	Average monthly income		

SECTION II: INDVIDUAL FACTOR

ANC FOLLOW UP AND NUTRITION INFORMATION		
No	Questions	Coding categories	Skip to
201	Did you attend ANC clinics in the current pregnancy?	1.Yes 2.No	2 => 203

202	If "Yes" to Q201 time of your first visit	1. within the first 3months 2. 4-6month 3. 6-9month	
203	Have you heard about nutrition information during current pregnancy?	1.Yes 2.No	2 => 205
204	If "Yes" to Q203" from where you heard?	1.from ANC clinics 2.From HEWs 3.From media 4.Others specify	

NUTRITIONAL KNOWLEDGE ASSESSMENT OF PREGNANT WOMEN

SN	Questions	Right answers	Preliminary analysis

205	How should a pregnant woman eat in comparison with a non-pregnant woman to provide good nutrition to her baby and help him grow?
	Please list four practices she should do.
		1.Eat more food (more energy)
		   ➢ Eat more at each meal (eat more food each day) Or ¨
		   ➢ Eat more frequently (eat more times each day)
		2. Eat more protein-rich foods
		3. Eat more iron-rich foods
		4. Use iodized salt when preparing meals
		5.Other
		6.Don't know
			1.Knows
			2.Dont know
			
			(Number of correct responses >=2, Knows)

206.	Most women would benefit from two types of supplements, or tablets, during pregnancy. Which are they?	1.Iron supplements ¨ 2.Folic acid supplements ¨ 3.Other ¨ 4.Don't know	1.Knows 2.Dont know (Number of correct responses >=1, Knows)
207	Can you tell me why it is so important to take folic acid supplements during pregnancy?	1.For normal development of the nervous system of the unborn baby (brain, spine and skull) ¨ 2.To prevent birth defects/abnormalities the nervous system of the unborn baby (brain, spine and skull) ¨	1.Knows 2.Dont know (Number of correct responses >=1, Knows)

		3.Other ¨	
		4.Don't know	
208.	When a pregnant woman is undernourished, she is at risk of having a low-birth-weight baby, meaning that the baby is small or has a low birth weight. What are the health risks for these babies?	1.Slower growth and development ¨ 2.Risks of infections/being sick ¨ 3.Risks of dying ¨ 4.Risks of being undernourished/having micronutrient deficiencies ¨ 5.Risks of being sick once adult/developing chronic diseases in adulthood (heart disease, high blood pressure, obesity, diabetes) 6.Other ¨ 7.Don't know	1.Knows 2.Dont know ♣ Number of correct responses >=1, Knows
209.	It is recommended that a woman waits at least two or three years between pregnancies, that is before coming pregnant once again. Please can you tell me why this is recommended?	1.To rebuild/fill up their body stores of nutrients (fat, iron and others) ¨ 2.For the mother to be healthier before having a new baby/to be prepared for the arrival of a new baby ¨ 3. Other ¨ 4. Don't know	1.Knows 2.Dont know Number of correct responses >=1, Knows

Adopted from FAO 2014, Guidelines for assessing nutrition-related KAP

SECTIONIII: **Household Food Insecurity Experience Scale**

Now I would like to ask you some questions about your food consumption in the last 4weeks. During the last 4WEEKS, was there a time when:			
301	You were worried you would run out of food because of a lack of money or other resources?	1. No 2. Yes	98 DK 99 Refused
302	You were unable to eat healthy and nutritious food because of a lack of money or other resources?	1. No 2. Yes	98 DK 99 Refused
303	You ate only a few kinds of foods because of a lack of money or other resources?	1. No 2. Yes	98 DK 99 Refused
304	You had to skip a meal because there was not enough money or other resources to get food?	1. No 2. Yes	98 DK 99 Refused
305	You ate less than you thought you should because of a	1. No	98 DK

		2. Yes	99 Refused
306	Your household ran out of food because of a lack of money or other resources?	1. No 2. Yes	98 DK 99 Refused
307	You were hungry but did not eat because there was not enough money or other resources for food?	1. No 2. Yes	98 DK 99 Refused
308	You went without eating for a whole day because of a lack of money or other resources?	1. No 2. Yes	98 DK 99 Refused

Adopted from FAO Technical Paper Version 1.1 October 2013.

SECTION IV: Food Restriction(Taboos) During Pregnancy

401	Did you avoided (are you avoiding) eating any food during your current Pregnancy?	1.Yes 2.No	2 => 501
402	If "Yes" to Q401, What food groups/types?	1. 2. 3. 4.	
403	Reason for avoidance?		

SECTION V&VI: DIETARY PRACTICES (MEAL FREQUENCY AND DIETARY DIVERSITY)

Household food consumption for 10 groups of foods (1 item per food group type)

Dietary Diversity Questionnaire

Please describe the foods (meals and snacks) that you ate or drank yesterday during the **day and night (last 24 hours)**, whether at home or outside the home. Start with the first food or drink eaten in the morning.

Write down all food and drinks mentioned. When composite dishes are mentioned, ask for the list of ingredients. When the respondent has finished, probe for meals and snacks not mentioned.

Breakfast	Snack	Lunch	Snack	Dinner	Snack

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

SECTION V - MEAL FREQUENCY

501	Meal frequency	1.<=2 meal/day	1.good practice (if meals/day >=4)
		2.3meals/day	2. bad practice((if meals/day <4)
		3.4meals/day	
		4.5meals/day	
		5.>=6meals/day	

SECTION VI: DIETARY DIVERSITY

MDD-W (Recommended ten food groups for women of reproductive age group 15-49 years

Food group	Food categories	Food items commonly consumed by survey area by Pregnant Women	Consumed Yes = 1 No= 0
601	Foods made from grains, White roots and tubers and plantains	Porridge, bread, rice, pasta/noodles or other foods made from grains, White potatoes, white yams, manioc/cassava/yucca, cocoyam, taro or any other foods made from white-fleshed roots or tubers, or plantains	Yes = 1 No= 0
602	Pulses (beans, peas and lentils)	Mature beans or peas (fresh or dried seed), lentils or bean/pea products	Yes = 1 No= 0
603	Nuts and seeds	Any tree nut, groundnut/peanut or certain seeds, or nut/seed "butters" or pastes	Yes = 1 No= 0
604	Milk and milk products	Milk, cheese, yoghurt or other milk products but NOT including butter, ice cream, cream or sour cream	Yes = 1 No= 0

605	Organ meat Meat and poultry Fish and seafood	Liver, kidney, heart or other organ meats , Beef, pork, lamb, goat, chicken, duck or other bird Fresh or dried fish, shellfish or seafood	Yes = 1 No= 0
606	Eggs	Eggs from poultry or any other bird	Yes = 1 No= 0
607	Dark green leafy vegetables	List examples of any medium-to-dark green leafy vegetables, including wild/foraged leaves	Yes = 1 No= 0
608	Vitamin A-rich vegetables, roots and tubers Vitamin A-rich fruits	Pumpkin, carrots, Ripe mango, ripe papaya ,ripe yellow color banana, sweet potato(yellow color of inside) for other less-common vitamin A-rich fruits)	Yes = 1 No= 0
609	Other vegetables	List examples of any other vegetables	Yes = 1 No= 0
610	Other fruits	List examples of any other fruits	Yes = 1 No= 0

Adopted from FAO/FANTA 2016, Minimum Dietary Diversity for Women

LIFAAQYADA

Lifaaqa 1. Xaashida macluumaadka

Foomka macluumaadka iyo foomka ogolaanshaha ee haweenka uurka leh (Ingiriisi)

Jamacada Jimma, machad caafimaad, macalin waaxda caafimaadka dadweynaha ee Epidemiology

I. Xaashida macluumaadka

1. Magaca daraasadda (Degmada) _____

2. Aqoonsiga Su'aalaha Aqbaarta. _____

HORDHAC: Subax wanaagsan / galabti? Magacaygu waa _____.

Daraasaddan oo ay fulineyso jaamacada Jimma, machad caafimaad, macalin caafimaad oo guud, qaybta Epidemiyolojiga adiga iyo aniga waxaan wada yeelan doonaa dood kooban oo ku saabsan 20-25 daqiiqo oo kaliya waxaanan kaa codsanayaa inaad na caawiso. Ka hor intaanan tagin

wadahadalkeena, waxaan ku weydiin doonaa inaad si taxaddar leh u dhageysatid waxa aan kugula kulmi doono ujeedada iyo xaaladda guud ee daraasadda waxaadna iigu sheegi doontaa inaad oggolaato ama aadan ku raacsaneyn inaad ka qeyb qaadato daraasaddan dhammaadka .

Ujeedada daraasaddan ayaa ah in la qiimeeyo hababka cuntada ee haweenka iyo arrimaha la xariira ee haweenka uurka leh ee Mooyaale ee gobolka Soomaalida ee Itoobiya, Maarso 2018.Daraasadan waxaa lagu fulin doonaa wareysiyo.Natiijooyinka daraasaddan waxay bixinaysaa macluumaad aasaasi ah oo caawin doona shaqaalaha nafaqada / shaqaalaha caafimaadka, haweenka uurka leh waxay doortaan doorasho wanaagsan oo cunto ah xilliga uurka iyo waxqabadka kale ee waxtarka leh.

Waxaan jeclaan lahaa in aan kuu xaqiijiyo in asturnaanta gaarka ah loo hayo si adag oo dhan.Nambarka lambarka wuxuu aqoonsanayaa qof kasta oo ka mid ah kooxna ma isticmaali doono magac.Jawaabtaada mid ka mid ah su'aalaha lama siin doono cid kale oo warbixinta daraasadduna waligaa laguma aqoonsan doono.Haddii warbixinta natiijooyinka la daabaco, macluumaadka kaliya ee ku saabsan kooxda wadarta ayaa soo baxaysa.

Wareysigu waa ikhtiyaari, ka qaybgasho / ka-qaybgal, ama diidista inaad ka jawaabto ama joojiso ka jawaabista su'aalaha ma yeelan doonto wax saameyn ah hadda ama mustaqbalka noloshaada.

Ma rabtaa inaad ka qayb qaadato daraasaddan?

1. Haa. 2. Maya mahadsanid !!!

FG: 1. Haddii maaddooyinka daraasadda ay oggolaadaan inay ka qaybqaataan daraasadda, u tag foomka oggolaanshaha

2. Looma baahna in la dhaqan geliyo macaamiisha si loogu daro daraasadda

Lifaaqa 2. Oggolaanshaha

Qeybta II. Foomka ogolaanshaha ee haweenka uurka leh (Ingiriisi)

Aniga oo saxeexay waxaan la socodsiiyay ujeedada mashruucan cilmi baarista ah.Waxaa la ii sheegay in aan ka jawaabayo su'aashan adigoo ka jawaabaya waxa aan ogahay arrinta.Waxaa la ii sheegay in macluumaadka aan bixinayo kaliya loo isticmaali doono ujeedada daraasaddan iyo aqoonsigayga iyo sidoo kale macluumaadka aan bixiyo si qarsoodi ah loola dhaqmo.Waxa kale oo la ii sheegay in aan diidi karo in aan ka qayb qaato daraasadda ama aan ka jawaabin su'aalaha

haddii aanan danaynayn.Waxaa intaa dheer in la ogaaday inaan joojin karo su'aalaha waqti kasta ee geedi socodka.Iyada oo ku saleysan xogta kor ku xusan waxaan oggolahay inaan ka qaybgalo cilmi-baaristaan si ikhtiyaar ah. Saxeex: _____Tari: _____

 NB: 1. Haddii maadada daraasaddu ay tahay ikhtiyaari si ay uga qaybqaataan daraasadda, u bilow wareysiga.

2. Saxiixa Wareysiga oo cadeynaya in ogolaansho la wargeliyay si aflagaado ah loo siiyey jawaab bixiyaha.Magaca _____ Saxiixa _____Tari _____ Tele. _____

3. Haddii ay jiraan waxyaabo u baahan in la caddeeyo fadlan ha ka baqin inaad weydiiso Wareysiga ama baaraha maamulaha si loo caddeeyo.

Cinwaanka baadhaha maamulaha Girum Petros Jimma, machad caafimaad, macalin waaxda caafimaadka dadweynaha ee Epidemiology Mobile: 09-10-51-49-55 Email: girum67@gmail.com

Lifaaqa 3 su'aalood

Qaybta 1aad : maclumaadka bulshada iyo dhaqaalaha

Tirsi	Suala	Codeynta qaybaha	U gudub
101	Da'da	_____sano	
102	Degenaansho	1.magaalada 2.miyigs	
103	Xaaladda guurka	1. hal 4. Laga dhintay 2.guursatay 5. Kala go 3. furitaanka	1,3,4,5 =>104
104	Haddii ay isqabaan nooca guurka	1.hal jinsi 2.laba jinsi	
105	Diinta	1. Muslimiinta 2. duubista/orthodox 3. kuwa kale(sheeg)	
106	Jinsiyada	1.Soomali 3.Gurage 2. Oromo 4.kuwa kale(sheeg)	

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107	Qiyaasta qoyska	1. hal 4. afar 2. laba 5. Shan iyo wixii ka sareeya 3. saddex	
108	Heerka waxbarashada	1. waxbarasho rasmi malaha 3. Dugsiga sare 2. dugsiga hoose 4. kuliyadaha 5. kuwa kale(sheeg)__	
109	Heerka waxbarashada ninkaada	1 Ma jirto waxbarasho rasmi ah 3. Dugsiga sare 2. Dugsiga Hoose 4. Waxbarashada kuleejka 5. tilmaam kale	
110	Shaqo	1. xaas guriga joogo 3. Shaqaale 2. ganacsiga gaarka loo leeyahay 4. Other specify	
111	Shaqaada ninkaaga	1. xooo dhaqato 3. Shaqaale 2. Ganacsiga gaarka loo leeyahay 4. Cadee kale	
112	Celceliska dakhliga bishi		

Qaybta 2aad : Isticmaalka Adeegga Caafimaadka Iyo Aqoonta Nafaqada Hooyada

Daryeelka Dhalmada Kahor Iyo Aqoonta Nafaqada			
Tirsi	Su'aalo	Qeybinta codeynta	U gudub
201	Xilliga uurka hada Miyaad ka soo qayb gashay adeega dhalmada kahor ee rugaha caafimad?	1 haa 2 maya	2 => 203
202	Haddi ay haa tahay ugudub suasha Q201 wakhtiga booqashada ugu horeysa	1. 3da bilood oo hore 2. 4-6bilood 3. 6-9bilood	
203	Miyaad ka maqashay macluumaadka nafaqada xiliga uurka?	1.Haa 2.maya	2 => 205
204	Haddii /haa/ tahay Q203 meesha aad ka maqadhay?	1.rugta caafimadka dareelka caafimaadka ee antenatal clinic 2.shaqalaha fidinta caafimadka 3. media/warbahinta 4.kuwi kale sheeg	

Qiimeynta aqoonta nafaqada ee haweenka uurka ley			
SN	Su'aalo	Jawaabaha saxda ah	Falanqaynta hordhaca ah
205	Side haweenka uurka lehay u cunaan marka la barbardhigo haweenka aan uurka lahayn si ay u siiyaan nafaqo wanaagsan cunugeeda ayna ku caawiyaan inuu koro? Fadlan qor afar ha boo ay tahay in ay sameeyaan.	1.cun cunto dheeraad ah (tamar badan) Cunto kasta cun cunto kasta (cun cunco dheeraad ah maalin kata) amm Cunaan marar badan (cun cunno dheeraad ah maalin kasta) 2. cun cunno badan oo protein ah 3. cun cunno badan oo birta ku jirto 4. isticmaal cusbo ioded ah markaad cunto diyaatineyso 5.kale 6.ma garanayo	1.garanayaa 2. ma garanayo (tirade jiwaabaha saxda ah >=2, garanayaa)
206.	Dumarka intooda badani waxay ka faa'iideysan karaan laba nooc oo dheeri ah ama kiniin, xilliga uurka. Waa kuwee?	1.maadooynkas birta ¨ 2.dheecaadka folio acid 3.kale 4.ma garanayo	1.garanayaa 2. ma garanayo (tirade jiwaabaha saxda ah >=1, garanayaa)
207	Ma ii sheegi kartaa sababta ay muhiim u tahay in la qaato dheecaan folic acid inta lagu jiro uurka?	1.horumarinta caadiga ah ee nidaamka dareemayaasha ah ee ilmaha magaalada (maskaxada, dhabarka iyo qorta) 2. si looga hortago cilladaha dhalmada / astaamaha ah nidaamka dareenka ee ilmaha aan dhalan (maskaxada, dhabarka iyo qorta) 3.kale 4.maagaranayo	1.garanayaa 2. maagaranayo (tirade jiwaabaha saxda ah >=1, garanayaa)
208.	Marka haween uur leh ay nafaqo – xumo hayso, waxay halis ugu jirtaa inay haysto cunug yar oo miisaanka dhasha, taasoo macnaheedu yahay in ilmhu yar yahay. Ama uumisaanka yar yahay. Waa maxay khataraha caafimadka ee carrurtaas?	1.koritaanka iyo koritaanka yaryar ¨ 2.khatarta caabuq /jirro ¨ 3.khatarta dhimashada ¨ 4.halis ah in la nafaqo/nafaqo yaryar oo nafaqo leh ¨ 5.halis ay inuu jirrado marka qof wyn/uu ku	1.Garnayaa 2.Magaranayo tirade jiwaabaha saxda ah >=1, garanayaa

		dhaco cudurka dhabadheeraad ah ee qaangaarka ah(cudurka wadnaha,cadadiska, dhigga oo sarreeya,cayilka,sokorowga). 6. kale 7. magaranayo	
209.	Waxaa lagula talinayaa in haweeney ay sugto ugu yaraan labo ama saddex sano u dhexeeya uurka,taas oo horay uur yeelatay markale. Fadlan iigu sheegi kartaa sababta lagula taliyay?	1.in did loo dhiso/buuxiyo dukaamada jirka ee nafaqooyinka (baruurta, birta iyo kuwa kale) 2.hooyo inay caafimaad qabaan kahor intaanay ilmo cusub/ udiyaarin imaanshaha ilmo cusub. 3. Kale 4. Magaranayo	1. garanayaa 2. Magaranayo tirade jiwaabaha saxda ah >=1, garanayaa

Laga soo qaatay hayada FAO 2014, tilmaamaha lagu qiimeynayo nafaqada KAP

Qaybta 3aad: miisaanka waayo-aragnimada cuntada ee qoysaska

Hadda waxaan jeclaan lahaa inaan ku wewydiiyo su'aalo kusabsan isticmaalka cuntadaada 4tii asbuuc ee ugu dambeeyey,waxay ahayd waqti markii la joogay:			
301	Waad ka walwalsaneyd inaad cuntada ka baxday sababtoo ah lacag la'aan ama ilo kale?	1. Haa 2. Maya	98. DK 99. Refused
302	Ma awoodin inaad cuntid cunto caafimaad leh iyo nafaqo leh sababtoo ah lacag la'aan ama ilo kale?	1. Haa 2. Maya	98. DK 99. Refused
303	Waxaad cunteen oo keliya noocyo cunto ah oo yar sababtoo ah lacag la'aan ama ilo kale?	1. Haa 2. Maya	98. DK 99. Refused
304	Waa inaad ka boodid cuntada sababtoo ah ma jirin lacag ku filan ama ilo kale oo aad cunto u hesho?	1. Haa 2. Maya	98. DK 99. Refused
305	Waxaad cuntay wax ka yar sidii aad u maleyneysay inaad tahay sababtoo ah lacag la'aan ama ilo kale?	1. Haa 2. Maya	98. DK 99. Refused
306	Qoyskaaga ayaa ka baxsaday cunto sababtoo ah lacag la'aan ama ilo kale?	1. Haa 2. Maya	98. DK 99. Refused
307	Waad gaajaysnayd laakiin ma cunin sababta oo ah ma jirin lacag ku filan ama ilo kale oo cunto ah?	1. Haa 2. Maya	98. DK 99. Refused
308	Waxaad tagtay adoon wax cunin maalin dhan sababtoo	1. Haa	98. DK

	ah lacag la'aan ama ilo kale?	2. Maya	99. Refused

Waxaa laga soo qaatay Waraaqda Farsamada ee FAO 1.1 Oktoobar 2013.

Qeybta Iv: Xannibaadda Cuntada (Taboosha) Inta lagu jiro Uurka

401	Miyaad ka fogaatay (ma waxaad iska ilaalineysaa) inaad cuntid wax cunto ah xilliga uurkaaga?	1.Yes 2.No	2 => 501
402	Haddii " Haa " u tahay Q303, Waa maxay nooca cuntada / noocyada?	1. 2. 3. 4.	
403	Sabbabita?(Reason)		

Qaybta V &Vi: Waxyaabaha Waxbarashada (Cuntada Cuntada Iyo Cuntada)

Isticmaalka cuntada qoyska ee 10 kooxood oo cunto ah (1 xabbo nooc kasta oo cunto ah)

Su'aalaha Kala-duwanaanta Kala duwanaanshaha

Fadlan sharax cuntada (cuntada iyo cunnada fudud) ee aad cuntay ama cabtay shalay shalay

maalin iyo habeenba (24kii saacadood ee ugu dambeeyey), ha ahaato guriga ama guriga dibaddiisa. Ka bilow cuntada ugu horeysa ama cabitaanka subaxdii.

Qor dhammaan cuntooyinka iyo cabitaannada la xusay.Marka la isku daro suxuunta la soo sheegay, weydii liiska maaddooyinka.Marka uu garsooruhu dhammeeyo, baaritaanka cuntada iyo cuntada fudud ee aan la sheegin.

Quraac	Cunto fudud	Qaado	*Cuntada fudud*	*Casho*	*Cuntada fudud*

Marka uu jawaab celiyaha jawaab celintu dhamaystirnaado, buuxi kooxaha cuntooyinka ku saleysan xogta kor ku xusan.Cunto kasta oo aan la sheegin, weydii jawaab celiyaha haddii alaab cunto ah oo ka timid kooxdan.

Qaybta V Ima Cuntada

501	Jadwalka cuntada	1. <= 2 cunto / maalin 2.3 saacadood / maalin 3.4 saacadood / maalintii 4.5 mayl / maalin 5> = = 6maalmood / maalin	1. Dhaqdhaqaaqa (haddii cuntada / maalinta> = 4) 2. Dhaqdhaqaaq xumo ((haddii cunto / maalin <4)

Qaybta Vi: Waxbarashada Bilowga Ah

MDD-W (Waxaa loo soo jeediyay toban kooxood oo cunto ah oo loogu talagalay haweenka da'da dhalmada ee 15-49 sano

Kooxaha Cunnada	Qaybaha cuntada	Alaabooyinka cuntada sida caadiga ah u wada cunaan sahan ay sameeyeen Haweenka Uurka leh ee la Isticmaalay	Haa = 1 Maya = 0
601	Cuntada laga sameeyey miro, Caleemo cad iyo digriiga	Boorashka, rootiga, bariiska, baastada / baastada ama cuntooyinka kale ee laga sameeyey miro, Baradhada cad, caleemaha cad, miro / kareemka / yucca, cocoam, taro ama	haa = 1 maya= 0
602	Rabsho (digir, digir iyo caano)	Digirta bisil ama digir (abuur cusub ama la qalajiyey), lentils ama wax beero / digir ah	haa = 1 maya= 0
603	Nuts iyo miraha	Waxyaalla kasta oo cows ah, qudaar ama lowska ama abuurka, ama cowska / abuurka "boomboyin" ama dhagta	haa = 1 maya= 0
604	Caanaha iyo caanaha	Caanaha, jiiska, yoogaanka ama alaabada kale ee caanaha, laakiin kuma jiraan subag, jalaato, kareem ama labeen dhanaan	haa = 1 maya= 0

605	Hilibka xubnaha Hilibka iyo digaagga Kalluunka iyo badda	Beerka, kalyaha, wadnaha ama hilibka kale ee jirka, Siiriska, hilibka doofaarka, ariga, rooga, digaaga ama shimbiraha kale Kalluunta cusub ama la qalajiyey, shellfish ama badeeco badda	haa = 1 maya= 0
606	Ukunta	Ukumaha digaaga ama shimbir kale	haa = 1 maya= 0
607	Khudaarta cagaaran ee madow	Qoraan tusaalooyin ah khudaar cagaaran oo dhexdhexaad ah oo cagaaran, oo ay ku jiraan caleemaha duurjoogta / caleemaha	haa = 1 maya= 0
608	Vitamin A khudradda qani ah, xididdada iyo digriiga Faytamiin A-hodan ah	Pumpkin, dabacasaha, Caanaha bislaaday, papaya soo bislaaday, muuska jaalaha ah, baradho macaan (midab jaalle ah oo gudaha ah) oo loogu talagalay fitamiin A-ka mid ah oo aan caadi ahayn)	haa = 1 maya= 0
609	Khudaarta kale	Muuji tusaalooyinka khudaarta kale	haa = 1 maya= 0
610	Miraha kale	Qor liiska miraha kale	haa = 1 maya= 0

Mahadsaniid!!