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EXTRA MEAL CONSUMPTION AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE AT GUNA HEALTH CENTER SOUTH GONDAR ZONE, NORTHWEST ETHIOPIA

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BAHIR DAR UNIVERSITY

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SCHOOL OF RESEARCH AND GRADUATE STUDIES

FACULTY OF CHEMICAL AND FOOD ENGINEERING

BY

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By

Zemene adissie

A thesis submitted to Bahir Dar Institute of Technology in partial fulfillment of the requirements for the degree of Master in Applied Human Nutrition department in faculty of chemical and food engineering.

Advisor Name: Hirut Assaye (PHD)

Bahir Dar, Ethiopia

July,, 2019

DECLARATION

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

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Date of submission: _____

Place:Bahir Dar,Ethiopia

This thesis has been submitted for examination with my approval as a university advisor.

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To my family

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ABSTRACT

Introduction: Adequate nutritional status of pregnant mothers is essential for their health and pregnancy outcomes. Especially during pregnancy, the regular three meals and at least one extra meal (snack) per day is recommended. But only limited research has been conducted on Extra meal consumption and its factor in Ethiopia.

Objective: To assess Extra meal consumption and associated factors among pregnant women attending Antenatal care at Guna Health Center south Gondar zone, Northwest Ethiopia.

Method: Institutional based cross-sectional study on 334 subjects was conducted at Guna Health Center south Gonder zone, Northwest Ethiopia, From February 7-27/2019 and simple random sampling was employed. Data were entered in to Epi Info version 7 and analyzed using SPSS version 20 statistical software. Both descriptive and analytical statistics were used. Variables with p value less than 0.2 in bivariate analysis were entered in to multivariate logistic regression model. Variables P value less than 0.05 were taken as statistically significant and adjusted odds ratio with 95% CI was considered to see association.

Result: A total of 334 pregnant women were interviewed for this study with the response rate of 100%. Higher proportion 280(83.8%) with 95% CI of (80-88%) of the study participants do not take extra meal during their pregnancy time. family size, nutrition information and number of ANC visit became independent predictor for extra meal consumption.

A pregnant women with household family size >4 persons was 81%less likely extra meal consume during pregnancy compared to their counterpart with household family size <=4 persons (AOR=0.191 at 95% CI (0.020-0.727).Relative to women who was visited ANC greater than three times during current pregnancy these who visited only once was 90.6% times less likely extra meal consume during pregnancy (AOR= 0.094 at 95%CI 0.020,0.434).**Conclusion and recommendation:** women found in the study area were suffered from poor dietary practice due to not having extra meal during pregnancy. According to the study result factors affecting extra meal consumption were family size, nutrition information and number of ANC visit. Thus, woreda health office should consider identified factors in their plan to reduce this problem by awareness creation of pregnant mothers. As well, it is recommended for further assessments.

Key word: Extra meal, pregnant women, associated factor, Accesses of milk and Guna Health Center

TABLE OF CONTENT

Abbreviation and acronym

ANC-……………………………………………………………………Anti Natal Care

AOR …………………………………………………………………….Adjusted Odd Ratio

CI……………………………………………………………………….Confidence Interval

COR……………………………………………………………………….Crude Odd Ratio

CSA…………………………………………………………...Central Statistical Agency of Ethiopia

NNP……………………………………………………………….National nutrition program

MDD……………………………………………………   Minimum Dietary Diversity of Women

MUAC………………………………………………………….Mid Upper Arm Circumference

RD………………………………………………………….Recommended Daily Allowance

SNNPR………………………………………….Southern Nations, Nationalities and Peoples Region

USAID………………………………….United States Agency for International Development

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1. INTRODUCTION

1.1 Background

Adequate dietary intake is the immediate need of human being especially, during pregnancy life is created, develop and its effect continue to the next generation. But, it influenced by several underlying controllable factors like access of food, care, environmental and health services(UNICEF, 2015)

Balanced meals are basic for health and proper functioning of the body system throughout the life cycle of all human beings(Desalegn Kuche *et al.*, 2015).

Providing a nourishing diet for pregnant and lactating women therefore results in significantly better infant health outcomes and for her health. Recent evidence suggest that it may also reduce the risk of chronic diseases later in life(World Health Organization., 2017).

Currently, nutrition sensitive intervention is growing rapidly including food based approach which is based on locally accessible and culturally acceptable foods to achieve development in human nutrition(De Bruyn *et al.*, 2016).

Meal patterns during pregnancy is a component of maternal nutrition relevant to pregnancy outcome and also for herself because pregnant women who sustain prolonged periods of time without food by skipping meals and/or snacks may be inducing a physiologic stress upon their pregnancy(Siega-Riz *et al.*, 2001).

Malnutrition remains a pervasive issue of the current century, with profound implications for individual growth, development and survival, incidence of acute and chronic diseases, and national economic productivity and wealth especially during child bearing age(De Bruyn *et al.*, 2016).

Ethiopia has one of the highest maternal mortality rates in the world, where 353 women from100,000 die during pregnancy, child birth, post partem…(EMoH, 2010).

The incidence of dietary inadequacies as a result of dietary habits and patterns is higher during pregnancy when compared to any other stage of the life cycle(Nana and Zema, 2018).

poor dietary pattern during pregnancy attributed as lack of nutrition education from health professionals (Zelalem *et al.*, 2017),history of disease, poor dietary knowledge(Nana and Zema,

2018),family monthly income, husband occupation and age of pregnant women(Tolera, Mideksa and Dida, 2018).

Poor maternal nutrition during pregnancy were associated with higher risk of having a preterm birth, low birth-weight, Intrauterine Growth Restrictions and facing with multiple threats to their own health and survival(Sisay Alemayehu, 2015)

1.2 Statement of the problem

The risk of a woman dying as a result of pregnancy or childbirth during her lifetime is about one in six in the poorest parts of the world compared with about one in 30 000 in Northern Europe(Ronsmans and Graham, 2006).Seven percent of the global disease burden and at least a fifth of maternal deaths is the result of maternal malnutrition along with the increased probability of poor pregnancy outcome(World Health Organization., 2017).

In South East Asia, South America and Africa countries, the region maternal under nutrition prevalence is as high as 35%(Black *et al.*, 2008)In Ethiopia, nutritional disorders are among the main causes of morbidity and mortality. The major problems are protein-energy malnutrition and micronutrient deficiencies such as vitamin A, iron, and iodine(EMoH, 2010).Twenty seven percent of women in Ethiopia are undernourished with a body mass index (BMI) of less than the 18.5 cutoff point and only four percent are obese with a BMI of more than 25.0. These figures put Ethiopia among sub-Saharan countries with the highest proportion of malnourished women(Nicholas, Dondi, 2011)

The nutrition recommendation meal frequency during pregnancy (three meals and at least one snack/day)(Walters, Bendulo and Stoecker, 2018) not practice by most women in Ethiopia.

A cross sectional study in Mekele Town by 2014 shows (79.6%) pregnant women not practiced, increasing meal frequency of pregnant women is highly recommended to address anemia among them(Abriha, Yesuf and Wassie, 2014), (30.3%)(Zelalem *et al.*, 2017) ,(73.1)(Tolera, Mideksa and Dida, 2018) in Addis Ababa, Ethiopia and Ambo district Oromia, Ethiopia respectively.

The discrepancy might be attributable to differences in sample size, geographical location, socio-economic characteristics and cultural differences.

It is also repeatedly reported that dietary practices can be influenced by culture, socioeconomic and environmental determinants(Siega-Riz *et al.*, 2001),(Zelalem *et al.*, 2017),(Abriha, Yesuf and Wassie, 2014).

The Ethiopian government is currently promoting nutrition related interventions through health extension program, health facility nutrition services, community-based women development army program and active involvement of pregnant women in focused antenatal care as well as in one-five network meeting at community level. Even though health sectors developing different health and nutrition programs, the above result have shown that poor dietary practices during pregnancy is still problem in Ethiopia(NNP II, 2016).

Many researches and projects focused on maternal health are common, but little attention is given to maternal nutrition in the study area (Zelalem et al., 2017). It is clear that maternal nutrition is crucial in reducing maternal and infant morbidity and mortality but no study has been conducted to assess extra meal consumption and its associated factors among pregnant women in the study area. There for the main aim of this study is to assess extra meal consumption and its associated factors among pregnant women attending antenatal care at Guna Health Center south Gondar zone, Northwest Ethiopia.

1.3 Objective

1.3.1 General objective

✓ To assess Extra meal consumption and associated factors among pregnant women attending Antenatal care at Guna woreda Health Center south Gondar zone, Northwest Ethiopia.

1.3.2 Specific objective

✓ To assess Extra meal consumption among pregnant women attending Antenatal care at Guna woreda Health Center south Gondar zone, Northwest Ethiopia.
✓ To identify factors associated with Extra meal consumption among pregnant women attending Antenatal care at Guna woreda Health Center south Gondar zone, Northwest Ethiopia.

1.4 Justification

Malnutrition is a significant problem in developing countries. Tackling malnutrition should be a priority for everyone, especially pregnant women. Improving nutrition is an investment that could save the lives of women around the world; it will also decrease the number of birth defects and disabilities seen in newborns and young children. In many developing countries, nutrition is essential to promoting a happy and healthy lifestyle where no person goes to bed hungry(WFP, 2015). Information on the prevalence of Extra meal consumption and its associated factors among pregnant women needed for prioritizing, designing and initiating intervention programs aimed at improving maternal nutrition. In addition, such data can be used for other researchers.
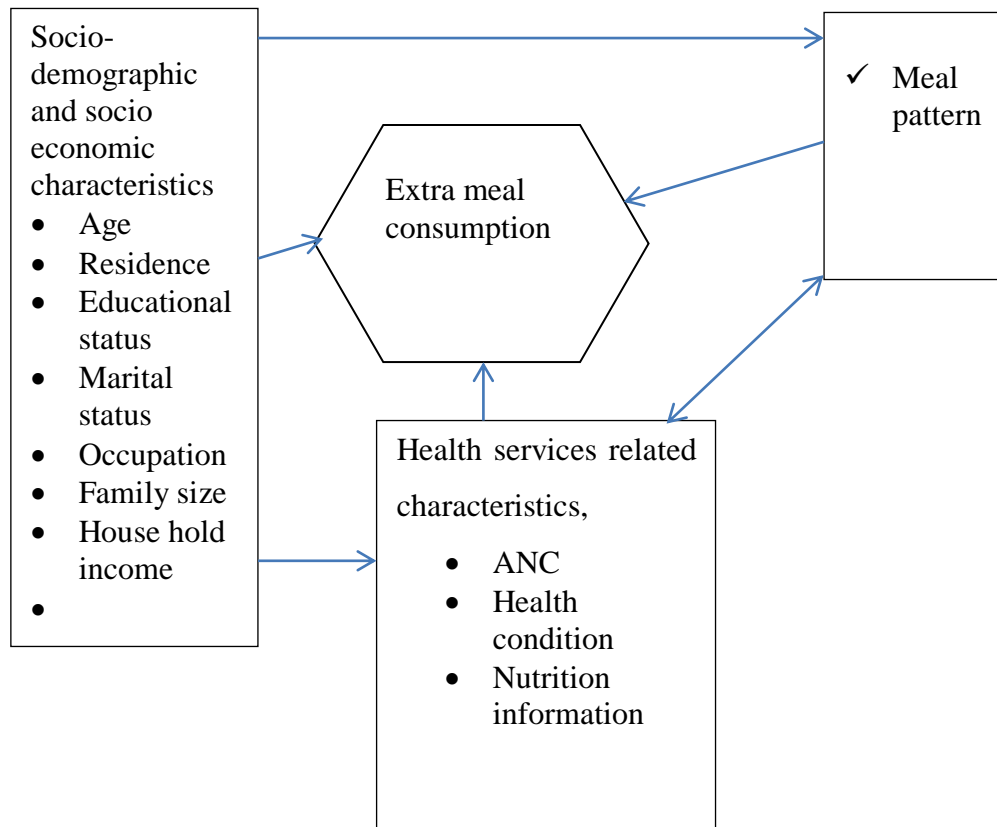
1.5 Conceptual framework

Figure6.1: conceptual frame work of factors associated Extra meal consumption among pregnant women at Guna woreda Health Center south Gondar zone, Northwest Ethiopia, 2019.

Source: from literature review

2 Literature review
2.1 Cultural aspects of meals

Human eating behavior depends on both biological and cultural aspects. The norms of consumption and social conventions of the time or quantity of meals, are all critically dependent on cultural aspects,(Chiva, 1997).Eating food alone as culturally inappropriate for women. Women's selflessness obliges them to share the limited family food resources with everyone in the household and Women are expected to eat after the rest of the family eats, and to prioritize husbands and children over themselves when preparing and serving food(USAID, 2014).

2.2 Factors Associated with meal consumption

2.2.1 Socio-demographic factors

Some of the socioeconomic and demographic factors explaining women's nutrition according to studies done in different places are reviewed below.

2.2.1.1 Household economic status

The economic status of a household is an indicator of access to adequate food supplies, use of health services, availability of improved water sources, and sanitation facilities, which are prime determinants of maternal nutritional status(UNICEF, 2015). A study of most of the DHS surveys conducted in developing countries and a study in the Southern Nations, Nationalities and Peoples Region (SNNPR) of Ethiopia (Moges, Eskindir and Amare, 2013)showed that pregnant women from low economic status households were the most affected by malnutrition.

2.2.1.2 Education status of women

Women who receive even a minimal education are generally more aware than those who have no education of how to utilize available resources for the improvement of their own nutritional status and that of their families. Education may enable women to make independent decisions, to be accepted by other household members, and to have greater access to household resources that are important to nutritional status .A comparative study on maternal malnutrition in ten sub-Saharan African countries (Girma.Woldemariam, 2002), a study in Ethiopia(Tebekaw, 2011) and Gondar(Kumera *et al.*, 2018)showed that the higher the level of education, the lower the proportion of undernourished women.

2.2.1.3 Place of residence

A comparative study on maternal nutritional status in 16 of the 18 DHS conducted

countries(Central Statistical Office (CSO), Ministry of Health (MOH), Tropical Diseases Research Centre (TDRC), University of Zambia, 2009; National Bureau of Statistics and ICF Macro, 2011)and a study in Ethiopia (Central Statistical Agency [Ethiopia] and ICF International, 2016)showed that rural women are more likely to suffer from chronic energy deficiency than women in urban areas. These higher rates of rural malnutrition were also reported by local studies in Ethiopia (Kuche, Singh and Moges, 2015; Kumera *et al.*, 2018).

2.2.1.4 Age of women

Women's age and parity are important factors that affect maternal depletion, especially in high fertility countries. DHS surveys conducted in Burkina Faso, Ghana, Malawi, Namibia, Niger, Senegal, and Zambia show a greater proportion of mothers age 15-19 and 40-49 that exhibit chronic energy deficiencies (CED)(Girma.Woldemariam, 2002). A local study in Ethiopia also showed that women in the youngest age group (15-19) and women in the oldest age group surveyed (45-49) are the most affected by under nutrition(Mengistu, Y and B, 2016)(Mengistu, Y and B, 2016)

2.2.1.5 Marital status of women

Marital status of the women is associated with household headship and other social &economic status of the women that affects their consumption. Nutritional and social   securities could be endangered by a negative change in marital status. A study on the SNNPR
Region of Ethiopia showed that women's malnutrition is significantly associated with marital status indicating that compared to married women malnutrition is higher among unmarried rural and divorced/separated urban women compared to married ones(Girma.Woldemariam, 2002)

2.2.2   Maternal diet and nutrition practice.

The importance of lifestyle and dietary habits during pregnancy for health of mothers and their offspring, is widely supported by the most scientific literature(Girma.Woldemariam, 2002; Willy, Judith and Peter, 2016). The consumption of a varied and balanced diet from the preconception period is essential to ensure both maternal well-being and pregnancy outcomes. However, the risk of inadequate intakes of specific micronutrients in pregnancy is high even in the most industrialized countries(Obwocha, Mbagaya and Were, 2016) also local studies suggested that poor dietary practice leads under nutrition and most undernourished women not meet the recommended RDA(Sisay Alemayehu, 2015; Nana and Zema, 2018)

2.2.3 Other factor

Access to health services was observed to have a significant relationship with nutritional status. This implies that households that had access to health services were more likely to have a better nutritional status. Access in the context of this study means proximity to affordable and quality health services(Kuche, Singh and Moges, 2015). (Kumera *et al.*, 2018)also revealed that in addition to the hygienic condition of the household, nutritional status could also be affected by access to and quality of health care (Kumera*et al.*, 2018).

 Findings from the study showed that study women who had better knowledge of the best method to attain good nutrition that is through consumption of sufficient and various types of foods, significantly had better nutritional status compared to their counterparts. The majority of the women 18.3% out of the 32.2% of women who were undernourished did not know the best method of acquiring good nutrition. The observation of this study demonstrates a very serious gap in knowledge about key nutritional facts in the study population. Furthermore, result show that women who were underweight, 23.1% did not know the relationship between dietary intake and nutritional disorders, in contrast with 9.17% of those who were aware of this relationship. 17.9% of the underweight weight did not know(Sisay Alemayehu, 2015; Nana and Zema, 2018).

3 Method

3.1 Study area

Guna Woreda found along Gayint-Debretabor Asphalt road, 129km from Bahir Dar and This place is located in areas near the tip of mount Guna(Belste(BoCTPD) *et al.*, 2005)health centers under Guna Woreda include Kimir Dingay health center, Amjaye health center and Mokish health center. Based on the 2007 national census this Woreda has a total population of 102,181, of whom 68,513 are men and 33668 women; 6,783 or 0.92% are urban inhabitants With an area of 2,099.25 square kilometers. Like most Ethiopian highlands, the inhabitant's livelihood is characterized by subsistence agriculture, which includes crop farming and animal husbandry. (CSA Central Statistical Agency of Ethiopia, 2007).

According to the information provided from each health center the average pregnant mothers who attended the ANC unit have been estimated about 527 within six month period.

3.2 Study design and period

Institutional based cross sectional study design was conducted at Guna woreda Health Center south Gondar zone, Northwest Ethiopia from February 7-27/ 2019.

3.3 Population

3.3.1 Source population

All Pregnant women who were registered at health center in Guna Woreda for antenatal care follow-up within six month period.

3.3.2 Study unit

Those randomly selected pregnant women during the time of data collection were the Study population.

3.4 Criteria

3.4.1 Inclusion criteria

All pregnant women who were come to the health center for ANC follow up were included in the study and they were accepting the informed consent.

3.4.2 Exclusion criteria

Pregnant women who were seriously ill and delivered excluded from the study.

3.5 Study variable

3.5.1   Dependent variable:

➢ Extra meal consumption

3.5.2   **Meal pattern:** Information about usual meals per day during pregnancy was self-reported from the respondents. The interviewers tick for breakfast, lunch, dinner, snacks and count a number of meals to confirm extra meal consumption as it is recommended by essential nutrition action. Similarly, their access of milk, fruit and vegetable were filled.

3.5.3   **Socio –demographic and socio-economic characteristics:** age, residence, religion, family size, educational level, marital status, occupation, family income level …

3.5.4   **Health services related characteristics**: ANC attendance, Nutrition information, Health condition (nutritional status measured - using a MUAC tape at left hand after the subject was standing up and Blood Hemoglobin level was used to assess anemia using hemocue. .Data on hemoglobin level were collected by reviewing charts of pregnant women).

3.6 Operational definition

✓ Meal: food and/or beverage consumption that occurred at specified time period of the day.

✓ Extra meal consumption: Pregnant women who eat more than three meals per day.

✓ A pregnant Women with <11 g/dl of blood hemoglobin level were considered as anemic.

✓ **MUAC** of pregnant Women <21cm were considered as undernourished and >=21 were well nourished.

3.7 Sample size determination

The sample size was determined by using 26.9% of the pregnant mothers had extra meal consumption during pregnancy in ambo district Oromia Ethiopia(Tolera, Mideksa and Dida, 2018).And using the following assumption: 26.9%of mothers had extra meal consumption with 5% marginal error and 95%CI and a nonresponse rate of 10%. Based on this assumption, the actual sample size for the study was determined using the formula for single population proportion.

$$ni = \frac{(\frac{Z_\alpha}{2})^2 P\,(1\text{-}P)}{d^2}$$

Where: ni= Initial sample size

Z = standard normal distribution corresponding to significance level at a = 0.05 or Confidence interval (CI), 95% = 1.96

P = expected proportion (0.269) of pregnant mothers had extra meal consummation.

d = margin of error (5%) around P

Therefore: - ni $= \frac{(1.96)^2 \times 0.269 \times 0.731}{(0.005)^2} = 303$

N = total study population.

Nonresponse rate = 10% = 31

The total minimum sample size (N) = 334

3.8 Sampling procedure

The calculated sample size was proportionally allocated to the health centers in the respective of their number using ANC registration book prior to the study period. Once the sampling unit was listed, the lottery method was implemented to identify the individual subject from each antenatal care unit.
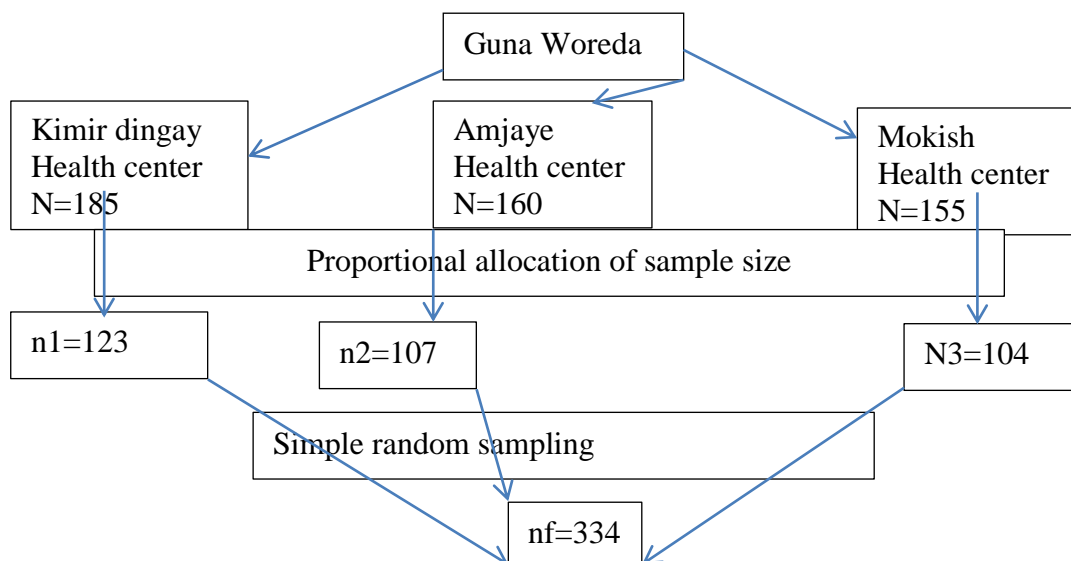
Schematic presentation of sampling procedure

3.9 Data collection procedure (method and tool)

Data were gathered using a structured face-to-face interview administered questionnaire in their health facilities. The questionnaire included 30 questions divided in 3 sections.

Data were collected by one BSc midwife and one BSC HO professional working at each health center ANC unit and supervised myself.

3.10   Data quality control

Data collectors were trained about interview techniques based on the research instrument, purpose and the objectives of the study.

Data were collected using a pre-tested, structured questionnaire adapted from related studies. The adapted questionnaire was modified, contextualized to the local situation and the research objectives. The English version of the questionnaire translate into local language and back to English by an expert to ensure its consistency. The translated Amharic version (local language) was pre-tested prior to the actual survey and modifications were made accordingly. Beside to this, I was checked all the questioners daily for completeness and monitor the overall quality of data to keep in the form of file. Finally I was carefully entered and cleared the data daily to my computer to be ready for analysis.

3.11   Data processing and analysis

Data were entered in to Epi Info version 7 and analyzed using SPSS version 20 statistical software. Both descriptive and analytical statistics were used. Descriptive results have been presented using tables and graphs. Proportion and summary statistics was done to describe the study participants in relation to relevant variables. Both Bivariate and multivariate analysis were carried out. Variables with p value less than 0.2 in bivariate analysis were entered in to multivariate logistic regression model. Variables P value less than 0.05 were taken as statistically significant and adjusted odds ratio with 95% CI was considered to see association.

3.12   Ethical consideration

Ethical approval and clearance was obtained from Bahir Dar Institute Technology prior starting. Permission to conduct the study was obtained from health facility administrator prior to data collection. Objective of the study was clearly explained to participants before conducting the

interview/taking anthropometric measurement and informed consent was obtained from each participant. Data were kept confidential.

3.13   Dissemination of the study result

The result of the study will be presented to Department of Applied Human Nutrition, Bahir Dar University institute of technology applied as part of MSc thesis and it will be shared to health facilities and the results will also be published on peer-reviewed journals.

4 Result

4.1 Socio –demographic characteristics:

A total of 334 pregnant women were interviewed for this study with the response rate of 100%. The mean age of pregnant women was 30 years (+/_ 5). Only 74 (22.2%) of the study subjects were lived in urban area, 260(78.8%) were rural. Almost all participants 315(94.3%) were followers of orthodox, 19(5.7%) were other. From the total respondents 233(69.5%) of husband occupation were farmer, 22(6.6%) were private and the remaining 79(23.7%) were government employee. Among the study subjects above half 173(51.8%) participants had a family size of greater than four,151(45.2%) had three / four and a few of them had less than three,10(3%).Regarding average monthly income of the family, more than half 197 (59%) got greater than 4000 birr, 137(41%) of them got 2000-4000 birr (Table 8.1).

Table8.1: Socio-demographic characteristics of pregnant women in Guna Woreda South Gonder Zone, North West, Ethiopia, February, 2019

Socio-demographic variable	Frequency	Percent (%)
Age group		
<=24	68	20.4
25-35	210	62.9
>=36	56	16.8
Mean	30 years	
Maternal residence		
Urban	74	22.2
Rural	260	77.8
Religion		
Orthodox	315	94.3
Other*	19	5.7
Educational status		
No	223	66.8
Primary	32	9.6
Secondary	11	3.3
Collage and above	68	20.4
Occupation		
Daily laborer	62	9.6
Housewife	172	51.5
Private	68	18.6
Employee	32	20.4
marital status		
Married	296	88.6
Divorced	9	2.7
Separate	29	8.7
Husband Educational status		
No	159	47.6
Primary	51	15.3

Secondary	34	10.2
Collage and above	90	26.9
Husband Occupation		
Farmer	233	69.8
Private	22	6.6
Employee	79	23.7
family size		
<=2	10	3.0
3_4	151	45.2
>=5	173	51.8
Mean	5	
house hold income		
2000_4000	137	41.0
>=4000	197	59.0

*Muslim, protestant

4.2 **Meal pattern:**

Only 11(3.3%) pregnant women's meal frequency during pregnancy were five, above half 185(55.4%) were three, 43(12.9%) were four and 95(28.4%) were two. The most consumed meals were dinner (30.9%) followed by lunch (30.1%) and breakfast (15.4%) respectively (fig.8.3). Regarding meal skipping, only 85(25.4%) of respondents had habits of meal skipping. The factors which make them to skip their regular meal were poor economy 10(3%), personal dislike 8(2.4%), fear of obesity 8(2.4%), workload 59(17.4%).however, 54(16.2%) of pregnant women were taking extra meal during pregnancy. Only 103(30.8%) of the respondents had habits of food aversion during this pregnancy. sixty-two participants (18.6%) were due to cultural belief/taboo and 51(15.3%) personal dislike. In addition, more than half 257(76.9%) of respondents had experienced food craving. Of which, 89 (26.6%) had got the food they craved, but 245 (73.4%) respondents had not get the food they craved. The factors that hinder pregnant mother from craved food were economic issue 188(56.3%) and availability issue 146(43.7%) (Table 8.2).

Table8. 2: meal pattern of pregnant women, Guna Woreda South Gonder Zone, North West, Ethiopia, February, 2019

Variable	Frequency	Percent (%)
frequency of meal per day during pregnancy		
2	95	28.4
3	185	55.4
4	43	12.9
5	11	3.3
Taking snacks between meal		
Yes	56	16.8
No	278	83.2
Reason of not taking snack		
due lack of information	128	38.3
due lack of economy	156	46.7
enough	50	15.0
meal skipping		
Yes	85	25.4
No	249	74.6
reason of meal skipping		
due food hating	8	2.4
fear of obesity	8	2.4
lack of economy	259	77.5
workload	59	17.7
Fasting habit during pregnancy		
yes	287	85.9
no	47	14.1
Avoiding food during pregnancy		
Yes	103	30.8
No	231	69.2
Reason of food avoiding during pregnancy		
hating food item	272	81.4
cultural taboo	62	18.6
reason of cultural taboo		
enlarge the fetus	314	94.0
leaked on fetus head	10	3.0
evil	10	3.0
Getting milk during pregnancy		
Yes	242	72.5
No	92	27.5
Getting fruit and vegetable		
Yes	270	80.8
No	64	19.2
Getting desired food during pregnancy		
Yes	89	26.6

No	245	73.4
Reason of not getting the desired food		
high priced	188	56.3
not available	146	43.7
Extra Meal Consumption		
Yes	54	16.2
No	280	83.8
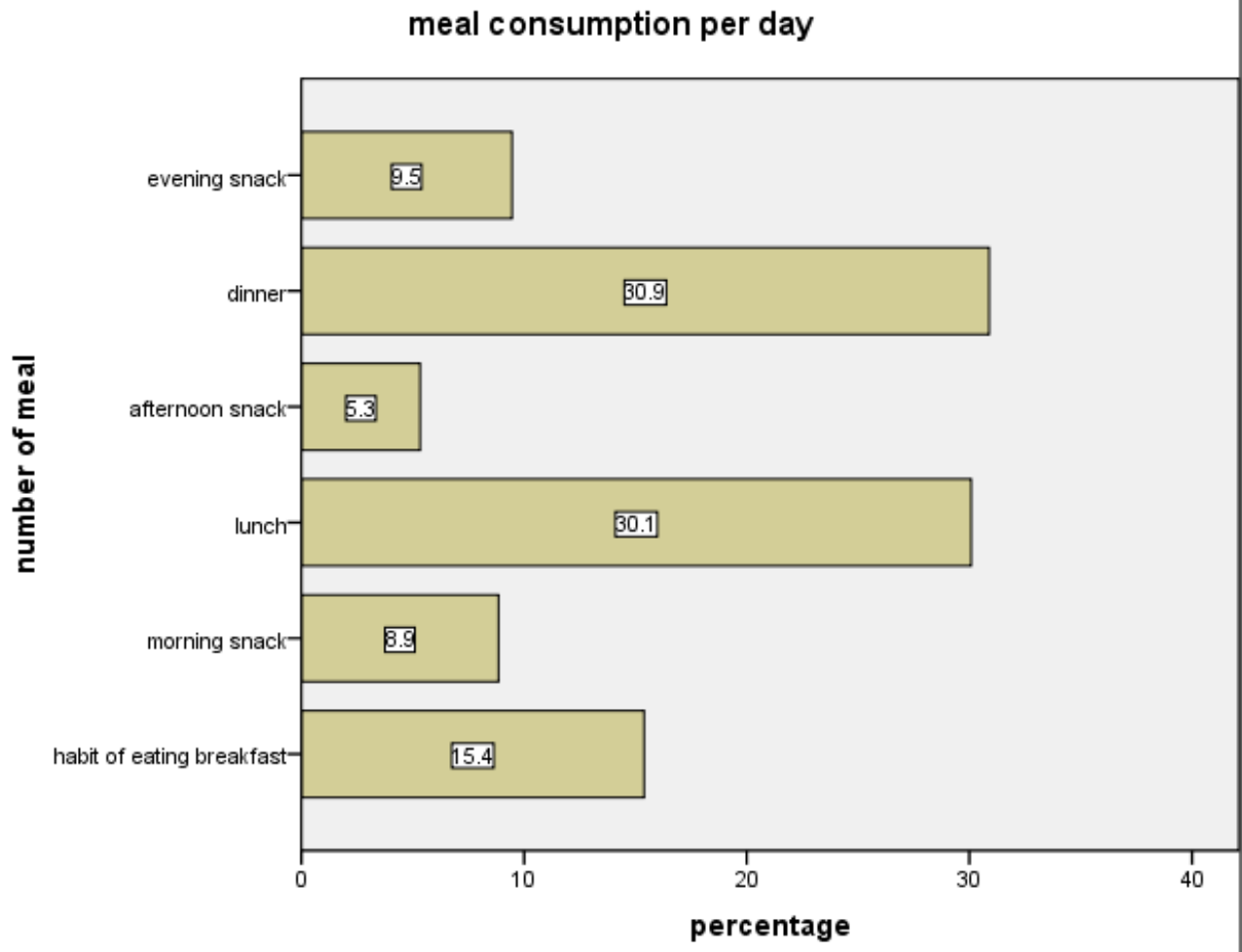
Figure 8.3: meal consumption of pregnant women

4.3 Health services related characteristics,

Majority of the participants were reported as healthy227 (82.9%) but 57(16.1%) were faced pregnancy related disease, 243(72.8%) were malnourished and 18.3 were Anemic. Only 74(22.2%) of the women were followed their weight, 260(77.8%) were not done. Number of ANC attendance for current pregnancy were 69(20.7%) once, 33(9.9%) twice, 41(12.3%) three

and 191(57.2%) four and above. Concerning to getting nutrition information during pregnancy, 246(73.3%) were not gotten but 88(26.3%) had gotten. The source of information were health care provider 22 (6.5%), Family 24 (7.2%), mass media32 (9.6%) and friends 10 (3%) (Table 8.3).

Table8. 3: Health services related characteristics of pregnant women, Guna Woreda South Gonder Zone, North West, Ethiopia, February, 2019

Variable	Frequency	Percent (%)
pregnancy related disease		
Yes	57	16.1
No	227	82.9
Nutritional status		
Well nourished	91	27.2
Malnourished	243	72.8
Anemia		
No	274	81.7
Yes	60	18.3
number of ANC for current pregnancy		
Once	69	20.7
twice	33	9.9
three	41	12.3
four and above	191	57.2
nutrition information		
Yes	88	26.3
No	246	73.7
Source of Nutrition Information		
health care provider	22	6.5
family	24	7.2
mass media	32	9.6
friends	10	3.0
Following Weight		
Yes	74	22.2
No	260	77.8
Did you get rest		
Yes	257	76.9
No	77	23.1

4.4 Factors associated with extra meal consumption

To identify factors associated with extra meal consumption both binary and multivariate logistic regression models were used. Accordingly, factors that were associated with extra meal consumption of pregnant women under binary logistic regression were age, husband educational level, family size, family income, nutrition information, rest and number of ANC visit. The variables that showed significant association with extra meal consumption during pregnancy

adjusted for their confounders using multivariate logistic regression model were family size, nutrition information and number of ANC visit became independent predictor for extra meal consumption.

A pregnant women with household family size >4 persons was 81%less likely extra meal consume during pregnancy compared to their counterpart with household family size <=4 persons (AOR=0.191 at 95% CI (0.020-0.727).

Pregnant women who had no nutrition information had 0.36 times less likely to had extra meal consumption than those who had nutrition information (AOR= 0.36 at 95% CI 0.079-0.957). Finally, relative to women who was visited ANC greater than three times during current pregnancy these who visited only once was 90.6% times less likely extra meal consume during pregnancy (AOR= 0.094 at 95%CI 0.020,0.434)(table8. 3).

Table8 3: bivariate and multivariate analysis of extra meal consumption and associated factor among pregnant women at Guna Woreda South Gonder zone North West, Ethiopia, February ,2019

Variable	Extra meal consumption		COR(95%CI)		AOR(95%CI)
	Yes	No			
Age(years)					
=<24	17(25.0%)	186(88.6%)		1	
25_35	24(11.4%)	51(75.0%)	0.194(0.039,2.077)		0.0857(0.0573,1.255)
>=36	13(23.2%)	43(76.8%)	0.091(0.010,0.970)		0.030 (0.017,1.832)
Husband Educational level					
No	13(12.5%)	46(89.4%)	0.535(0.057,0.923)		0.467(0.002,1.31)
primary	5(10.6%)	17(50.0%)	0.807(0.248,0.840)		0.249(0.112,1.200)
secondary	17(50.0%)	57(63.3%)	0.796(0.261,1.285)		0.340(.125,1.219)
college and above	19(36.7%)	139(87.5%)		1	
Family size					
<=4	26(10.7%)	217(89.3%)		1	
>4	28(30.8%)	63(69.2%)	0.269(0.030,0.7799)		0.191(0.020,0.727)**
Family income					
2000-4000	10(7.3%)	127(92.7%)	0.273(0.076,0.947)		0.098(.0867,1.606)
>4000	44(22.3%)	153(77.7%)		1	
Nutrition information					
Yes	35(39.8%)	227(92.3%)		1	
No	19(7.7%)	53(60.2%)	0.430(0.187,0.866)		0.36 (0.079,0.957)**
Getting rest					

Yes	23(8.9%)	234(91.1%)		1
No	31(40.3%)	46(59.7%)	0.015(0.006,0.120)	0.008(0.006,1.621)
Number of ANC visit for current pregnancy				
Once	9(27.3%)	24(72.7%)	0.365(0.151,0.881)	0.094(0.020,0.434)*
twice	11(15.9%)	58(84.1%)	0.722(0.332,1.572)	1.582(0.244,10.264)
three	11(26.8%)	30(73.2%)	0.373(0.165,0.845)	0.266(0.046,1.550)
four and above	23(12.0%)	168(88.0%)		1

* indicate p-value <0.05 and ** indicate p-value <0.000

5 Discussion

This study assessed extra meal consumption and associated factor among pregnant women attending antenatal care at Guna woreda health center South Gonder zone north west, Ethiopia. According to the essential nutrition action (ENA), taking at least one additional meal per day during pregnancy is recommended for all pregnant women(ENA,Project, 2008). Nevertheless, a higher proportion 280(83.8%) with 95% CI of (80-88%) of the study participants do not take extra meal during their pregnancy time. This figure is almost similar (78.4%) or consistent with study conducted Wondo Gannet district, Southern Ethiopia during pregnancy(Desalegn Kuche *et al.*, 2015). Whereas, the current study is higher than the study conducted in Guto Gida, Ethiopia (60.1%)(Fekadu Beyene, 2013) and Malaysia (26%)(Walters, C., Bendulo, P. and Stoecker, B. J. (2018)).The probable reason for this discrepancy could be the interventions on maternal health, nutrition and other women empowering programs by the government as well as other non-governmental organizations in the study area and due to socio demographic variation.

Taking extra meal during pregnancy significantly associated with family size, nutrition information and number of ANC visit. Study conducted in Ambo district, west Shewa showed that nutrition information, Average monthly income of the family, age of pregnant woman, and husband occupation were identified as important factors affecting extra meal consumption of pregnant mothers during pregnancy. Beside to this, the other study in Wondo Genet district southern, Ethiopia reported that family size, growing chat and growing fruit and vegetables were significantly associated. In this study A pregnant women with household family size >4 persons was 81%less likely extra meal consume during pregnancy compared to their counterpart with household family size <=4 persons (AOR=0.191 at 95% CI (0.020-0.727).similar finding reported by the other study in Wondo Genet district southern, Ethiopia(Desalegn Kuche *et al.*,

2015). This might be related to large family size and sharing the amount of serving among themselves and leaving nothing for the mother to take additional meal.

Pregnant women who had no nutrition information had 0.36 times less likely to had extra meal consumption than those who had nutrition information (AOR= 0.36 at 95% CI 0.079-0.9570). Similar findings in Ambo district, west Shewa revealed that nutrition information had statistical association with extra meal consumption during pregnancy (p<0.000)(Tolera, Mideksa and Dida, 2018). Another study in Addis Ababa reported that Nutrition Education during Pregnancy lead to Healthy Dietary Practice (Zelalem et al.,2017). A study in America also indicated that women's dietary information was predictor of optimal nutrition.(Shehab L.,2012).This might be related to their belief that extra meal for pregnant mean preparing for them and eating alone 'undoable practice' due to lack of awareness.

Finally, relative to women who was visited ANC greater than three times during current pregnancy these who visited only once was 90.6% times less likely extra meal consume during pregnancy (AOR= 0.094 at 95%CI 0.020, 0.434) .This might be because those who frequently visit the health institutions were getting health and nutrition educations as well as advice by the respective health professionals.

Limitation of the study: There may be a recall and/or social desirability bias while subjects were requested to give dietary information. Moreover, cross sectional nature of the study limits measuring the cause and effect relationship

6 Conclusion and Recommendation

6.1 Conclusion

Based on this study finding, it can be concluded that pregnant women found in the study area were suffered from poor dietary practice due to not having extra meal during pregnancy. According to the study result factors affecting extra meal consumption were family size, nutrition information and number of ANC visit.

6.2Recommendation

Policy makers and Health related managers: should focus on the key variables in their future planning to deal with extra meal consumption during pregnancy. They should pay attention on family planning, nutrition information and ANC services.

Health and Health related staffs:

It is recommended providing adequate health education about proper and balanced maternal nutrition at pre-conception care for future mothers and during pregnancy. It is better to prepare leaflets on maternal nutrition and give them for mothers. Beside to this, assess the frequency of a woman's daily meal and their nutritional status during different contact points like community health day, pregnant forum and one to five network and women development army meeting.

The Community at large: Should focus on nutrition education, family planning, nutrition information and ANC services.

Individual: women should be aware the important of consuming extra meal with diversified food.

For further research: Bahir Dar University, institute of technology, department of Applied Human Nutrition also takes responsibility for further assessments to identify additional factors affecting extra meal consumption of pregnant women and food description with the nutrient intake of each meals at the study area. On the same note since there is limited information in the country on extra meal consumption during pregnancy further research in other area is highly r[6[

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Annex:

Annex 1.Information sheet and Consent form for pregnant women (English Version)
Bahir Dar University Faculty of Chemical and Food Engineering, Applied Human Nutrition
Department

Section I. Information sheet

      1. Name of the health center _____

      2. Questionnaire identification no. _____

INTRODUCTION: Good morning/afternoon? My name is _____. In this study, which is undertaken by Zemene Adissie, you and I would have a short discussion of about 20-30 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 extra meal consumption and associated factor among pregnant women attending antenatal care at guna health center in south Gonder , Northwest Ethiopia. The study will be conducted through interviews. The results of the study will inform design of the nutrition intervention strategies targeting pregnant women¨ due to their importance in reproductive and productive roles in the society. 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 or refusal to respond or stop responding to the questions will have no effect now or in the future on services that you or any member of your family may receive from the service providers.

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.

Section II. Consent form for pregnant women

I, the undersigned, have been informed about the purpose of this particular research. 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: 2. if the study subject is voluntary to participate in the study, start the interview.

Interviewer signature certifying that informed consent has been given verbally by the respondent……..

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

Zemene Adissie

Mobile: 09-01-39-85-59

Email:adiszemen.23@gmail.com

Bahir Dar, Ethiopia

Annex 2. English version Questionnaire
Part1: Socio-demographic and socio economic characteristics

S.no.	Question	Response	Skip
101.	How old are you?	_____years	
102.	What is your current marital status?	1. Single 2. Married 3. Divorced 4. Widowed 5. Separated	
103.	What is your Religion?	1. Orthodox Tewahdo 2. Muslim 3. Catholic 4. Protestant 5. Others(specify)_____	
104.	What is your Ethnicity?	1. Amhara 2. Tigrie 3. Oromo 4. Guragie 5. others specify_____	
105.	What is your Family size?	1.One 2. Two 3. three 4. four 5. Five and above	
106.	What is your Educational level?	1. No formal education 2. primary school 3. secondary school 4. college education and above 5. other specify_____	
107.	What is Your husband educational level?	1. No formal education 2. primary school 3. secondary school 4. college education and above 5. other specify_____	
108.	What is your Occupation?	1. Housewife 2. Private business 3. Employee 4. Other specify_____	
		1. Farmer	

109.	What is Your husband occupation?	2. Private business	
		3. Employee	
		4. Other specify_____	
110.	What is the family Monthly income?		
		_____ETB	
111	What is your residence?	1.rural 2.urban	

Part2:meal pattern assessment

| 201. | During a regular day, How many meals do you usually eat daily after pregnancy? | _____
1. Once
2. Twice
3. Three times
4. Four and above_____ | |

202. Now Place a tick sign for meals and snacks that you usually eat.

Breakfast	Snack	Lunch	Snack	Dinner	Snack	Sum

203	Do you have the habits of eating snacks between meals?	1. Yes, I have 2. No, I have not	
204	From Q.203 If you do not have why?	1.Lack of information 2.Poor economy 3.Considered as adequate 4.othe(specify)	
205	Do you skip meal?	1. Yes 2. No	
206	From Q.205 If you skip why?	1.personal dislike 2.fear of obesity 3.poor economy 4.workload 5. other(specify)	
207	Do you have the habit of fasting during pregnancy?	1. Yes 2. No	

208	Do you have the habit of avoiding food during pregnancy?	1. Yes 2. No	
209	From Q.208 If yes why?	1.Personal dislike/Aversion 2.Not allowed to pregnant/cultural taboo 3. other(specify)	
210	From Q.209 Why you avoid food due to cultural taboo?	1.Will make baby big & labor difficulty 2.Will be plastered on fetal head 3.Evil eye 4. other(specify)	
212	Do you get any food strongly craving?	1. Yes 2. No	
213	If no why you don't get?	1.not affordable 2.not available 3. other(specify)	

Part3: health services related characteristics

301	What is your gestational age? .	.____weeks .	
302	Have you gotten pregnancy Associated diseases?	. .1 .yes 2.No	
303	Hemoglobin level	. g/dl .	
304	MUAC	Cm	
305	How many antenatal visits do you have on the current pregnancy?	1. One 2. Two 3. Three 4. Four 5. Other specify	

306.	Have you gotten pregnancy related Nutritional information?	1. Yes 2. No	.
307	If Yes, from where?	1.Health provider 2.Family 3.Media 4.,Friends 5.Others specify	
308	Do you follow your weight during pregnancy?	1. Yes 2. No 3. Don't know	
309	Do you get rest during pregnancy period?	1. Yes 2. No	

Annex 4: Information sheet and Consent form for pregnant women (Amharic Version)

(ነፍሰ- ጡር ለሆኑ ሴቶች የመረጃ መስጫና የፈቃደኝነት መጠየቂያ ቅጽ)

ባህር ዳር ዩኒቨርሲቲ ኬሚካል እና ምግብ ፋካሊቲ የስነ-ምግብ ትምህርት ክፍል

ክፍል 1፤ የመረጃ መስጫ ቅጽ

1. ጥናቱ የሚካሄድበት ጤና ጣቢያ————————————————

2. የመጠይቁ መለያ ቁጥር————————————————————————————

መግቢያ: እንደምን አደሩ/ዋሉ ስሜ———————————— ይባላል፡፡ ዘመነ አዲሴ በሚያካሂደዉ ጥናት እ�ነና አርሰዎ አጠር ያሉት ከ 20-30 ደቂቃ የሚወስድ ውይይት ይኖረናል፡፡ በዚህም ውይይት እንዲተባበሩኝ በትህትና እጠይቃለሁ፡፡ ወደ ውይይቱ ከመግባታችን በፊት ስለ ጥናቱ አላማና ጠቀላላ ሁኔታ ስለማነብለዎት በጥሞና እንዲያዳምጡኝ እጠይቃለሁ፡፡ በመጨረሻም በጥናቱ ለመሳተፍ መስማማትዎንና አለመስማማትዎን ይነግሩኛል፡፡

የዚህ ጥናት አላማ በጉና ወረዳ ከሚኖሩ ነፍሰ-ጡር ሴቶች መካከል ተጨማሪ ምግብ የሚመገቡ ምን ያህሎቹ እንደሆኑ እና ተዘማጅነት ያላቸውን ምክንያቶች ለማወቅ ሲሆን ጥናቱ የሚካሄድበት መንገድ በመረጃ ሰበሰባቢው በሚቀርብ መጠይቅ ይሆናል ፡፡እርሰዎ የሚሰጡት መረጃ በጉና ወረዳና በሀገር አቀፍ ደረጃ ለሚገኙ ነፍሰ-ጡር ሴቶች ስለ ምግብ የሚያስፈልጋቸውን መረጃ ለማድረስ ይረዳል፡፡

በቆይታዉ ሁሉ ምስጢር እንደምንጠብቅ እያረጋገጥኩኝ እያንዳንዱ ተሳታፊ የተለየ መለያ ቁጥር ሲኖረዉ ስመዎን ግን አንጠቅስም፡፡

ለማንኛዉም ጥያቄ የሚሰጡት ምላሽ ለሌላ ሰው ተላልፎ አይሰጥም፡፡ የጥናቱ ውጤት ሪፖርትም ስለ እርሰዎ አይገልጽም፡፡ በተጨማሪም የጥናቱ ሪፖርት ቢታተም የሚያወጣው ስለ አጠቃላይ ተሳታፊ ሰዎች ይሆናል፡፡ መጠይቁ በፈቃደኝነት ላይ ብቻ ሲሆን የእርሰዎ መሳተፍ ወይም አለመሳተፍ እንዲሁም ጥያቄዎችን ለመመለስ ፈቃደኛ አለመሆንና በጥቁው ወቅት አቋርጠ መውጣት አሁንም ይሁን ወደፊት እርሰዎም ይሁኑ ቤተሰበዎ በሚያገኙት አገልግሎት ላይ ምንም አይነት ተጽዕኖ አይኖረውም፤ በጥናቱ ላይ ተሳታፊ በመሆነዎም የሚሰጥ ክፍያም አይኖርም፡፡

ለመሳተፍ ፈቃደኛ ነዎት?

1. (   ) አዎ   2. (   ) አይደለሁም

አመሰግናለሁ!!!

ማስታወሻ: የትናቱ ተሳታፊ በጥናቱ ላይ ለመሳተፍ ፈቃደኛ ከሆኑ ወደ ፈቃደኛነት ማረጋገጫ ቅጽ ይለፉ::

ክፍሌ 2: ነፍስ-ጡር ለሆኑ ሴቶች የፈቃደኛነት መጠየቂያ ቅጽ

ከታች ፈርማዬን ያኖረኩት እኔ የጥናቱ ዓላማ የተነገረኝ ሲሆን የምጠየቀው ጥያቄ የማቀውን መመለስ እንደምችል፤ እኔ የምስጠው ለዚህ ጥናት አገልግሎት ብቻ የሚውል ሲሆን ስሜንና የምስጠውን መረጃ በምስጢር እንደሚጠበቅ ተነግሮኛል:: ፍላጎት ከለለኝ በጥናቱ ያለመሳተፍ ፤ጥያቄ ያለመመለስና በጥያቄው መካከል አቋርጬ መውጣት እንደምችል ተነግሮኛል:: በዚህ መሰረት በጥናቱ ለመሳተፍ ፈቃደኛ መሆኔን በፊርማዬ አረጋግጣለሁ::

ፊርማ ---------------------------

ቀን ---------------------------

ማስታዎሻ:

1. የጥናቱ ተሳታፊ በጥናቱ ፈቃደኛ ከሆኑ መጠይቁን ይጀምሩ::
2. የጥናቱ ተሳታፊ ፈቃደኛ መሆናቸውን የሚያረጋግጥ የመረጃ ሰበሰባቢው ስምና ፊርማ

ስም _____

ፊርማ_____

ስልክ _____

ማንኛውም ገለጻ የሚያስፈልጋቸው ነገሮች ካለ መረጃ ሰበሰባቢውንም ሆነ ዋና ተመራማሪውን በአካልም ሆነ በአድራሻው ይጠይቁ::

የዋና ተመራማሪው አድራሻ :

ዘመነ አዲሴ

ባህር ዳር ዩኒቨርሲቲ ኬሚካል እና ምግብ ፋኩሊቲ የስነ-ምግብ ትምህርት ክፍል

ስልክ ቁጥር 09 01398559,

ኢሜል:adiszemen.23@gmail.com ,

ባህር ዳር፤ ኢትዮጵያ

Annex 6. Amharic Version Questionnaire

ክፍል 1፡ አጠቃላይ ማህበራዊና ስነ-ህዝባዊ ሁኔታ

ተ.ቁ	ጥያቄዎች	መልሶች (አማራጮች)	አስተያየት
101	ዕድሜዎት ስንት ነዉ?	...................ዓመት	
102	ሃይማኖትዎ ምንድን ነው?	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶልክ 5. አድቬንትስት 6.ሌላ (ይገለፅ)..................	
103	የየትኛዉ ብሄረ አባል ነዎት?	1. አማራ 2. ትግሬ 3. ኦሮሞ 4. ሌላ (ይገለፅ)................	
104	የትዳርዎ ሁኔታ ምንድን ነው?	1. ያገባች 2. ያላገባች 3. የተፋታች 4. የሞተባት 5. ተለይታ የምትኖር	
105	የሚኖሩ የት ነዉ?	1.ከተማ 2.ገጠር	
106	የቤተሰብዎ ብዛት ምን ያክል ነዉ?	....	
107	የትምህርት ደረጃዎ/ክፍልዎ ስንት ነው?	1.የለኝም 2.የመጀመሪያ ደረጃ 3.ሁለተኛ ደረጃ 4.ኮሌጅ እና በላይ	
108	የተሰማሩበት የስራ መስክ/ዋና ስራዎ ምንድን ነው?	1. የቤት እመቤት 2. የግብርና ሙያ 3. የግል ስራ 4. የመንግስት ተቀጣሪ 5. ሌላ (ይገለፅ)	

109	የባለቤተዋ የትምህርት ደረጃ/ክፍል ስንት ነው?	1.የለዉም	
		2.የመጀመሪያ ደረጃ	
		3.ሁለተኛ ደረጃ	
		4.ኮሌጅ እና በላይ	
110	ባለቤተዋ የተሰማሩበት የስራ መስክ/ዋና ስራ ምንድን ነው?	1. የግብርና ሙያ	
		2 የግል ስራ	
		3. የመንግስት ተቀጣሪ	
		4. ሌላ (ይገለፅ)	
		....	
III	የቤትሰብዎ የወር ገቢ ምንያክል ነው?	_____ብር	

ክፍል 2፡ የምግብ አመጋገብ ልምድ ዳሰሳ

| 201 | በቀን ምን ያህል ጊዜ ይመገባሉ? | ___ጊዜ በቀን | |

202. በትላንትናዉ ዕለት በቤት ዉስጥ እና ከቤት ዉጭ የተመገቧቸዉን የምግብ ... እባክዎ በዝርዝር ይንገሩን

ቁርስ	መክሰስ	ምሳ	መክሰስ	ራት	መክሰስ

203	በዋና ዋና የመመገቢያ ሰዓታት መካከል መክሰስ(ማቆያ) የመመገብ ልምድ አለዎት?	1.አዎ	
		2. የለኝም	
204	መክሰስ(ማቆያ) የመመገብ ልምድ ከለለዎት ምክንያቱ ምን ሊሆን ይችላል?	1.መረጃ/እዉቀና ስለለ	
		2.የኢኮኖሚ እትረት ስላለ	
		3.በቂ ስለሆነ	
		4.ሌላ(ይገለፅ)	
205	ዋና ዋና የመመገቢያ ሰዓታት የመዝለል ልምድ አለዎት?	1.አዎ	
		2. የለኝም	
206	የ205 መልሰዎ አዎ ከሆነ ምክንያቱ ምን ሊሆን ይችላል?	1.የማልወዳቸዉ ምግቦች ሲኖሩ	
		2.ዉፍረት ስለምፈራ	
		3.የኢኮኖሚ እትረት ስላለ	
		4.የስራ ጫና ስላለ	
		5. ሌላ(ይገለፅ)	
207	በርግዝና ወቅት የመጾም ልምድ አለዎት?	1.አዎ	
		2. የለኝም	
		3.አላቅም	

208	በርግዝና ወቅት የምትጠሉት ምግብ አለ?	1.አዎ 2. የለኝም 3.አላቅም	
209	የ208 መልሰዎ አዎ ከሆነ ምክንያቱ ምን ሊሆን ይችላል?	1.የማልወዳቸዉ ምግቦች ሲኖሩ 2.በባህላችን የተከለከለ ስለሚሆን 3. ሌላ(ይገለፅ)	
210	ባህላችን ለነፍሰ-ጡሮት ምግቦችን የሚከለክልበት ምክንያት ምን ሊሆን ይችላል?	1.ፅንሱን በማፋፋት ለወልጆ ስለሚስቸግር 2.በፅንሱ አናት ላይ ይንጠባጠባል 3.ለቡዳ ሲባል 4. ሌላ(ይገለፅ)	
211	በርግዝና ወቅት የሚያምርሽ ምግብ ነበር?	1.አዎ 2. የለኝም	
212	የ211 መልሰዎ አዎ ከሆነ ምክንያቱ ምን ሊሆን ይችላል?	1.በቀለሙ 2.በማዛዉ 3.አላቅም 4. ሌላ(ይገለፅ)	
213	በርግዝና ወቅት የሚያምርሽን ምግብ በቀላሉ አገኝተሽ ነበር?	1.አዎ 2. የለኝም	
214	213መልሰዎ የለም ከሆነ ምክንያቱ ምን ሊሆን ይችላል?	1.ዋጋው ተመጣጣኝ አይደለም 2. አይገኝም 3. ሌላ (ይግለጹ	

ክፍል 3፦የወሊድ እና ጤና ሁኔታ

301	ከፅነሱ (ነፍስ ጡር ከሆኑ) ምን ያክል ግዜ ሆነዎት?	_____ሳምንት	
302	ከእርግዝናሽ ጋር የተያያዘ የበሽታ ሁኔታ	1. የደም ግፈት 2. የስኳር	

		3. የኩላሊት
		4. ሌሎች (ይጠቀስ)
		5. የለብኝም
303	ለዚህ ፅንስ ምንያክል የቅድመ-ወሊድ ክትትል አድርገዋል?	1. አንዴ
		2. ሁትለ
		3. ሦስት
		4. አራትና ከዚያ በላይ
304	ከእርግዝና ጋር በተያያዘ ስለ ስርአተ-ምግብ መረጃ አግኝተዋል?	1. አዎ
		2. አላገኘሁም
305	አዎ ከሆነ መሌስዎ: መረጃውን ከየት አገኙ?	1. ከጤና ባለሙያ
		2. ከቤተሰብ
		3. ከመገናኛ ብዙሃን
		4. ከጉደኛ
		5.ሌሎች
		ምንጮች_____
306	በእርግዝና ወቅት ከብደተዎን ይከታተላሉ?	1. አዎ
		2. አልከታተልም
		3. አሊስታውስም/አላቅም