1. INTRODUCTION

1.1. Background

Gestational weight gain (GWG) can be defined as the amount of weight gain between conception and just before the birth of the infant; it is a unique and complex biological phenomenon that supports the functions of growth and development of the fetus (1). Gestational weight gain has been regarded as an indicator of maternal and fetal wellbeing (2). It comprises product of conception including the fetus, placenta and amniotic fluid comprise approximately 35% of total GWG, changes in maternal tissues uterus, breast, blood and to a similar extent, liver and intestinal mucosa), and changes in body composition with a significant increase in total body water, subcutaneous fat and protein reserves (3).

Total gestational weight gain and rate of gestational weight gain is the most commonly used indicator in maternal anthropometry. Total GWG is obtained by subtracting the weight before pregnancy from the weight at the end of pregnancy (usually measured just before childbirth). Rate of GWG is measured by subtracting first recorded weight which was taken when mother was preferable less than 21 weeks of gestational age with last recorded weight then dividing it by respective weeks (4).

A variety of guidelines about the GWG exist; their approach in GWG management also varies. The first guidelines published by institute of medicine was in 1990, recommendations for weight gain depending on pre-pregnancy weight, in an attempt to balance the benefits of increased fetal growth with the risks of complicated labor and delivery and of postpartum maternal weight retention. In 2009, the Institute of Medicine published updated guidelines for weight gain during pregnancy, the new recommendations were based on WHO BMI classes and included a specific and relatively narrow range of suggested GWG recommending that women who are obese should aim for lower weight gains and those women who has low pre-pregnancy BMI should have more weight gain (5).

Table1 Recommendations for total weight gain and rate of weight gain during pregnancy according to pre-pregnancy body mass index (BMI) (singleton pregnancies), Institute of Medicine, 2009

Pre-pregnancy BMI	**Recommended Total Weight Gain**	***Recommended Rates of Weight Gain in 2nd & 3rd Trimester*** [a] *Mean (range)*
Underweight < 18.5kg/m2	**12.5 – 18 kg**	***0.51 (0.44 – 0.58) kg/week***
Healthy weight 18.5 – 24.9kg/m2	**11.5 – 16 kg**	***0.42 (0.35 – 0.50) kg/week***
Overweight 25.0 – 29.9kg/m2	**7 – 11.5 kg**	***0.28 (0.23 – 0.33) kg/week***
Obese ≥ 30.0kg/m2	**5 – 9 kg**	***0.22 (0.17 – 0.27) kg/week***

Gestational weight gain above recommended IOM guidelines have been related to several health problems for the mother and infant such as hypertensive conditions, pre-eclampsia, gestational diabetes, thromboembolic events (6). Moreover women with excessive GWG are more likely to have high postpartum weight retention (7). In other hand underweight women who do not gain enough weight during pregnancy are at risk of small for gestational age neonates and preterm birth, birth outcomes associated with poor health later in life for the neonate (1).

Overweight or obese pregnant women are at an increased risk of stillbirth or perinatal death and labor and birth complications may require labor induction and caesarian section (8). overweight and obese women are more likely to have excessive GWG (9). Infants born from overweight or obese pregnant women are at greater risk of macrosomia, congenital anomaly, preterm birth, and may need admission to a neonatal intensive care unit (10). These infants are also at a greater risk of overweight and obesity later on in life (11).

Inadequate maternal nutritional status before conception and low gestational weight gain (poor maternal nutrition during pregnancy primarily due to inadequate dietary intake) are the major determinants of growth retardation in utero (12). women's who enter pregnancy with inadequate weight contributes directly to low birth weight incidence among term births (13).

1.2. **Statement of the problem**

Sixty three systematic review and meta-analysis papers from 29 countries which were only published after the 2009 IOM guidelines display a global high prevalence of GWG above and below the 2009 IOM cutoff points, 27.8 and 39.4%, respectively. Furthermore, the mean GWG and prevalence of GWG above guidelines have increased (14).

Between 1980 to 2008 globally underweight decreased slightly in women of childbearing age from 15- 13% while overweight increased from 23- 34%. However, underweight is 5–10% higher in poor countries like Bangladesh, Cambodia, Ethiopia, Nepal, and Senegal, in these 5 countries 20–25% of women are underweight–an estimated 12 million pregnant and lactating women are too thin. There is little information on the proportion of pregnant women who do not gain adequate weight, based on their pre-pregnancy BMI (15).

Many studies point out various predictors that affect nutritional status and behavior, of pregnant women, which in turn has adverse effects on both the mother and the fetus (16-18). Maternal, behavioral, and social factors, which include maternal pre-pregnancy body mass index (BMI), parity, maternal age, substance use, educational status, healthy eating, physical activity, and adequate counseling of mothers on weight gain during pregnancy is strong predictors of gestational weight gain.

Recently studies have attempted to identify predictors of GWG but they remain poorly understood and some findings have been somewhat inconsistence (13). This is most likely due to the difficulties associated with not having enough longitudinal cohort data following entire pregnancy period, and as such GWG remains a neglected public health issue. The contributions of different and specific predictors of gestational weight gain are under studied in our country. Recognizing these predictors can be a useful since many of these predictors can be modifiable if it is screened early on pregnancy which allows timely, effective and specific intervention to be practiced.

1.3. Significance of the study

Identifying key predictors of gestational weight gain is very important to provide preventive intervention and attention that will benefit pregnant women's to gain appropriate weight. It also helps policy makers and other organizations working with maternal and child health to understand and decide on which factor to intervene at the right time. In addition it will serve as a good reference for future researchers on predictors and rate of gestational weight gain and allow others to conduct further research on gestational weight gain. It will also inform health practitioners and other stakeholders about the current rate of gestational weight gain and different predictors (if there is one) to understand which are modifiable practices at what period of time. In general the finding of this study will assess rate of gestational weight gain and its predictors.

2. Literature review

2.1. Rate of weight gain during pregnancy

Rate of gestational weight gain was defined as the amount of gestational weight gain per week. It was assessed by subtracting first recorded weight with last recorded weight then dividing it by respective weeks. Based on 2009 IOM recommendation GWG were classified in to three categories, low gestational weight gain, adequate weight gain and excess weight gain based on pre-pregnancy BMI. Few studies have been done in developing countries especially in Africa, some studies shows that low GWG is common problem during pregnancy and it has been found to contribute to adverse maternal and neonatal outcome (19).

A prospective, multi-Centre international screening cohort study conducted between November 2004 and February 2011, in 1950 healthy, nulliparous women with singleton pregnancies in, Australia. The mean weight gain in the whole cohort was 12.3 kg. In general 74.3% of the study participants had high GWG, while 17.2% had normal GWG and 8.6% had low GWG. Compared to those with normal GWG, high GWG was more common in women who were overweight or obese (20).

The American Institute of Medicine (IOM) guidelines was used in prospective cohort study in Matlab, rural Bangladesh. GWG adequacy among 208 eligible women, GWG was adequate for 19.8% of the participants, while 58% had an inadequate GWG and 22.2% had an excessive GWG. Pre-pregnancy BMI was significantly associated with being below, within or above these guidelines. Among underweight women 75.0% had inadequate GWG and among overweight women 34.3% had excessive GWG The prevalence of overweight was 17% and the mean GWG was low (0.34 kg/week) (21).

In addition study done in 1079 pregnant women's in Rio de Janeiro, Brazil using Brazilian Ministry of Health recommendation of weight gain during pregnancy. In this study mean weight gain was 12.3kg, and women with obesity at the beginning of the pregnancy gained less weight (9.8kg ± 7.9) than those with adequate weight (13.5kg ± 6.1), low weight (12.8kg ± 6.0), or overweight (12.1kg ± 6.9). Fewer than 30% of the sample displayed adequate weight gain for

gestational age, while nearly 50% of the pregnant women gained more weight than recommended (22).

Another study done in UAE from a prospective Mother-Infant Study Cohort (MISC) included 256 pregnant women. According to this study women who were under-weight , normal , overweight and obese before pregnancy has 18.2, 22.6, 53.9 and 48.7% insufficient GWG respectively, while Women who were under-weight , normal , overweight and obese before pregnancy has 18.2, 22.6, 53.9 and 48.7% respectively. Most importantly women with a normal pre-pregnancy BMI has the highest proportion of adequate GWG (23).

Study conducted in Uganda based on the Uganda MOH recommendation which is adapted from 2009 IOM guideline on 221 pregnant women. Significantly higher number of participants, that is, 62.5% gained less than the recommended GWG and 34.4% gained adequate weight gain, while only 3.1% gained above the recommended (24).

Based on IOM guideline an institutional based quantitative cross-sectional study design was conducted in 411women's who had given birth at health institutions from January to July of 2014 in Harari Regional State. 72 % of them had a normal body weight, whereas 14.6 % were overweight. The mean weight gain during their pregnancy was 8.96 kg. Underweight and obese women gained 9.14 and 6.44, respectively. 69.3 % of the women gained inadequate gestational weight, but only 2.7 % respondents gained excessive gestational weight. (25).

1.2 predictors of gestational weight gain

2.2.1. Pre-pregnancy BMI and gestational weight gain

Pre-pregnancy BMI is the most modifiable risk factor for unhealthy GWG (inadequate and excess).A secondary study conducted in New York City on predictors of GWG shows that, over one third of pregnant women had inadequate GWG. Moreover in this observational study 57% of women who had normal pre-pregnancy BMI had inadequate GWG, while 35% of overweight and 36% of obese women before pregnancy had excessive GWG. In this study women with

overweight and excess pre-pregnancy BMI were more likely to gain excessive GWG than women who had normal pre-pregnancy BMI (16).

The Mother and Infant Nutritional Assessment (MINA) cohort study done in Qatar and Lebanon showed that 42% of women in Lebanon and Qatar entered pregnancy overweight (BMI exceeding 25 kg/m2), and only 30% had adequate GWG. Qatari nationality, lower educational level and older age was associated with high maternal pre-pregnancy BMI. In turn, a higher pre-pregnancy BMI was found to be an independent risk factor for excessive GWG (26).

Study done in Bangladesh based on IOM guidelines showed that, 19.8% of the participants gained adequate, while 58.0% gained inadequate GWG and 22.2% had an excessive GWG. Similar to other studies pre-pregnancy BMI was significantly associated with being below, within or above these guidelines. Excessive GWG was seen among 34.3% of overweight women and inadequate GWG was seen among 75.5% of underweight women (p-value 0.007) (21).

2.2.2. Knowledge towards gestational weight gain

Study done in Houston, USA on African American participant indicated that women who knew their pre-pregnancy weight status were twice as likely to be knowledgeable about GWG recommendations as women who did not know their pre-pregnancy weight status. Ninety-four percent said achieving healthy GWG was important to them. Thirty-one percent of the sample had knowledge of GWG recommendations. Sixty-nine percent were incorrect about their pre-pregnancy weight status (27).

In addition, low proportion of women in Nottingham who was weighed during their routine contact at ANC clinics reported having received advice after these measurements. The result added 39.4% of the participants reported they were aware of guidance around weight change during pregnancy, and 59 women reported that guidance recommended a weight gain of 11.3 kg. 80.8% of the participants reported that healthcare professionals were main sources of information, 79.3% print and online information, and 37.8% family and friends (28).

Two hundred pregnant women over the age of 18 receiving prenatal care at a tertiary care center in Danville, Pennsylvania participated in this study. Most women reported that their health care provider had discussed their weight and diet (78.8%), the expected amount of weight they should

gain (81.6%), exercise and physical activity during pregnancy (79.8). Fewer, but still a majority of women reported being told about possible harms to their baby (67.0%), possible harms to themselves (65.4%), and possible problems with delivery (64.6%) from excessive GWG (29).

Four focus groups stratified by level of acculturation and BMI with a total of 29 Hispanic women at tertiary care facility in Western Massachusetts; women did not consider standard weight gain recommendations to be important and thought they should be individualized. Overall, weight gain advice, knowledge about weight gain recommendations and attitudes towards weight gain recommendations differed by weight status, whereas weight gain advice, dietary beliefs and feelings about weight gain differed according to acculturation status (30).

2.2.3. Parity and GWG

Parity had the largest effect on both gaining above and below recommendations. First, primiparous women tend to gain the most weight during pregnancy, second, for women with higher parity (4+) gain more weight in association with pregnancy. For women of greater parity, the association between maternal body weight and parity is partly can be explained by cumulative excess gestational weight gained during successive pregnancies, and partly the result of gaining more weight from the beginning of one pregnancy to the next at later pregnancies (31).

Participants at Geisinger prenatal health care in central and northeastern Pennsylvania who were mostly non-Hispanic white, rural population, showed that parity was the most important factor determining GWG outcomes. Excess GWG consistently declined with parity (62.6, 56.4, and 46.3% for first birth, second birth, and more than one previous birth, respectively). Conversely, the proportion of pregnant mothers gaining inadequate GWG was lowest for a first birth (14%), almost doubling to 26% for women with two or more previous births (32).

Study done on Brazil using observational control study showed no difference regarding pregnant women in both primiparous and multiparous group regarding gaining excess GWG. In both group one third of the entire participant gained excess GWG. Except pregnant women who were underweight before 11 weeks of gestation only 35% of the both primipara and multipara participant gained adequate according to the recommended IOM guideline (33).

2.2.4. Food insecurity and GWG

Food insecurity during pregnancy not only affects physiological health but also influences behavior and mental health which in turn mediates the association with gestational weight gain. 2017 study in South Florida showed that food insecure women are 60% more likely to gain below the IOM range compared to food secure women in unadjusted model (34).

In mini review done on prevalence of food insecurity and its association with gestational weight gain in different part of the world (Ethiopia, South Africa, Brazil, Bangladesh, South America, Colombia and so on), the prevalence of food insecurity in women during the gestational period ranged from 9.0% to 87.9%, with the lowest prevalence found in developed countries and the highest in developing countries. There was also observed a significant association with gestational weight gain (either inadequate or excess) (35)

However, cross sectional study done in Hamadan County, Iran, in 2018 classified food security status in in to 4; food security, hunger-free food insecurity, medium-hunger food insecurity, severe-hunger food insecurity. According to this study there was no statistically significant association between food insecurity and gestational weight gain pattern(36).

Similarly, 2016 California study showed that food insecurity was not associated with gestational weight gain after adjusting for age, education, household income, marital status, nativity, race/ethnicity, language spoken at home, health insurance, parity, pre-pregnancy BMI, smoking during pregnancy, gestational age, and year of survey. However, as an effect modifier for association between food insecurity and gestational weight gain race/ethnicity was identified using Wald tests ($p=0.12$) (37).

In contrast, prospective cohort study done using the United States Department of Agriculture (USDA) 18-item Core Food Security Module (CFSM) in North Carolina identified a significant association between food insecurity and gestational weight gain after adjusting for age, race, income, education, marital status, number of children, smoking, physical activity, gestational age and pre-gravid BMI. Generally women from food insecure households gained 1.87 kilograms, or 4 pounds, more than women from food secure household (38).

2.2.5. Behavioral factors and GWG

Substance use during pregnancy is the most common and modifiable factor affecting maternal and neonatal outcomes in both developing and developed worlds. Substance use during pregnancy directly can affect the fetus by directly passing through placental barrier and also indirectly by affecting maternal health habit including diet. Study done in Jimma town, Ethiopia showed that the overall prevalence of substance use among pregnant women in the study area was 37.9%, predominantly with khat chewing 65.8% followed by alcohol consumption 29.7% and cigarette smoking 2.7% (39).

A population based prospective cohort study done in Sri-lanka indicated that one of the determinants of excessive GWG was passive smoking during their third trimester. Pregnant women's who were exposed to cigarettes smoking has 88% chance of gaining excess gestational weight gain (40).

Study done on healthy nulliparous women in Adelaide, Australia, Auckland, New Zealand, and Cork, Ireland showed that there has been association between excessive GWG and smoking. In this study group pregnant women's who stopped smoking at or before 14 to 16 weeks of gestational age were 50% most likely to gain excessive GWG compared to non-smokers pregnant women's (41).

Another study done in USA, data are from the UW eHealth Public Health Information Exchange (PHINEX) from 2007-2012, effects of smoking on gestational weight gain indicates that excessive gestational weight gain was dominant on former smokers and current smokers are at increased risk for insufficient weight gain, relative to people who have never smoked(42, 43).

Alcohol consumption among pregnant women has been increased significantly in the last decades. WHO alcohol guidelines indicated that alcohol-related harm is determined by the volume of alcohol consumed, the pattern of drinking, and, on rare occasions, the quality of alcohol consumed. Quality and quantity of proper nutrient supply and energy intake during pregnancy can adversely affected by alcohol consumption (44). Strongly diet quality is poorest among the drinkers who consumed the high quantity with lower frequency and best among the drinkers who consumed low quantity but with higher frequency. Consuming excess amount of

alcohol interferes with the nutritional status of the drinker, moreover there is a problem with alcoholics consuming a balanced diet (45).

2.2.6. Psychosocial factors and GWG

Psychosocial factors such as stress, anxiety, depression, social support were a predictor of adequacy of GWG. Study done central North Carolina found that from psychosocial status variables depression were significantly related to the adequacy of GWG. There has been a positive relation between excessive GWG and elevated depression symptoms both at earlier and later stages of pregnancy (46).

Study done among women in Northern California assessing perceived stress near the time of gestational diabetes diagnosis indicated that high level of stress was significantly associated with twice the risk of excess GWG compared with women with low stress. The association between high stress and excess GWG persisted when examining maternal pregnancy weight gain which defined as total pregnancy weight gain minus infant birth weight suggesting maternal stress was impacting maternal weight independent of fetal growth (47).

Population-based prospective cohort study, done in Netherland showed that the prevalence of Psychological distress, depression, and anxiety among pregnant women were 7.0%, 7.0%, and 8.4% of all pregnant women, respectively. In this study prevalence of psychological distress, depression, and anxiety showed variance between BMI groups. However there was no significant association of psychological distress, depression, and anxiety with GWG (48).

Many studies support the effects of intimate partner violence (IPV) on of IPV during pregnancy in contributing to adverse maternal and neonatal outcomes. Yet, until recently it is a neglected public health issue with significant negative influence. There are several mechanisms to how IPV influence maternal and neonatal outcomes including physical effect, emotional effect and biological effects. The first and important factor is to identify and treat IPV during pregnancy by training of health providers (49).

2.2.7. Dietary diversity and dietary practice with GWG

Dietary diversity is a significant predictor of pregnancy outcome, it ensures optimal intake of essential nutrients for maintaining good health both for the mother and fetus. Ethiopia has diverse agro-ecological and cultural variations and is greatly influenced by socio-demographic, culture and individual (education, preference…) dietary diversity before and during pregnancy have a potential influence on GWG (50). Dietary diversity score (DDS), is a simple, rapid and significant tool used as an indicator for assessing the adequacy of nutrient and energy intake, diet quality and it's also an important indicator of food insecurity (51).

A prospective cohort study in Kilite-Awlaelo Health and Demographic Surveillance Site (KA-HDSS) in Tigray region, northern Ethiopia which was conducted between February 2018 and January 2019, showed a U-shaped association between dietary diversity and gestational weight gain. A dietary diversity score below five was inversely related to weight gain. In contrast, the association between dietary diversity score above five and weight gain was positive (52).

A randomized clinical trial conducted among pregnant women in urban Tanzania which enrolled pregnant women before 27 weeks of gestation. This trial prospectively examined the associations of maternal dietary diversity and diet quality, using Minimum Dietary Diversity for Women (MDD-W) with GWG. This study indicated that minimum dietary diversity of pregnant women showed no association with any of the GWG outcomes , including inadequate GWG, excessive GWG, or inappropriate GWG (53).

In developing countries pregnant women has a greater chance of being malnourshed that a majority of pregnant women have inadequate nutrient intakes due to socio-economic constraints, frequent reproductive cycles and cultural constraints. Also, dietary diversity is shown as a proxy of food security, which may show holistic picture 0f the mother's dietary sufficiency.

3. Objective

3.2. General objective

- To assess rate and predictor of gestational weight gain in Butajira Ethiopia,2021: a community based cohort study

3.3. Specific objective

- To assess rate of gestational weight gain in Butajira Ethiopia,2021: a community based cohort study
- To identify associations between pre-pregnancy BMI, substance use, health behaviors, and psychosocial factors and rate of gestational weight gain in Butajira Ethiopia,2021: a community based cohort study

4. Method and material

4.2. Study area

The study was conducted in the Butajira District of southern Ethiopia, which is located approximately 130 km from Addis Ababa (the capital city of Ethiopia) in the Gurage Zone in the Southern Nations Nationalities and People's Region (SNNPR). The town has a latitude and longitude of 8°07′N 38°22′E and an elevation of 2131 meters above sea level. Based on the 2007 Census conducted by the central statistics agency (CSA), this town has a total population of 33,406. Out of these 16,923 are men and 16,483 women. The majority of the populations were reported as Muslim, with 51.27%, while 39.58% Orthodox and 8.72% were Protestants. The district houses a Rural Health Program (BRHP) (owned and operated by Addis Ababa University), which is a health and demographic surveillance system (HDSS) with a continuous registration of vital and migratory events among ten selected villages. The studied district was purposely selected for the benefit of a better sampling frame and research infrastructure.

4.3. Study design and period

The study was analysis of secondary data from the Butajira Nutrition, Mental health and Pregnancy (BUNMAP) project in Ethiopia, a population-based cohort established in 2016. The cohort is established with a primary aim of evaluating the effect of economic, psychological and quality aspects of food and nutrition on pregnancy outcomes, child growth and development. This cohort of pregnant women and their offspring living in selected clusters of Butajira Health and Demographic Surveillance Site (HDSS), South Ethiopia.

The study was conducted from January 2018 to December 2019.

4.4. Source population

The source population was all pregnant women in Butajira HDSS.

4.5. Study population

The study population was randomly selected pregnant women who are enrolled in the survey before or at 16 weeks of gestation from the BUNMUP cohort data in Butajira HDSS.

4.6. Inclusion criteria

- Pregnant women with first recorded weight ≤ 16 weeks of gestation
- Pregnant women who completed the study

4.7. Exclusion criteria

- Multiple pregnancies
- Age less than 18 years
- Missing information from baseline study

4.8. Sample size determination

Single population proportion formula was used to calculate the minimum sample size for the first specific objective

$$\boldsymbol{N} = \frac{\left(Z\alpha_{/2}\right)^2 \mathrm{p}\,(1-\mathrm{p})}{\mathrm{d}^2}$$

Where: N = required sample size

Zα/2 = critical value for normal distribution at 95% confidence level which equals to 1.96 (z value at α =0.05)

P = an estimate of the prevalence rate for the population

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

To calculate for the first objective, total gestational weight gain

The study conducted in Harari, Ethiopia shows that the overall gestational weight gain of the participants, and 69.3% has inadequate weight gain with a P-value of <0.05 (25).

N = $(1.96)^2$ * 0.69 * 0.31/ $(0.05)^2$ = 328 then after adding 10% contingency rate the final sample size is 360.

Double population proportion formula is used to calculate the minimum sample size for the second specific objective

$$N = \frac{(Z_\alpha + Z_\beta)^2 * (P_1 (1-P_1) + P_2 (1-P_2)}{(P_1-P_2)^2}$$

To calculate the sample size for association between predictors and actual gestational weight gain among pregnant women a double proportion formula was calculated using Epi info version 7.2.1.0 with the following assumption

P_1 = % outcome in exposed group

P_2 = % outcome in unexposed group

r = ratio of unexposed: exposed = 1:2

$Z_{\alpha/2}$ = level of significance at 95% Confidence interval= 1.96

Z_β = 80% power

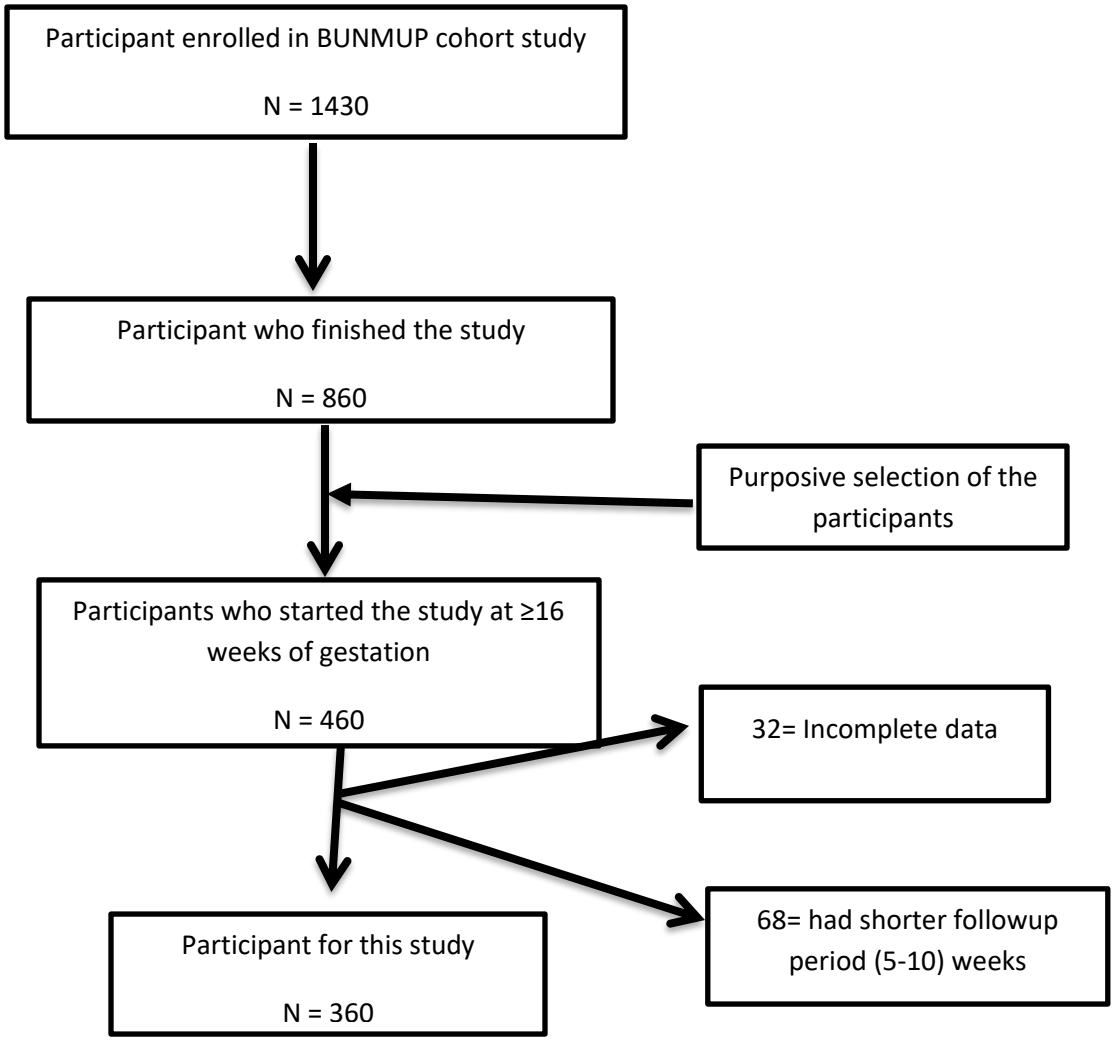
Table 2 sample size calculation

	Variables	**Assumption**	**Total sample size**	**After adding 10%**	**Reference**
	GWG	P = 69.3%	328	360	Fekede Asefa et al. 2016 (24)
Predictors of GWG	Pre-pregnancy BMI and GWG	P_1 = 55.4% P_2 = 75%	211	232	Fekede Asefa et al. 2021 (44)
	Food security and GWG	P_1 = 46% P_2 = 89%	46	50	Sabrina Luke, 2017 (30)
	Employment status and GWG	P_1 = 76.1% P_2 = 55.5%	185	203	Fekede Asefa et. al. 2021 (44)

Then the largest sample size (360) is selected as the final sample size for the study.

4.9. Sampling procedures

Eight hundred sixty pregnant women completed the BUNMUP cohort study. We then chose participants who were enrolled in the study at less than or equal to 16 weeks of gestation. Using simple random sampling three hundred sixty women's was enrolled in this study.



4.10. Data collection tool and procedure

The data for this secondary analysis was used from ongoing the BUNMUP cohort study. This data with specific variable therefore, contains all important general characteristics of the participant like age, educational status, occupation, marital status, religion and ethnic group.

Socio-economic status (SES) indices was collected using variables such as land ownership and size of land, type of house and construction material, availability of fixed assets such as radio, television, phone, bed, and chair and other household items, possession of domestic animals, bank or microfinance saving account, fuel for household cooking, type of water source for drinking and cooking, and availability and type of latrine during the first survey. First, the above variables were coded between 0 (not improved) and 1(improved) according to DHS programs. Then variables entered and analyzed using PCA, and those variables 'having a communality value of greater than 0.5 were used to produce factor scores. Finally, the factor scores were summed and ranked into poorest, poor, medium, rich and richest.

Current pregnancy and maternal medical disorder and past obstetrics history contains pregnancy planned or not, gestational age, ANC visits, known maternal medical disorders, gravidity and parity.

Pre-pregnancy BMI was obtained by dividing pregnant women's weight before or at 16 weeks of gestation by their respective height square. Then it was grouped based on WHO cut off point, underweight <18.5, normal weight 18.5-24.9, overweight 25-29.9 and obese $\geq$30. But due to small observation obese and overweight category was merged together.

Dietary diversity of the mothers was assessed from food consumption expenditure questionnaire with question assessing "How many food groups did you consume the past 7 days?" in this questionnaire major food groups cereal, legumes, egg and milk product, oil seed, meat, potato, enset and vegetables, sugar, honey, salt oil spices were listed. From these 7 food groups respondents with <4 food groups consumed were considered as having inadequate dietary diversity practice (poor dietary diversity) whereas those with $\geq$ 4 food groups consumed were considered as having adequate dietary diversity practice (good dietary diversity) (50).

Dietary practice assessed that if there was a change in amount of food or variety of food consumed after getting pregnant.

Substance use during pregnancy -was assessed by asking if they use chat, cigarettes and alcohol during pregnancy.

Household food insecurity which is measured based on household insecurity access scale (HFIAS) a recall over the past four weeks and consists of two types of questions: nine "occurrence" and nine "frequency-of-occurrence" questions. The pregnant women's is first asked if a given condition was experienced (yes or no) and, if it was, then with what frequency (rarely, sometimes, or often). The resulting responses were categorized food insecurity into four levels: food secure, mild food insecurity, moderate food insecurity and severe food insecurity.

In Psychosocial stress measurement questionnaire; Depression was assessed using nine component self-report patient health questionnaire (PHQ-9) to be recalled in the past two weeks. It is categorized as "0" if the response is "not" at all, "1" = if the response is "several times", "2" if the response is "more than half the day" and "3" if the response is "nearly every day". The resulting response was then categorized into 4, as no depression if the score was 0-6, mild depression if the score was between 7 and 13, moderate depression if the score was 14-20 and severe depression if the score was between 21 and 27. Apart from the past two weeks, general feeling of depression was assessed during the past 12 months and it was grouped in to two (yes or no). Intimate partner violence screening was checked using four questions (physical hurt, insult or talk down, threatening and scream or curse) with score "1" as never, "2" as rarely, "3" as sometimes, "4" as fairly often and "5" frequently. Intimate partner refers to husband, ex-husband, or boyfriend.

4.11. Data processing and analysis

The collected data was edited, cleaned, coded, entered and analyzed by using STATA version 12 for windows. Descriptive statistics was used to summarize the data and organize them into socio-demographics characteristics, past obstetrics history, current pregnancy and maternal medical disorder, dietary practice, substance use, household food insecurity, dietary diversity and psychosocial stress measurements scales of the participants according to the sections of the questionnaires. Rate of GWG was assessed by subtracting first recorded weight which was taken when mother was less than or equal to 16 weeks of gestational age with last recorded weight then dividing it by respective weeks. Finally according to IOM guidelines, GWG was categorized with the respective BMI as inadequate, adequate and excess. The continuous data was described by appropriate measure association and variation. The findings were presented by frequencies and percentages, and summary measures were displayed using tables and graphs.

Collinearity statistics was measured and multicollinearity was checked between predictor variables using variance inflation factor and tolerance. Bivariate and multivariate multinomial regression was used. A multinomial logistic regression model was used, and pregnant women with weight gain below or above the recommended levels were compared to those with adequate weight gain. Crude risk ratios (CRR) and adjusted risk ratios (ARR) was calculated to determine the association between the explanatory variables and GWG.

4.12. Variables

2.11.1 Dependent variable

- Gestational weight gain

2.11.2. Independent variables

- Socio-demographic characteristics: Age, educational level, monthly income, marital status, socio-economic status
- Pregnancy and obstetrics history: , gravidity, medical conditions, pregnancy planned or not
- Pre-pregnancy BMI: Underweight, normal weight, overweight and obese

- Psychosocial: depression, intimate partner violence
- Dietary practice
- Dietary diversity
- Number of ANC visits
- Food insecurity
- Substance use: chat, cigarettes and alcohol

4.13. Ethical considerations

Ethical clearance was secured from the research review technical Committee of Addis Ababa University School of Public Health. Legal Permission was taken from BUNMUP project Since the data is collected through review of secondary data, there is no any harm to participants and their relatives as far as the confidentiality is kept. Moreover, no personal identifier was used on data collection form. The recorded data was access by a third person except the principal investigators, and was kept confidentially. The information obtained from the study was used only for the purpose of study and was kept confidential.

4.14. Dissemination plan

After the data was analyzed, based on the findings obtained, conclusions and recommendations were made. The result of the final thesis will be presented and submitted to Addis Ababa University, College of health science, School of public health and finding will be circulated to SNNPR health bureau and Butajira district health bureau including the Butajira HDSS and to other organizations that have concern about maternal and child health in the region. Moreover, the finding will also be sent for publication in reputable journals and scientific publications.

4.15. Operational definition

Rate of GWG – amount of gestational weight gain per week

Pre-pregnancy weight – the first measured weight in pregnancy, if the first visit occurred at ≤ 16 weeks of pregnancy according to last menstrual period or early ultrasound dating.

Inadequate GWG – gestational weight gain below the IOM recommendations.

Adequate GWG – gestational weight gain according to normal cutoff point of the IOM recommendations.

Excess GWG - gestational weight gain above the IOM recommendation

Dietary diversity – number of foods or food groups consumed over the last 7 days not regarding the frequency of consumption.

Good dietary diversity- summing up the number of food groups consumed by the participants and from these 7 food groups those with ≥ 4 food groups consumed

Poor dietary diversity- from these 7 food groups participants with <4 food groups consumed

Dietary practice – an observable actions or behavior of dietary habit expressed either by change in amount or variety of food

Substance use – uses of chat, tobacco, and/or alcohol (including tella, areke) during pregnancy

Local units- usually refered to a bundle which is approximately 100-200 gram chat leaves

Gravidity – the total number of pregnancies, regardless of outcome

Food security – households doesn't exhibits any of the circumstance or only has to worry about food on rare occasions

Mild food insecurity- if a family occasionally or frequently concerned about food and unable to to consume preferred meal and or to eat less diverse foods

Moderate food insecurity- if the household sacrifice food quality and begin to reduce the number of meal portion and number of meal on a regular or irregular basis

Severe food insecurity- if the household encounter a decrease in amount of food consumed and the three most severe symptoms (running out of food, going to sleep being hungry and not eating for the whole day)

Intimate partner violence - a pattern of coercive control of one intimate partner by the other that includes physical violence, threaten with harm, scream or curse, insult or talk down to during pregnancy

5. RESULT

5.1 General characteristics of the study participant

A total of 360 pregnant women's record was reviewed. The age of study participants range from 18 to 40 years with mean (SD) of 27.5 and 4.7 years respectively. The majority of participants were in the age group of 28-38 years old which accounts 178 (49.4%). Among the participant in the study 162 (45%) had completed primary (1-8) school. Most of the study participants 266 (73.9%) were housewife, 358 (99.4%) are currently married.

Table 3 Socio-demographic statuses of the study participants in Butajira Ethiopia, 2018 - 2019

No	Variable	Frequency(N)	Percent (%)
1	**Age**		
	18-27 years	173	48.1
	28-37 years	178	49.4
	>37 years	9	2.5
2	**Educational status**		
	primary (1-8)	162	45.0
	Secondary (9-12)	34	9.4
	College/university	12	3.3
	read and write	30	8.3
	Illiterate	122	33.9
3	**Occupation of the mothers**		
	Housewife	266	73.9
	Farmer	45	12.5
	Merchant	36	10.0
	Student	1	.3
	Private employee	2	.6
	Maid/servant	2	.6
	Unemployed	8	2.2
4	**Marital status**		
	Currently married	358	99.4
	Separated	1	.3
	Widowed	1	.3
5	**Ethnic group**		
	Gurage	251	69.7
	Silete	93	25.8
	Amhara	10	2.8

	Oromo	4	1.1
	Tigray	2	.6
6	**Religion**		
	Islam	300	83.3
	Orthodox	41	11.4
	Protestant	18	5.0
	Catholic	1	.3
7	**Socio-economic status**		
	Poorest	73	20.3
	Poor	72	20
	Medium	72	20
	Wealthy	72	20
	Wealthiest	71	19.7

5.2. Past obstetrics history

One hundred twenty three (34.2%) of the study participants were primigravid (on their first pregnancy). The study participants have a mean of 2.9 pregnancies (1.97 SD) and with 3.1 of mean live birth (1.9 SD). Three hundred forty (94.5%) participants didn't experience any obstetric complication during their previous pregnancies.

Table 4 Past obstetric history of pregnant mothers in Butajira Ethiopia,2018-2019

No	Variables	Frequency(N)	Percent (%)
1	**Gravidity**		
	Primigravid	123	34.2%
	Multigravid	156	43.3%
	Grandmulti-gravid	81	22.5%
2	**Obstetric complications**		
	No	340	94.5%
	Yes	20	5.5%

5.3. Current pregnancy and maternal medical disorder

Out of 360 participants 295(81.9%) were planned the pregnancy. One hundred sixty two (45%) of the participants started ANC during their first trimester (week 1 to the end of 12 week). One

hundred sixty seven of participants in this study visited ANC three times. From the study participants 264 (73.3%) have their blood pressure measured, 101 (28.1%) had their urine sample taken, 279 (77.5%) had their blood sample taken, 294 (81.7%) had their weight measured, 302 (83.9%) had their height measured and only 69 (19.2%) of the participants were told what to eat during pregnancy. The mean ANC visits of participants were 2.9 (0.7 SD).

Table 5 Current pregnancy and maternal medical disorder of pregnant mothers in Butajira Ethiopia, 2018-2019

No	Variables	Frequency(N)	Percent (%)
1	**Pregnancy planned**		
	Planned	295	81.9
	Later	59	16.4
	not want more children	6	1.7
2	**First ANC visit**		
	First trimester	162	45
	Early second trimester	198	55
3	**Number of ANC visit**		
	2	109	30.3
	3	167	46.4
	4	84	23.3
4	**Known cardiac disease**		
	No	346	96.1
	Yes	4	1.1
	Don't know	10	2.8
5	**Known diabetic disease**		
	No	348	96.7
	Don't know	12	3.5
6	**Known thyroid disease**		
	No	351	97.5
	Yes	1	.3
	Don't know	8	2.2
7	**Known malaria disease**		
	No	346	96.1
	Yes	4	1.1
	Don't know	10	2.8
8	**Malaria in the last 3 month**		
	No	342	95
	Yes	3	0.8

	Don’t know	15	4.2

5.4 Dietary practice during pregnancy

Regarding dietary practice of pregnant women’s, about 150 (41.7%) of the participants reported they eat less food than there pre-pregnancy state and around 134 (37.2%) of the participants consume less variety of food after becoming pregnant.

Table 6 **Dietary practice of pregnant mothers in Butajira, Ethiopia 2018-2019**

No	Variables	Frequency(N)	Percent (%)
1	**Amount of food you eat changed after pregnancy**		
	I eat more food than normal	22	6.1
	I eat less food than normal	150	41.7
	The amount of food I eat has not changed	188	52.2
2	**Variety of food in your diet changed after pregnancy**		
	I eat more types of food than normal	29	8.1
	I eat less types of food than normal	134	37.2
	I eat the same foods as normal	197	54.7

5.5 Substance use during pregnancy

Twenty eight (7.8%) of participants reported drinking Tella or areke (local drinks) or beer in this pregnancy. Among participants who drink local drinks or beer 24 (6.6%) drinks daily during this pregnancy. Two houndred twenty of the participants reported chewing chat during this pregnancy, among participants who chew chat 98 (27.2%) of pregnant women reported daily consumption of chat with a mean of 1.5 local units (0.8 SD). Five (1.4%) of the participants has smoked cigarettes before but none of the participants smoked cigarettes during this pregnancy and also there is no family member who smoke cigarettes.

Table 7 Substance use of pregnant mothers in Butajira Ethiopia, 2018-2019

No	Variables	Frequency(N)	Percent (%)
1	**Drinking alcohols**		

	No	332	92.2
	Yes	28	7.8
2	**Daily drinking alcohol**		
	No	336	93.3
	Yes	24	6.6
3	**Chewing chat**		
	No	140	38.9
	Yes	220	61.1
4	**Daily chew chat**		
	No	261	72.5
	Yes	98	27.2
5	**Smoked cigarettes**		
	No	355	98.6
	Yes	5	1.4

5.6 Household food insecurity

One hundred one (28.1%) of the participant reported in the past four weeks they experienced household food insecurity. Only 3 (0.8%) of the participants encounter severe food insecurity. From these participants, 8.9% reported that it occurred rarely (once or twice in past four weeks), 15.8% sometimes (3 to 10 times in the past four weeks) and about 3.3% often (more than 10 times in the past four weeks).

Table 8 Household food insecurity of pregnant mothers in Butajira, Ethiopia, 2018-2019

No	Variables	Frequency(N)	Percent (%)
1	**Food insecurity**		
	Food secured	259	71.9
	Mild food insecurity	44	12.2
	Moderate food insecurity	54	15
	Severe food insecurity	3	0.8

5.7 Psychosocial factors and intimate partner violence (IPV)

Participants in this study reported over the last two weeks 13 (3.6%) were mildly depressed. And only about 2 (0.6%) had experienced IPV. A part from these past two weeks, 36 (10%) of the participants reported they felt depressed or uninterested in most things during the past 12 months.

Table 9 Psychosocial factors and intimate partner violence (IPV) of pregnant mothers in Butajira, Ethiopia, 2018-2019

No	Variables	Frequency(N)	Percent (%)
1	**Psychosocial factors**		
	No depression	346	96.1
	Mild depression	13	3.6
	moderate depression	1	.3
2	**Generally depressed**		
	No	324	90.0
	Yes	36	10.0
3	**Intimate partner violence**		
	No	358	99.4
	Yes	2	.6

5.8 Dietary diversity

From the food groups listed, cereal 359 (99.7%) and vegetables 355 (98.6%) were most consumed 7 days prior to data collection. And meat 67 (18.6%) was the least consumed. In this study group a total of 202 (56.1%) had good dietary diversity.

Table 10 Dietary diversity of pregnant mothers in Butajira, Ethiopia, 2018-2019

No	Food groups	Frequency(N)	Percent (%)
1	**Cereals**		
	No	1	.3
	Yes	359	99.7
2	**Pulses**		
	No	208	57.8
	Yes	152	42.2
3	**Milk products and eggs**		
	No	198	55.0
	Yes	162	45.0
4	**Oil seeds**		
	No	248	68.9
	Yes	112	31.1
5	**Meat**		
	No	293	81.4
	Yes	67	18.6
6	**Potatoes, enset and vegetables**		
	No	5	1.4
	Yes	355	98.6
7	**Sugar, salt, honey and spices**		
	No	24	6.7
	Yes	336	93.3

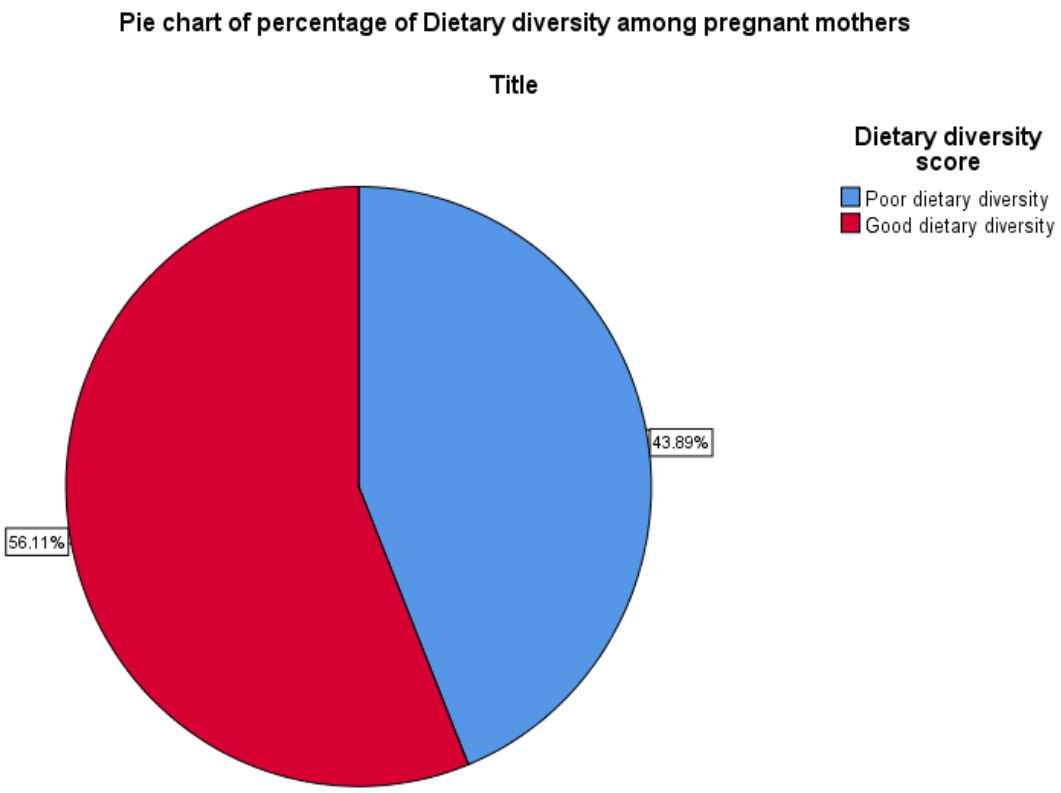


Fig 1 Percentage of dietary diversity among pregnant mothers

5.9 Pre-pregnancy BMI (weight gain before 16 week of gestational age)

The mean BMI of pregnant women in Butajira was 21 kg/m^2 ± 2.7 SD with minimum 15.5 kg/m^2 and a maximum of 31.6 kg/m^2 before or at 16 weeks of gestational week. Based on WHO classification of body mass index 269 (74.7%) were normal weight before or at 16 weeks of gestational age.

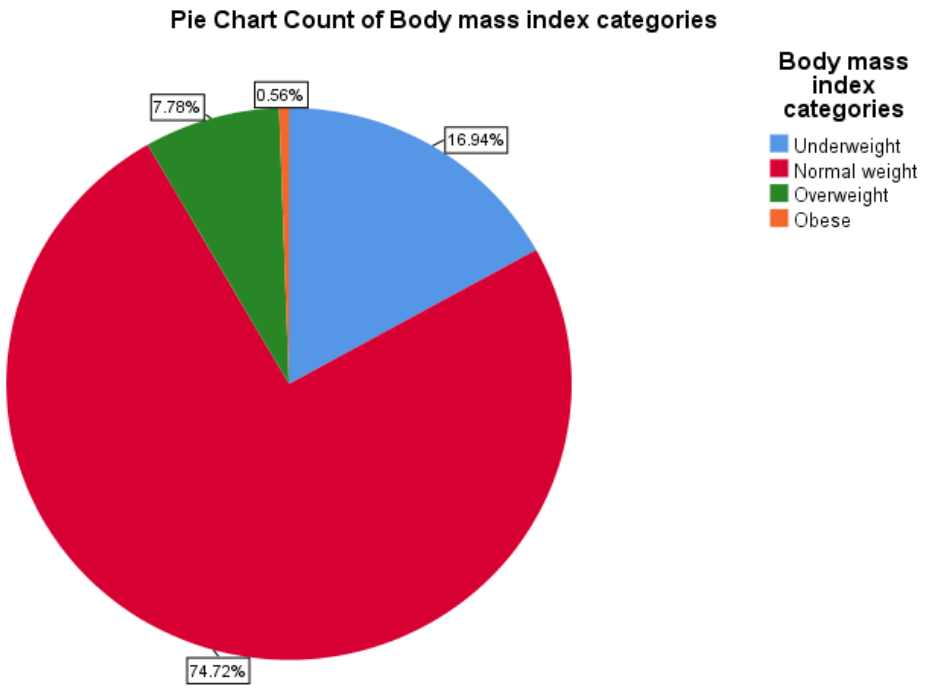


Fig 2. Pre-pregnancy body mass index (BMI before 16 weeks of gestational age)

5.10 Gestational weight gain rate

In this study group women on average were gaining below IOM guidelines per week in all four BMI categories. Weight variation during pregnancy ranged from nine kilo gram loss to twenty two kilo gram gain. Weight loss was observed on 8 (2.2%) women and 6 (1.7%) women had no weight gain compared to the beginning of the pregnancy. The mean rate of gestational weight gain per week was 0.31 (0.19 SD) with average of 20 weeks. Based on WHO body mass index cut off point only 33 (9.2%) of the participant gain adequate weight.

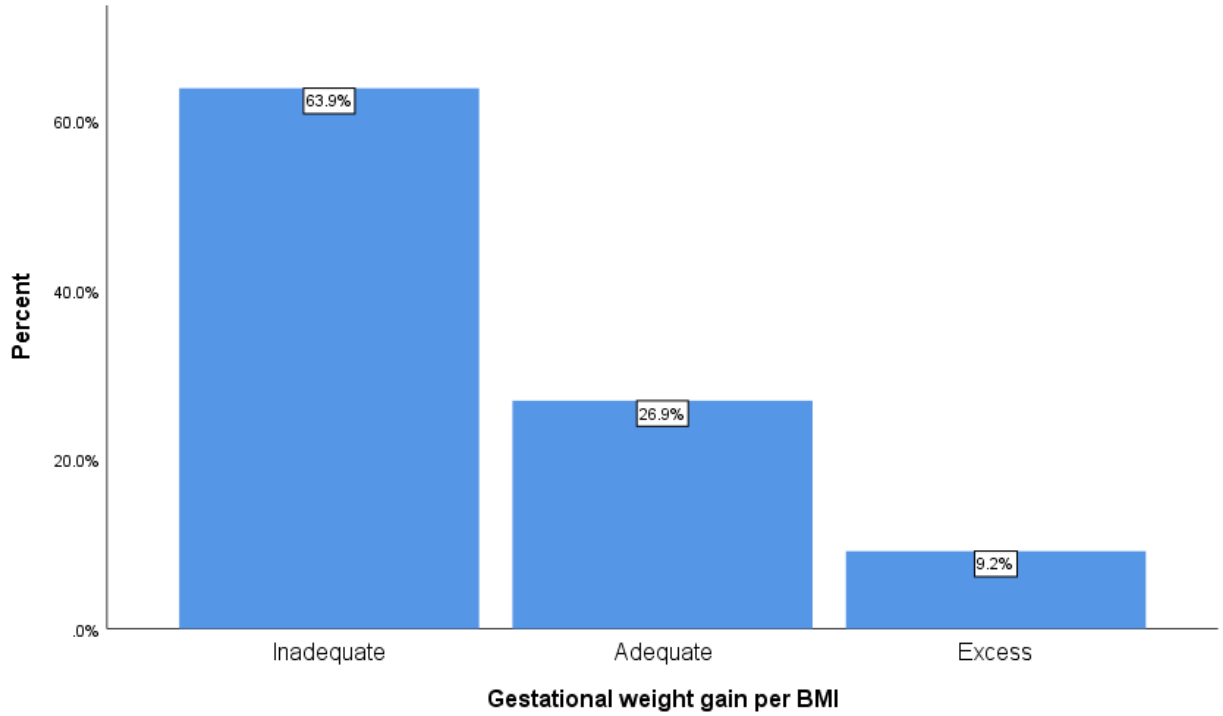


Fig 3 Gestational weight gain categories according to IOM guidelines

Table 11 Comparison of rate of GWG per week between IOM guidelines and this study

Weight category	Pre-gestational BMI (weight before 16 week of gestational age)	IOM mean GWG per week	Study mean GWG per week
Underweight	<18.5	0.51 (0.44 – 0.58)	0.38 (0.11 - 0.92)
Normal weight	18.5-24.9	0.42 (0.35 – 0.50)	0.3 (-0.38 - 0.79)
Overweight	25-29.9	0.28 (0.23 – 0.33)	0.23 (-1 - 0.9)
Obese	>30	0.22 (0.17 – 0.27)	-0.02 (-0.37 - 0.33)

This study identified that on average pregnant women were gaining below IOM recommendations. Weight loss was observed throughout the pregnancy on 8 woman compared to their pre-pregnancy weight. On average obese pregnant women loss 0.02 weight per week.

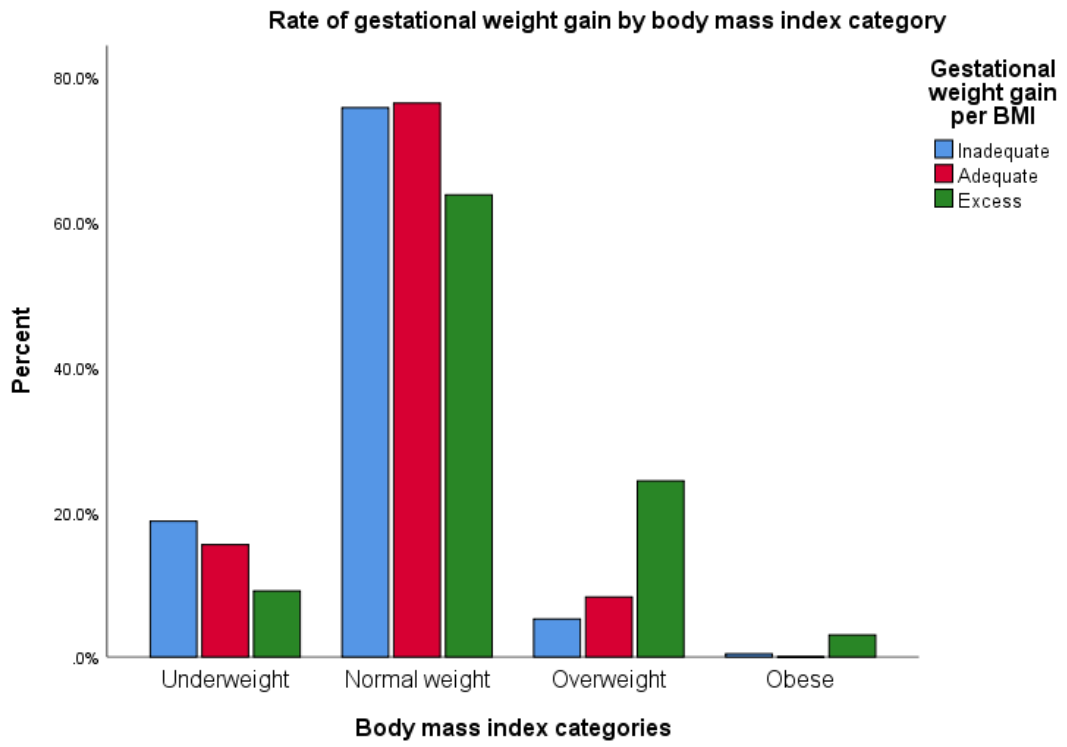


Fig 4 Rate of gestational weight gain based on BMI categories

Table 12 Cross-tabulation of predictors with rate of gestational weight gain

Variables		Rate of gestational weight gain		
		Inadequate N (%)	**Adequate N (%)**	**Excess N (%)**
Age	18-27	113 (31.4%)	47 (13.1%)	13 (3.6%)
	28-37	110 (30.6%)	48 (13.3%0	20 (5.6%)
	>37	7 (1.9%)	2 (0.6%0	0
Educational status	No formal education	98 (27.2%)	40 (11%)	14 (3.9%)
	Formal education	132 (36.7%)	57 (15.8%)	19 (5.3%)
Occupational status	Unemployed	180 (50%)	69 (19.2%)	26 (7.2%)
	Employed	50 (13.9%)	28 (7.8%)	7 (1.9%)
Marital status	Currently married	228 (63.3%)	97 (26.9%)	33 (9.2%)

	Separated	1 (0.28%)	0	0
	Widowed	1 (0.28%)	0	0
Socio-economic status	Poorest	52 (14.4%)	17 (4.7%)	4 (1.1%)
	Poor	39 (10.8%)	22 (6.1%)	11 (3.1%)
	Middle	49 (13.6%)	17 (4.7%)	6 (1.7%)
	Rich	46 (12.8%)	20 (5.6%)	6 (1.7%)
	Richest	44 (12.2%)	21 (5.8%)	6 (1.7%)
BMI	Underweight	43 (11.9%)	15 (4.2%)	3 (0.8%)
	Normal weight	174 (48.3%)	74 (20.6%)	21 (5.8%)
	Overweight	12 (3.3%)	8 (2.2%)	8 (2.2%)
	Obese	1 (0.3%)	0	1 (0.3%)
Gravidity	Primigravida	72 (20%)	41 (11.4%)	10 (2.8%)
	Multigravida	107 (29.7%)	33 (9.2%)	16 (4.4%)
	Grandmulti-gravida	51 (14.2%)	23 (6.4%)	7 (1.9%)
ANC visit	2	66 (18.3%)	30 (8.3%)	13 (3.6%)
	3	105 (29.2%)	49 (13.6%)	13 (3.6%)
	4	59 (16.4%)	18 (5%)	7 (1.9%)
Substance use	Alcohol No	14 (3.9%)	10 (2.8%)	4 (1.1%)
	Yes	216 (60%)	87 (24.2%)	29 (8.1%)
	Chat No	87 (24.2%)	42 (11.7%)	11 (3.1%)
	Yes	143 (39.7%)	55 (15.3%)	22 (6.1%)
Pregnancy planned	Planned	184 (51.1%)	82 (22.8%)	29 (8.1%)
	Later	41 (11.4%)	14 (3.9%)	4 (1.1%)
	Not want more child	5 (1.4%)	1 (0.3%)	0
Dietary diversity	Poor dietary diversity	99 (27.5%)	46 (12.8%)	13 (3.6%)
	Good dietary diversity	131 (36.4%)	51 (14.2%)	20 (5.6%)
Dietary practice	Amount of food Eat more food	11 (3.1%)	10 (2.8%)	1 (0.3%)
	Eat less food	97 (26.9%)	39 (10.8%)	14 (3.9%)
	Not changed	122 (33.9%)	48 (13.3%)	18 (5%)
	Variety of food Eat more food	18 (5%)	11 (3.1%)	0
	Eat less food	86 (23.9%)	35 (9.7%)	13 (3.6%)
	Not changed	126 (35%)	51 (14.2%)	20 (5.6%)

Food insecurity	No	169 (46.9%)	62 (17.2%)	28 (7.8%)
	Yes	61 (16.9%)	35 (9.7%)	5 (1.4%)
Depression score	No depression	222 (61.7%)	92 (25.6%)	32 (8.9%)
	Mild depression	8 (2.2%)	4 (1.1%)	1 (0.3%)
	Moderate depression	0	1 (0.3%)	0
IPV score	No	228 (63.3%)	97 (26.9%)	33 (9.2%)
	Yes	2(0.5%)	0	0

5.11 Predictor of gestational weight gain rate (kg/week)

Collinearity statistics was measured and multi-collinearity was checked between predictor variables. VIF (variance inflation factor) value among variables was less than 4 which indicate that multi-collinearity was not a problem in regression model.

Bivariate multinomial logistic regression was done and Variables that have *p*-value of < 0.2 and those important variables from different literatures were considered for further multivariable multinomial regression. Initially during bivariate multinomial logistic regression food security, BMI, change in amount of food eaten and generally depressed show association with gestational weight gain. Multinomial logistic regression with relative risk was done to determine predictors of GWG with 95% CI. For the dependent variable 'adequate gestational weight gain' was used as a reference. After adjusting for possible confounders in the model like age (years), marital status, educational status and occupation, only early pregnancy BMI, gravidity and food insecurity showed statistically significant association with GWG *p*-value <0.05.

Pregnant women's with pre-pregnancy BMI (≤ 16 weeks of gestation) of overweight and obese has 5.9 risk of gaining excess weight relative to adequate weight gain than underweight or normal weight women's [ARR 5.9; 95%CI: 1.1-32.1]. Secondly a Multigravida pregnant woman has 2.2 risk of gaining inadequate weight than primigravida with [95%CI: 1.1-32.1]. The other variable which showed association was food insecurity with excess GWG, pregnant women's who experience food insecurity has a lower risk of gaining excess GWG rate than food secured women's [ARR 0.31; 95%CI: 0.10-0.97].

Table 13 Multivariate multinomial logistic regression analysis with risk ratio of predictors of gestational weight gain rate (kg/week) with reference category of adequate rate of GWG

NO	Rate of weight gain	Variables	*P*-value	Adjusted *p*-value	CRR (95% CI)	ARR (95% CI)
1		**BMI**				
	Inadequate vs Adequate	Underweight	0.54	0.71	0.82(0.42-1.56)	0.87(0.44-1.74)
		Normal weight	Ref	Ref	Ref	Ref
		Overweight and obese	0.29	0.38	0.56(0.19-1.63)	0.54(0.17-1.67)
	Excess vs Adequate	Underweight	0.6	0.72	1.4(0.37-5.37)	1.2(0.3-4.9)
		Normal weight	Ref	Ref	Ref	Ref
		Overweight and obese	**0.03**	**0.01**	**5.6(1.17-26.8)**	**5.9(1.1-32.1)**
2		**Gravidity**				
	Inadequate vs Adequate	Primigravida	Ref	Ref	Ref	Ref
		Multigravida	**0.02**	**0.01**	**1.8(1.06-3.19)**	**2.2(1.1-4.2)**
		Grandmulti-gravida	0.46	0.25	1.2(0.67-2.35)	1.6(0.7-3.84)
	Excess vs Adequate	Primigravida	Ref	Ref	Ref	Ref
		Multigravida	**0.14**	0.12	1.9(0.79-4.95)	2.3(0.79-7.05)
		Grandmulti-gravida	0.69	0.34	1.2(0.41-3.72)	2.0(0.46-8.6)
3		**Substance use**				
	Inadequate vs Adequate	No	Ref	Ref	Ref	Ref
		Yes	0.70	0.88	0.84(0.36-1.98)	0.93(0.38-2.29)
	Excess vs Adequate	No	Ref	Ref	Ref	Ref
		Yes	0.88	0.72	0.89(0.22-3.6)	1.3(0.28-6.24)
4		**Dietary diversity**				
	Inadequate vs Adequate	Poor dietary diversity	Ref	Ref	Ref	Ref
		Good dietary diversity	0.46	0.78	1.19(0.74-1.92)	1.09(0.582.06)
	Excess vs Adequate	Poor dietary diversity	Ref	Ref	Ref	Ref
		Good dietary diversity	0.42	0.62	1.38(0.62-3.1)	1.3(0.42-4.08)
5		**Food insecurity**				
	Inadequate vs Adequate	No	Ref	Ref	Ref	Ref
		Yes	**0.08**	0.10	0.6(0.38-1.06)	0.6(0.34-1.1)
	Excess vs Adequate	No	Ref	Ref	Ref	Ref
		Yes	**o.o3**	**0.04**	**0.3(0.11-0.89)**	**0.31(0.10-0.97)**
6		**Generally depressed**				

	Inadequate vs Adequate	No	Ref	Ref	Ref	Ref
		Yes	**0.16**	0.23	1.93(0.76-4.85)	1.8(0.67-4.84)
	Excess vs Adequate	No	Ref	Ref	Ref	Ref
		Yes	0.27	0.23	2.1(0.55-7.9)	2.4(0.55-10.9)
7		**Change in amount of food eaten after pregnancy**				
	Inadequate vs Adequate	Eat more food than normal	Ref	Ref	Ref	Ref
		Eat less food than nrmal	**0.087**	0.159	2.2(0.89-5.7)	2(0.75-5.7)
		Not changed	**0.07**	0.151	2.3(0.92-5.79)	2(0.76-5.53)
	Excess vs Adequate	Eat more food than normal	Ref	Ref	Ref	Ref
		Eat less food than normal	0.24	0.185	3.5(0.42-30.6)	5.0(0.46-5.49)
		Not changed	0.22	0.189	3.7(0.44-31.4)	4.88(0.45-5.22)

Significant ($P < 0.05$), CRR- crudes risk ratio, ARR- adjusted risk ratio

5. Discussion

The main aim of this study was to assess predictors of gestational weight gain rate among pregnant women's in Butajira district, Ethiopia. Predictors of GWG can differ between countries and populations which accounts for the fact that the result obtained in our study are not always comparable with different studies. Our study indicated there was association between BMI, food insecurity and gravidity with GWG. It also assessed rate of GWG, pregnant women's enter in to this study with a mean weeks of 12.5 (2.6 SD) gestational age and with last record of gestation age of mean 33 (4.1 SD) weeks.

In our study pregnant women on average were gaining 0.31 (0.19 SD) kg per week. Similar to our study Bangladeshi women gain gestational weight of 0.34 kg per week (20). The mean GWG in Malawi was 0.26 (SD ± 0.2) kg per week which was lower than our study(54). This slight variation between our finding and Malawi study might be explained by smaller sample size of Malawian study.

Based on IOM guideline our study found a high frequency of inadequate weight gain (63.9%), which is almost similar to study done in Addis Ababa, Ethiopia which was 67.2% of the participants (55) and also study done in Niger 63% (56), Uganda 62.7% (31)and also Mexico city showed 52.3% of the population gained inadequate GWG according to IOM recommendation (57). In contrary studies done in Chinese and Malaysia countries showed that inadequate GWG was about 14.9% and 26.7% respectively but about 63.9% of our study participants gained inadequate rate of GWG (58, 59). This may be explained by pregnant women's in those studies may have high BMI during early pregnancy which greatly affect weight gain as high BMI category participants expected to gain less as compared to normal and underweight women's.

The present study found 16.9% of the participants were underweight before or at 16 week of gestation. A very small number of underweight women were reported in Ghanaian study which was about 4.4% (60). Almost similar to our study 15% of Bangladesh women reported to be underweight at early pregnancy (20). In this study only 7.8% and 0.6% of our participants at early pregnancy (less than or at 16 weeks of gestation) were reported overweight and obese respectively. Study in Ghana showed that 52.6% of the participants entered pregnancy overweight or obese, this significant difference might be explained by general notion highly

accepted by Ghanaians that being plump (fat) is a reflection of wellbeing and also the study was done on pregnant women's who attended only private clinic (60).

Our finding suggested that being overweight and obese before or at 16 weeks of gestation increase the risk of gaining excess weight compared to underweight and normal weight women's. Study done in Addis Ababa observed that being underweight or normal weight increases the odds of gaining inadequate weight compared to overweight and obese women's (55). This might be due to women's who were underweight at early pregnancy are required to gain more weight, on the other hand overweight and obese women are required to gain little weight. In contrary to our study in Brazil showed that only in the overweight category where participants gained excess which occurred in 66.2% of the participants (61). Similarly Indonesian study indicated that women who were overweight/obese at pre-pregnancy were at-risk of having excessive GWG rate (62). These data suggests that women who enter pregnancy when overweight or obese have higher chances of getting excessive gestational weight gain as compared to those with normal BMI or underweight.

In this study the prevalence of food insecurity was about 28.1% in contrast, food insecurity was high in Gedio, Southern Ethiopia which was about 67.4% (63). And a smaller prevalence was seen Southwestern, Ethiopia study which was only 9% (64). The difference in prevalence of food insecurity between our study and that of Gedio might be due to seasonal variability (harvest season) during data collection time. On the other hand pregnant women's who reported to experience food insecurity had a lower risk of gaining excess GWG rate than food secured women's. Study done on Addis Ababa showed no association between food insecurity and GWG(55). Other study done in Gambela, Ethiopia indicated that pregnant women who were from food insecure households were nearly two times more likely to be underweight compared to pregnant women who were from food secured households (65). Study done in Brazil showed no association between food insecurity and inadequate or excess GWG (66). On similar note study done in Hamadan County, Iran (31) and Chicago food insecurity showed association with reduced the gestational weight gain (67). In contrary to our finding North Carolina, USA study observed living in food insecure household is associated with higher gestational weight gain (33). This may be due to mostly in developed countries food-insecure households often purchase calorie-dense foods that are high in fats and added sugars in adaptation to their food insecurity.

Although there were no many studies associated gravidity with gestational weight gain our study indicated that multigravida pregnant women's had increased risk of gaining inadequate GWG. Similar to our finding Northeastern Pennsylvanian study showed that with increasing parity also the proportion of pregnant mothers gaining excess was declined (32). However observational study done in Brazil indicated that there was no association between primiparous and multiparous participant regarding gaining excess gestational weight gain (33).

Although we included data on diet diversity there was no association between dietary diversity and rate of GWG. Meanwhile study done in Tigray region, Ethiopia showed a significant association between poor dietary diversity and higher gestational weight gain (68) also study done on Algerian women show evidence of association between poor dietary diversity and inadequate GWG (69). In agreement with our study result study done in Tanzania did not observe evidence of association of dietary diversity with any of the GWG outcomes (70). Similarly there was not association between a change in amount and variety of food taken during pregnancy with rate of GWG in this study. In contrary similar study done in Butajira showed that significant association between reduction of amount of food and gestational weight gain (71). This observed difference may be due to our study didn't consider additional causes beyond intentional restriction of food amount other reasons like illnesses and aversion (strong dislike) or eating because of craving that occurred during their pregnancy. When assessing dietary patterns it can differ between countries and populations, which accounts for the fact that the results obtained are not always comparable with the results of studies by other authors.

From this study the one thing clear is, in butajira district ANC clinics, gestational weight gain monitoring was not part of ANC; only 16% of the study participants were given information about what to eat and small number of women were encouraged to recognize and manage pregnancy-related complications, particularly pre-eclampsia, anemia during their visit. Weight and height were measured but BMI was not determined; during their visit for 73.3% of the participants their blood pressure was measured and for 77.5% of women's blood sample taken as a part of ANC.

This study light some potentially modifiable risk factors for inadequate or excessive GWG, this provides opportunities for intervention studies to improve pregnancy outcome and prevent adverse maternal outcome. Using prospective study design is one of our strength in this study, which helped to provide detailed information of the independent variables. The other strength of our study was Gestational age was estimated by the last menstrual period and also verified by ultrasound.

The major limitation of the study was related to using pre- pregnancy weight before or at 16 weeks of gestation, at which time pregnant mothers may already have been an increase or decrease of gestational weight. In addition, some women's had shorter interval of record of gestational age which is difficult to assess and assign them as adequate rate, inadequate rate or excess rate of gestational weight ; hence there may be significant weight change after their recorded weeks of gestation. The other limitation was related to the use of secondary data as different literature pointed out, there are predictors assumed to impact GWG which was not available in the secondary data, such as physical activity, sleep pattern, parity, food taboo, decision maker of the household, number of family member and inter-pregnancy interval. There were also missing values of the predictor variables, however, we minimized the risk of incomplete data by having multiple source of recorded data. The other and most important limitation was using recommended IOM guidelines, currently there was seen evidence of these recommendation may not be applicable in low income countries like Ethiopia despite the fact that IOM guidelines are regardless of race and ethnicity.

6. Conclusion and Recommendation

6.1.Conclusion

In conclusion this study found that on average pregnant mothers in all BMI categories gained inadequate GWG. After covariates adjusted for possible confounders in the model like age (years), marital status, educational status and occupation, only early pregnancy BMI, gravidity and food insecurity showed statistically significant association with GWG. Our finding suggested that being overweight and obese before or at 16 weeks of gestation increase the risk of gaining excess weight. Secondly, a food insecure pregnant mother was less likely to gain excess gestational weight gain than adequate. And finally Multigravida pregnant women's were more at risk of gaining inadequate weight.

6.2.Recommendations

The finding imply the importance of early engagement with pregnant mothers and counseling about the importance of gaining appropriate weight based on their respective weight. Health practitioner need to adopt and implement guidelines for appropriate weight gain and encourage them to follow proper and timely antenatal care. Additionally health practitioner's need to give nutritional advice for the mothers to promote appropriate dietary practice and dietary diversity.

Moreover in this study we didn't observe association between substance use (alcohol and chat consumption) and GWG, but there was a prevalence of substance use, at individual, familial, and societal levels, there is a significant need for behavioral changes and modifications, especially gender-based societal norms and practices to reduce these unhealthy practices.

Further longitudinal studies including the predictors of GWG is needed to clearly verify which predictors greatly affect GWG and which of these predictors can be modifiable for future implementation is required in our country. In addition future research may need to investigate practical applicability of the IOM guidelines and the effect of GWG outcomes on pregnancy and later outcomes in our own context.

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ANNEX

ANNEX I Conceptual framework

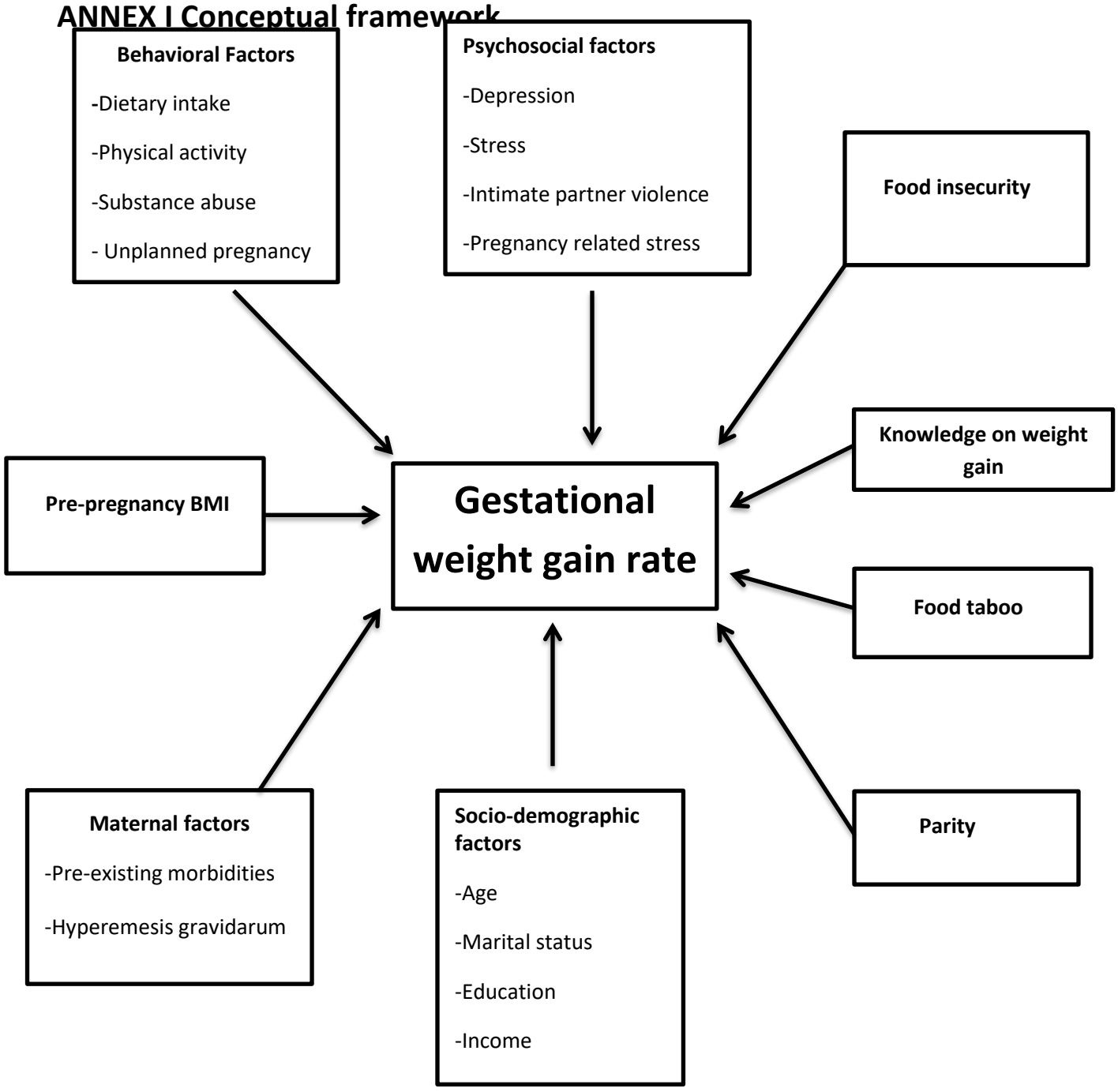

Figure 5. Conceptual frame work

Source: adapted and modified from IOM 2009 (5).

ANNEX II Questionnaire

Questionnaire from nine part modules used in a BUNMUP project, consisting of question assessing socio- demographic characteristics, role in household decision making, past obstetrics history, current pregnancy and maternal medical disorder, food taboos, substance use, household food insecurity, psychosocial stress measurements scales, and food consumption expenditure.

1. Socio-demographic status

Number	Question	Responses	Variable name
201.	In what month and year were you born?	Month…… Don't know month ..... 9999 Year..... Don't know year..... 99	WMONTH WYEAR
202.	How old are you now? COMPARE AND CORRECT AND /OR IF INCONSISTENT	_____years	WAGE
203.	What is the highest level of school you attended?	Primary (1-8) ..... 1 Secondary(9-12) ..... 2 College/university..... 3 Read and write ..... 4 Illiterate 5	HEDUTION
204.	What is your religion?	Orthodox Christian ..... 1 Islam ..... 2 Protestant ..... 3 Catholic Widowed ..... 4 Other (specify) ..... 99 _____	WRELIGION
205.	To which ethnic group do you belong?	Oromo..... 1 Amhrara ..... 2 Gurage ..... 3 Tigray..... 4 Afra..... 5 Silete 6	WETHNIC

		Other (specify) ..... 99 _____	
206.	What is your occupation?	Farmer and housewife..... 1 Housewife ..... 2 employee/private ..... 3 Student..... 4 Merchant..... 5 Local drink seller ..... 6 Commercial sex worker ..... 7 Maid servant ..... 8 Daily laborer..... 9 Unemployed ..... 10 Farmer and merchant ..... 11 Other (specify) ..... 99 _____	WOCCUPATI
207.	What is your marital status?	Currently married ..... 1 Separated ..... 2 Divorced ..... 3 Widowed..... 4 Never married 99	WMARITAL If 2,3,4,99 Go to 211

2. Household related questions

Number	Question	Responses	Variable name
201.	Main construction material used for the floor: CIRCLE ALL THAT APPLY	<u>Natural floor</u> Earth /sand .....11 dung .....12 <u>Rudimentary floor</u> Wood planks .....21 Bamboo.....22 <u>Finished floor</u> Polished wood or parquet .....31 Ceramic tiles .....32 Cement .....33 Carpet.....34 Other (specify).....99 _____	**HFLOOR**
202.	Main construction material used for the roof: CIRCLE ALL THAT APPLY	<u>Natural roofing</u> Thatch/leaf/mud .....11 <u>Rudimentary roofing</u> Plastic.....21 Bamboo.....22 Wood planks 23	**HROOF**

		Finished roofing Corrugated iron/metal.....31 Wood .....32 Cement/concrete .....33 Other (specify).....99 _____	
203.	Main construction material used for exterior walls: CIRCLE ALL THAT APPLY	Natural walls No walls .....11 Cane/Trunks/Bamboo/Reed .....12 Dirt .....13 Rudimentary walls Wood with Mud .....21 Stone with mud .....22 Card board .....23 Finished walls Stone with lime/cement .....31 Bricks .....32 Wood planks/shingles .....33 Other (specify).....99 _____	
204.	What kind of toilet facility does your household have? [INTERVIEWER: LIMIT TO ONE RESPONSE; IF TWO TYPES ARE MENTIONED, RECORD THE TYPE CLOSEST TO THE TOP OF THE LIST]	Flush toilet Flush to septic tank.....11 Flush to Pit latrine ..... 12 Flush to somewhere else .....13 Pit latrine Traditional pit toilet.....21 Pit latrine with slab.....22 Pit latrine without slab.....23 Ventilated improved pit latrine.....24 Composting toilet ..... 25 No facility/bush/field 31	HTOILET

		Other (specify) ..... 99 _____	
205.	What is the main source of drinking water for members of your household? [INTERVIEWER: BE SURE OF THE SOURCE OF "PIPED WATER". IF THE ANSWER IS "PIPED WATER" CHECK THE SOURCE AND CIRCLE THE APPROPRIATE CODE]	<u>Piped water/supply water</u> Piped inside dwelling .....11 Piped to yard/plot.....12 Public tap .....13 <u>Water from spring</u> Protected well/spring .....21 Unprotected well/spring.....22 <u>Water from Dug well</u> Protected well .....31 Unprotected well .....32 <u>Surface water</u> Pond/lake/River/stream/spring/Dam51 <u>Rain water</u>.....61 <u>Tanker truck</u>.....71 <u>Vendor</u> .....81 <u>Bottled water</u>.....91 No fixed facility .....96 Other (specify) 99	HWATER

		_____	
206.	Tell me, please, if your home has: [INTERVIEWER: CIRCLE ALL THAT APPLY]	Electricity.....1 Watch/clock.....2 Radio.....3 Television .....4 Mobile Telephone.....5 House Phone.....6 Refrigerator ..... Chair .....8 A bed with cotton/Sponge/Spring mattress .....9 Electric Mitad .....10 Kerosene Lamp/pressure .....11 Solar .....12 Flash light that works with battery 13	HELECTRIC HWATCH HRADIO HTELEVSION HMOBILE HPHONE HFRIGE HCHAIR HBED HMITAD HLAMP
207.	What type of fuel does your household mainly use for cooking? [INTERVIEWER: ALLOW MULTIPLE ANSWERS]	Electricity.....1 LPG/natural gas .....2 Biogas .....3 Kerosene .....4 wood .....5 Charcoal.....6 Straw/shrubs/grass .....7 Animal Dung .....8 Agricultural crop.....9 Other (specify).....10 _____	HFUELELECT HFUELGAS HFUELBIO HFUELKERO HFUELWOO HFUELCHAR HFUELGRAS HFUELDUN HFUELCROP HFUELOTHE
208.	Do you have a separate room which is used as a kitchen?	No .....1 Yes.....2	HKITHCEN

209.	Does any member of the house hold own the following? [INTERVIEWER: CIRCLE ALL THAT APPLY]	Bicycle.....1 Motorcycle/scooter/Bajaj.....2 Animal drawn cart .....3 Car/Truck.....4	HBICYCLE HMOTOR HCART HCAR
210.	How many (LOCAL UNITS) of agricultural land do members of this household own? LOCAL UNITS _____ (SPECIFY)	Local units |__|__| Don't have 00	HLANDSIZE
211.	How many of the following animals do you keep? (INTERVIEWER: IF HOUSEHOLD DOES NOT OWN A PARTICULAR ITEM, RECORD "00" AGAINST THAT ITEM.)	a) Milk cows, oxen or bulls..... |__|__| b) Chickens ..... |__|__| c) Goats..... |__|__| d) Sheep ..... |__|__| e) Horses ,donkey, or mule..... |__|__| f) Beehives ..... |__|__|	HCOWS HCHICEKEN HGOATS HSHEEP HHORISE HBEEHIVES
212.	Does any member of the hold have a bank or microfinance saving account	No .....0 Yes.....1	HSAVING
How do you dispose of household rubbish? (Do not read the responses. Allow respondent to answer, then fill each item below.)			
213.	Garbage pit	☐ 1=Yes ☐ 0=No	HPIT
214.	Discard in garden	☐ 1=Yes ☐ 0=No	HGARDE
215.	Discard in bush	☐ 1=Yes ☐ 0=No	HBUSH
216.	Open burning	☐ 1=Yes ☐ 0=No	HBURN
217.	Other (specify_____)	☐ 1=Yes ☐ 0=No	HOTHER

3. Past obstetric questions

	Question	Responses	Skip

401.	Now I would like to ask about all the pregnancies you have had during your life. During your life how many times have you been pregnant? (including those that did not end with a live births), record "00" if none	[_____] times If "00" go to 415	
402.	Now I would like to ask about all the births you have had during your life. During your life how many times have you given live birth? ***[I mean, to a child who ever breathed or cried or showed other signs of life – even if he or she lived only a few minutes or hours], record "00" if none)***	[_____] times Don't Know……....99	
403.	Have you ever had a fetus died in utero before birth?	Yes ……1 No …….. 2 → Go to 405 Don't Know……....99 → Go to 405	
404.	During your life how many times have you had fetus died in utero?	[_____] times Don't Know……....99	
405.	Have you ever given birth to a preterm child (between 28 – 37 weeks of gestation)	Yes ……1 No …….. 2 → Go to 407 Don't Know……....99 → Go to 407	
406.	During your life how many times have you given birth to a preterm child (between 28 – 37 weeks of gestation)	[_____] times Don't Know……....99	
407.	Did you experience any obstetric complication during your previous pregnancy?	Yes ……1 No …….0 → Go to 420 Don't know …….0 → Go to 420	
408.	If there is obstetric complication please tell me	……1 …….2 …….3 …….4 ……..5	

4. Current Pregnancy and maternal medical disorder

no	Questions	Responses	Skip
442.	At the time you became pregnant with the index delivery, did you plan to get pregnant, did you want to wait until later, OR did you NOT WANT to have any more children?	Planned ……1 Later…….2 Not want more children…….3	
443.	For how many weeks have you been pregnant? (prompt with date of last menstrual period)	_____ weeks Don't Know …….. 99	
444.	Did you see anyone for antenatal care during this pregnancy?	Yes ……... 1 No ……... 0 → Go to 462 Don't know …….. 99 → Go to	
445.	Whom do you see? Anyone else?	**HEALTH PERSONNEL** Doctor ……..1 Nurse……. 2 Midwife ……. 3 Health officer …… 4 Health extension worker……5 **Other person** Traditional birth attendant . . . . . 6 Other 7	
446.	Where did you receive Antenatal care during this pregnancy? Anywhere else	**HOME** Her home ……... 1 Other home ……. 2 **PUBLIC SECTOR** Government hospital ……..3 Government health center/station…….4 Government health post ……5 Other public sector ……6 _____ (specify) **NGO** Health facility . . . . . ……... 7 Other NGO health facility . . . . . 8 _____ (specify) **PRIVATE** Private	
447.	How many months pregnant were you when you first received antenatal care for this pregnancy?	Months . . . . . [_____][_____] Months Don't know 99	
448.	How many times did you receive antenatal care during this pregnancy?	Number of times [_____] Don't know 99	

448.A	When did you receive your antenatal care visit(s)	Date for each ANC visit Visit 1 DATE (DD/MM/YYYY) [____/____/_____] Visit 2 DATE (DD/MM/YYYY) [____/____/_____]	
448.B	During (any of)your Antenatal care visit(s) were you told about the signs of pregnancy complications or danger sign of pregnancy?	Yes . . . . . 1 No . . . . . 0 → Go to 448D Don't know . . . . . 99 → Go to	
448.C	Which signs of pregnancy complications were you told about? (more than one answer is possible)	Vaginal bleeding. . . . . 1 Vaginal gush of fluid. . . . . 2 Severe headache. . . . . 3 Blurred vision. . . . . 4 Fever . . . . . 5 Abdominal pain. . . . . 6 Convulsion . . . . . 7 Other 8	
448.D	During any of your antenatal visit were you told about birth preparedness plan?	Yes . . . . . 1 No . . . . . 0 Don't know 99	
448.E	Which plans were you told about? (more than one answer is possible)	Place of birth…….. 1 Supplies needed for birth…….. 2 Emergency transportation……. 3 Money/emergency fund ……4 People to support during/after birth …….5 Potential blood donors……..6 Others ……..7	
449.	As part of your antenatal care during this pregnancy, were any of the following done at least once: a) Was your blood pressure measured? b) Did you give a Urine sample?	YES NO a) BP . . . . . ……1 2 b) URINE . . . . . ……....1 2 c) BLOOD . . . . . ……....1	
460.	During this pregnancy, did you have your weight measured?	Yes . . . . . 1 No . . . . . 0 Don't know 99	
461.	During this pregnancy, did you have your height measured?	Yes . . . . . 1 No . . . . . 0 Don't know 99	
464.	During this pregnancy, were you given information about what to eat?	Yes ..... .1 No ..... .0 Don't Remember 99	
MATERNAL MEDICAL DISORDERS			
465.	Known Cardiac disease?	Yes . . . . . 1 No . . . . . 0 Don't know 99	

466.	Known diabetes disease?	Yes . . . . 1 No . . . . 0 Don't know 99	
467.	Known thyroid disease?	Yes . . . . 1 No . . . . 0 Don't know 99	
468.	Are you currently sick of Malaria disease?	Yes . . . . 1 No . . . . 0 Don't know 99	
469.	Within the last 3 months were you diagnosed with Malaria?	Yes . . . . 1 No . . . . 0 Don't know 99	
470.	Other known disease?	Yes . . . . 1 No . . . . 0 Don't know 99	

5. Food Taboos during Pregnancy

	Question	**Pregnant?**	**Variable name**
501.	In your area are there **traditional practices** that prohibit pregnant or breastfeeding women from taking some foods or types of foods?	1=yes 0=no →**Q509** 98 = don't know →**Q509**	FDTABOBF FDTABOLAC

	If yes, please list the foods or types of food that are prohibited (be as specific as possible):						
Food Type FTPTYPE1	**502.** **When Prohibited during Pregnancy?**	**503.** **Why Prohibited?**	**504.** **Also prohibited during breast feeding?**	**505.** **If yes, Why?**	**506.** **Do you normally eat this food?**	**507.** **Do you eat this food during pregnancy /lactation?**	**508** **Do yo this fo during pregn**
A _____	1. Entire Pregnancy 2. Beginning 3. End 4. Middle 5. N/A 6. Don't	1.Fear of difficult labor (large baby) 2. Discoloration of fetus 3. Fear of abortion 4. Other: (specify _____) 5. Don't Know	1=yes 2=no 98 = don't know	Specify	1= regularly 2= sometimes 3= rarely 4 = never 98 = don't know	1= regularly 2= sometimes 3= rarely 4 = never 98 = don't know	1 = ye 2 = no 98 = d know

	know						
B _____	1. Entire Pregnancy 2. Beginning 3. End 4. Middle 5. N/A 6. don't know	1.Fear of difficult labor (large baby) 2. Discoloration of fetus 3. Fear of abortion 4. Other: (specify _____) 5. Don't Know	1=yes 2=no 98 = don't know	Specify	1= regularly 2= sometimes 3= rarely 4 = never 98 = don't know	1= regularly 2= sometimes 3= rarely 4 = never 98 = don't know	1 = ye 2 = no 98 = d know
C _____	1. Entire Pregnancy 2. Beginning 3. End 4. Middle 5. N/A 6. don't know	1.Fear of difficult labor (large baby) 2. Discoloration of fetus 3. Fear of abortion 4. Other: (specify _____) 5. Don't Know	1=yes 2=no 98 = don't know	Specify	1= regularly 2= sometimes 3= rarely 4 = never 98 = don't know	1= regularly 2= sometimes 3= rarely 4 = never 98 = don't know	1= yes 2 = no 98 = d know

509.	In your area are there traditional practices that encourage pregnant women to eat <u>more</u> of certain foods?	1=yes 0=no→**Q513** 98 = Don't know →**Q513**

If yes, please list the foods or types of food that are encouraged:

Food or Food Type	**510. When Encouraged?**	**511. Why Encouraged?**	**512. Normally Consumed?**
A. _____	1. Entire Pregnancy	1. Facilitates delivery 2. Prevents stillbirth 3. Prevents big baby	1=yes 2=no

	2. Beginning 3. End 4. Breast feeding	4. Healthy baby 5. Improves maternal health 6. Other (specify)	
B. _____	1. Entire Pregnancy 2. Beginning 3. End 4. Breastfeeding	1. Facilitates delivery 2. Prevents stillbirth 3. Prevents big baby 4. Healthy baby 5. Improves maternal health 6. Other (specify)	1=yes 2=no

	Question	**Response**	**V**
513.	How has the <u>amount</u> of your food you eat changed after you became pregnant?	1. I eat more food than normal 2. I eat less food than normal 3. The amount of food I eat has not changed 4. Don't know	F
514.	How has the <u>variety</u> of foods in your diet changed after becoming pregnant?	1. I eat more types of food than normal 2. I eat less types of food than normal 3. I eat the same foods as normal 4. Don't Know	F

6. Substance use during pregnancy

517.	Do you drink *tella* or *Areke* (local drinks) or *Beer in this pregnancy?* (please specify the type of drink here ([_____])	Yes ……....1 No……....0→ Go to **535** Don't Remember……....99 → Go to **535**	
518.	Do you drink [mention drink] every day during this pregnancy?	Yes……....1 No……....0 Don't Remember……....99	
519.	If yes, how many [units/bottle] per day?	[_____] units/bottle per day	
520.	If yes, how many [units/ bottle] per week/month?	[_____] units/bottle per week	

		[_____] units/bottle per Month Don't Know……....99	
521.	Do you chew khat during this pregnancy?	Yes ……....1 No…….....0 → Go to **539** Don't Remember……....99 → Go to **539**	
522.	Do you chew khat every day during this pregnancy?	Yes ……....1 No…….....0 Don't Remember……....99	
523.	If yes, how much [local unit] per day?	[_____] [local unit] per day	
524.	If no, how much [local unit] per Week?	[_____] [local unit] per week	
525.	Have ever smoked cigarettes?	Yes……1 No…… 0 → Go to **542** Don't Remember…… 99 → Go to **542**	
526.	Do you currently smoke cigarettes?	Yes. ……1 No …… 0 Don't Remember……. 99	
527.	In the last 24 hours, how many cigarettes did you smoke?	[___|___] CIGARETTES	
528.	Is there any family member who smoke cigarettes?	Yes ……1 No …… 0 Don't know……99	

7. Household Food Insecurity Access Scale

	Question	Response	Variable name
517.	In the past four weeks, did you worry that your household would not have enough food?	☐ 1=Yes ☐ 0=No ☐ 98=Don't Know	SWORRY
518.	If yes, how often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (3 to 10 times in the past four weeks) 3 = Often (more than 10 times in the past four weeks)	SWORRYFRQ
519.	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	☐ 1=Yes ☐ 0=No ☐ 98=Don't Know	SKIND
520.	If yes, how often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (3 to 10 times in the past four weeks) 3 = Often (more than 10 times in the past four weeks)	SKINDFRQ
521.	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	☐ 1=Yes ☐ 0=No ☐ 98=Don't Know	SLIMITED
522.	If yes, how often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (3 to 10 times in the past four weeks) 3 = Often (more than 10 times in the past four weeks)	SLIMITEDFRQ
523.	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	☐ 1=Yes ☐ 0=No ☐ 98=Don't Know	SDISLIKE
524.	If yes, how often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (3 to 10 times in the past four weeks) 3 = Often (more than 10 times in the past four weeks)	SDISLIKEFRQ
525.	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	☐ 1=Yes ☐ 0=No ☐ 98=Don't Know	SMALL

526.	If yes, how often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (3 to 10 times in the past four weeks) 3 = Often (more than 10 times in the past four weeks)	SMALLFRQ
527.	In the past four weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?	☐ 1=Yes ☐ 0=No ☐ 98=Don't Know	SFEW
528.	If yes, how often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (3 to 10 times in the past four weeks) 3 = Often (more than 10 times in the past four weeks)	SFEWFRQ
529.	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	☐ 1=Yes ☐ 0=No ☐ 98=Don't Know	SNOFOOD
530.	If yes, how often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (3 to 10 times in the past four weeks) 3 = Often (more than 10 times in the past four weeks)	SNOFOODFRQ
531.	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	☐ 1=Yes ☐ 0=No ☐ 98=Don't Know	SLEEP
532.	If yes, how often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (3 to 10 times in the past four weeks) 3 = Often (more than 10 times in the past four weeks)	SLEEPFRQ
533.	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	☐ 1=Yes ☐ 0=No ☐ 98=Don't Know	SNODAY
534.	If yes, how often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (3 to 10 times in the past four weeks) 3 = Often (more than 10 times in the past four weeks)	SNODAYFRQ

8. psychosocial factors

C				
Over the last two weeks, how often have you been bothered by any of the following problems?				*11
601.	Over the last two weeks, how often have you bothered by little interest or pleasure in doing things	Not at all	0	
		Several days	1	
		More than half the days	2	
		Nearly every day	3	
602.	Over the last two weeks, how often have you bothered by feeling down, depressed, or hopeless	Not at all	0	
		Several days	1	
		More than half the days	2	
		Nearly every day	3	
603.	Over the last two weeks, how often have you bothered by trouble falling/staying asleep, sleeping too much?	Not at all	0	
		Several days	1	
		More than half the days	2	
		Nearly every day	3	
604.	Over the last two weeks, how often have you bothered by feeling tired or having little energy	Not at all	0	
		Several days	1	
		More than half the days	2	
		Nearly every day	3	
605.	Over the last two weeks, how often have you bothered by poor appetite or overeating	Not at all	0	
		Several days	1	
		More than half the days	2	
		Nearly every day	3	
606.	Over the last two weeks, how often have you bothered by feeling bad about yourself – or that you are □a failure or have let yourself or your family down.	Not at all	0	
		Several days	1	
		More than half the days	2	
		Nearly every day	3	
607.	Over the last two weeks, how often have you bothered by trouble concentrating on things, such as reading the newspaper or watching television?	Not at all	0	
		Several days	1	
		More than half the days	2	
		Nearly every day	3	
608.	Over the last two weeks, how often have you bothered by moving or speaking so slowly that other people could have noticed Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual.	Not at all	0	
		Several days	1	
		More than half the days	2	
		Nearly every day	3	
609.	Over the last two weeks, how often have you bothered by thoughts that you would be better off dead or of hurting yourself in some way?	Not at all	0	
		Several days	1	
		More than half the days	2	
		Nearly every day	3	
	Total for PHQ1-PHQ9	_____		
610.	Apart from these past two weeks, during the	No	0	

	past 12 months, did you have other episodes of two weeks or more when you felt depressed or uninterested in most things, and had most of the problems we just talked about?	Yes	1	
611.	If said "Yes" to any of the problems, how difficult have these problems made it for you to do your work, take care of things at home or get along with other people?	Not difficult at all	0	
		Somewhat difficult	1	
		Very difficult	2	
		Extremely difficult	3	

HITS Tool for Intimate Partner Violence Screening

Please listen to each of the following activities and tell me that best indicates the frequency with which your partner acts in the way depicted.

Score: 1= Never 2= Rarely 3=Sometimes 4= Fairly often 5=Frequently 98 = don't know

	Items	**Score**						**Variable**
	How often does your partner:							
601.	Physically hurt you	1	2	3	4	5	98	HITS1
602.	Insult or talk down to you	1	2	3	4	5	98	HITS2
603.	Threaten you with harm	1	2	3	4	5	98	HITS3
604.	Scream or curse at you	1	2	3	4	5	98	HITS4

9. Dietary habit

	How many days (in the last 7 days) did you consume this food?	
		DAYS 701
		DAYSCON
	CEREALS	
1.	Teff (white)	
2	Teff (black)	
3	Barley (Gebis)	
4	Wheat/Durahh (Sinde)	
5	Maize (Bekolo/ Bahismashla)	
6	Sorghum (Mashila)	
7	Millet (Zengada)	

8	Other (specify)	
	PULSES	
9	Lentils (Misir)	
10	Horse beans (Bakela)	
11	Cow Peas (Ater)	
12	Field Peas	
13	Others (specify)	
	MILK PRODUCTS AND EGGS	
14	Milk	
15	Yoghurt (ergo)	
16	Butter	
17	Eggs	
18	Cheese without fat (ayb)	
	OIL SEEDS	
19	Neug	
20	Sesame	
21	Safflower	
22	Sunflower	
23	Rapeseed	
24	Linseed	
25	Peanuts	
26	Other (specify)	
	Meat	
27	Beef (yekebit siga)	
28	Mutton (yegeb)	
29	Chicken	
30	Goat Meat (yefiyel siga)	
	POTATOES, ENSET, VEGETABLES	
31	Enset (Kochoo)	
32	Potatoes	
33	Gommen	
34	Selata	
35	Jinjibel (ginger)	
36	Tikl Gommen (cabbage)	
37	Nech Shinkurit(garlic)	
38	Fasolia	
39	Fenugreek (abish)	
40	Onions	
41	Others (specify)	
	SUGAR, HONEY,	

	SALT, OIL, SPICES	
42	Sugar	
43	Salt	
44	Cooking Oil	
45	Karia	
46	Berbere	
47	Honey	
48	Other (specify)	

ANNEX III Amharic version questionnaire

ቁጥር	ጥያቄ	መልስ	የመለያ ስም
201.	በምን ወር እና አመተ ምህረት ነበር የተወለዱት?	ወር …… ወሩን አላውቀውም ..... 9999 አመተ ምህረት..... ዓ.ምቱን አላውቀውም..... 99	WMONTH WYEAR
202.	እድሜዎት ስንት ነው? **በማነፃፀር የማይጣጣም ከሆነ/ስህተት ካለው ይታረም**	_____አመት	WAGE
203.	የተማሩት ከፍተኛ የትምህርት ደረጃ የትኛው ነው?	የመጀመሪያ ደረጃ(1-8) ..... 1 ሁለተኛ ደረጃ (9-12)..... 2 ኮሌጅ/ዩኒቨርሲቲ..... 3 ማንበብ እና መጻፍ ..... 4 ያልተማረ 5	HEDUTION
204.	ሐይማኖትዎ ምንድን ነው?	ኦርቶዶክስ ..... 1 ሙስሊም ..... 2 ፕሮቴስታንት ..... 3 ካቶሊክ ..... 4 ሌላ (የገለጽ) ..... 99 _____	WRELIGION
205.	የየትኛው ብሄረሰብ አባል ኖት?	ኦሮሞ ..... 1 አማራ ..... 2 ጉራጌ ..... 3 ትግራይ ..... 4 አፋር ..... 5 ስልጤ ..... 6 ሌላ (የገለጽ) 99	WETHNIC
206.	የስራዎ አይነት	አርሶአደር እና የቤት እመቤት..... 1 የቤት እመቤት ..... 2 የግል ..... 3 ተማሪ 4	WOCCUPATI

		ነጋዴ ..... 5 የመጠጥ ሻጭ ..... 6 ሴተኛ አዳሪ ..... 7 የቤት ሰራተኛ ..... 8 የቀን ሰራተኛ ..... 9 ስራ ፈላጊ ..... 10 ግብርና እና ነጋዴ ..... 11 ሌላ (ይገለጽ) 99	
207.	የጋብቻ ሁኔታ ?	በአሁኑ ሰአት በትዳር ላይ ያሉ ..... 1 የተለያዩ ..... 2 የተፋቱ ..... 3 ባለቤታቸው የሞተባቸው ..... 4 በጭራሽ አግብተው የማያውቁ/ያላገቡ 99	WMARITAL **→ጥ211** **→ጥ211** **→ጥ211** **→ጥ211**

አሁን በመቀጠል ደግሞ ስለ ቤትሽ ሁኔታ እና ስለተያያዥ ነገር እጠይቅሻለሁ

ቁጥር	ጥያቄ	መልስ	የመለያ ስም
201.	ለቤቱ የወለል ስራ በዋነኛነት የተጠቀሙት የግንባታ እቃ ምንድን ነው የተሰራበትን ሁሉ ያክብቡ	<u>ባህላዊ ወለል</u> አፈር ..... 11 የከብት ውዳቂ ..... 12 <u>ያላለቀ ወለል</u> የእንጨት ድርድር ..... 21 ቀርከሀ/አገዳ/ጨፈቃ ..... 22 <u>ዘመናዊ ወለል</u> ዘመናዊ ጣውላ ..... 31 ሴራሚክ ..... 32 ሲሚንቶ ..... 33 ምንጣፍ ..... 34 ሌላ (ይገለጽ) ..... 99 _____	**HFLOOR**
202.	ለቤቱ የጣሪያ ስራ በዋነኛነት የተጠቀሙት የግንባታ እቃ ምንድን ነው የተሰራበትን ሁሉ ያክብቡ	<u>ባህላዊ ጣሪያ</u> ጣሪያ የለውም ..... 11 የሳር ክዳን /ቅጠል / ..... 12 <u>ያላለቀ ጣሪያ</u> ፕላስቲክ ..... 21 ቀርከሀ/አገዳ/ጨፈቃ ..... 22 የእንጨት ድርድር 23	**HROOF**

		ዘመናዊ ጣሪያ ቆርቆሮ ወይም ብረት ..... 31 እንጨት ..... 32 ሲሚንቶ/ኮንክሪት..... 33 ሌላ (ይገለጽ) ..... 99 _____	
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204.	ቤትዎ ምን አይነት መጸዳጃ ቤት አለው **ከአንድ በለይ መልስ ከተሰጠ በዋናነት የሚጠቀሙትን ይመዝግቡ**	ውሀ ያለው ሽንት ቤት ወደ ሴፕቲክ ታንክ የሚያመራ ..... 11 ወደ ጉርጓድ መጸዳጃ ቤት የሚያመራ ..... 12 ወደ ሆነ ቦታ ጋር የሚገናኝ ..... 13 የጉርጓድ መጸዳጃ ቤት ባህላዊ የጉርጓድ መጸዳጃ ቤት ..... 21 ባህላዊ የጉርጓድ ሽንት ቤት በሲሚንቶ የተሰራ 22 ባህላዊ የጉርጓድ ሽንት ቤት በሲሚንቶ ያልተሰራ ..... 23 የተሻሻለ የጉርጓድ መጸዳጃ ቤት ..... 24 ኮምፖስት መጸዳጃ ቤት.....25 መጸዳጃ ቤት የለም/በቁጥቋጦ /በሜዳ.....31 ሌላ (ይገለጽ)…….99 _____	HTOILET
205.			HWATER

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207.	ምግብ ለማብሰል በዋናነት ቤተሰቡ የሚጠቀመው የሀይል ምንጭ ምንድን ነው [ከአንድ በላይ መልስ ይቻላል]	ኤሌክትሪክ ..... 1 የተፈጥሮ ጋዝ ..... 2 ባዮ ጋዝ..... 3 ነጭ ጋዝ..... 4 እንጨት ..... 5 ከሰል 6	HFUELELECT HFUELGAS HFUELBIO HFUELKERO HFUELWOO

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208.	ለማብሰያነት የምትጠቀሙበት የተለየ የማገዶ ቤት አላችሁ	የለም ..... 1 አዎ 2	HKITHCEN
209.	ከሚከተሉት ውስጥ የትኞቹ የቤተሰቡ አባል አለው [ከአንድ በላይ መልስ ይቻላል]	ብስክሌት ..... 1 ሞተር ሳይክል/ትንሽ ዶቅዶቄ/ባጃጅ ..... 2 በእንስሳ የሚጎተት ጋሪ..... 3 መኪና/የጭነት መኪና 4	HBICYCLE HMOTOR HCART HCAR
210.	የቤተሰቡ አባል ምን ያህል የእርሻ መሬት አለው በአካባቢው መለኪያ----------(ይገለጽ)	የአካባቢው መለኪያ ____ የእርሻ መሬት የለኝም 00	HLANDSIZE
211.	ከተዘረዘሩት የእንስሳ መሀል የቤተሰቡ አባል ምን ያህል አለው (የቤተሰቡ አባል እንስሳ የሌለው ከሆነ በሳጥን ውስጥ 00 ይጻፉ)	a)የወተት ላም፣ በሬ፣ኮርማ..... ____ b) ዶሮ ..... ____ c) ፍየል..... ____ d) በግ..... ____ e) ፈረስ፣አህያ፣በቅሎ..... ____ f) የንብ ቀፎ ..... ____	HCOWS HCHICEKEN HGOATS HSHEEP HHORISE HBEEHIVES
212.	ከቤተሰቡ አባል መሀል በባንክ ውስጥ/በአነስተኛ ቁጠባ/ የቁጠባ ሂሳብ ያለው አለ	የለም ..... 0 አለ..... 1	HSAVING
በቤት ወስጥ እንዴት ነው ቆሻሻ የምታስወግዱት? (ምርጫውን አያንብቡት፣ መጠይቁን እራሳቸው ይመልሱ፣ በመቀጠል			

መልሱን ይሙሉት)			
213.	የቆሻሻ ጉርጓድ	☐ 1=አዎ ☐ 0=አይደለም	HPIT
214.	በአትክልት ቦታ	☐ 1=አዎ ☐ 0=አይደለም	HGARDEN
215.	በቁጥቋጦ ቦታ	☐ 1=አዎ ☐ 0=አይደለም	HBUSH
216.	በማቃጠል	☐ 1=አዎ ☐ 0=አይደለም	HBURN
217.	ሌላ (ይገለጽ_____)	☐ 1=አዎ ☐ 0=አይደለም	HOTHER

የሴቶች የጤንነት እና የእርግዝና ሁኔታ

በመቀጠል ስለ ቀድሞ እርግዝናዎ እና ጤናዎ እጠይቆታለሁ:: ከዚህ በመቀጠል ስለ ራስዎ የሚጠየቁትን ጥያቄዎች እንዲመልሱልኝ በትህትና እጠይቃለሁ። (የመጀመሪያ እርግዝና ከሆነ አይሞላም)

	ጥያቄ	**መልስ**	
401.	አሁን በህይወት ዘመንዎ ስለነበሩት እርግዝናዎች እጠይቅዎታለሁ:፡ ምን ያህል ጊዜ እርጉዝ ሆነው ያውቃሉ? (በህይወት ያልተወለዱትን ልጆች ጨምሮ), ከሌለ“00” የመዝግቡ	[_____] ጊዜ 00 ከሆነ ወደ ጥያቄ 415	
402.	አሁን በህይወት ዘመንዎ ስለነበሩት ወሊዶች እጠይቅዎታለሁ:፡ ምን ያህል ጊዜ በህይወት ያለ ልጅ ወልደዋል? ***[ይህ ማለት እስትንፋስ የነበረው፣ ያለቀሰ ወይንም ሌላ በወህይወት የመኖር ምልክት ያሳየ፤ ለትንሽ ደቂቃ ወይም ለትንሽ ሰአትም ቢሆን በህይወት የቆየው],* ከሌለ“00” የመዝግቡ)**	[_____] ጊዜ	
403.	በማህጸን ውስጥ የተከሰተ የሽል መሞት አጋጥሞዎት ያውቃል?	አዎ ……1 አያውቅም ……0 ወደ ጥያቄ 405	
404.	ካለ በማህጸን ውስጥ የተከሰተ የሽል መሞት ስንት ጊዜ አጋጥሞዎታል?	[_____] ጊዜ	
405.	ከመወለጃው ጊዜው በፊት የተወለደ ልጅ ወልደው ያውቃሉ? (ከ 28 – 37 ሳምንት)	አዎ ……1 አያውቅም ……0 ወደ ጥያቄ 407	
406.	ካለ ከመወለጃው ጊዜው በፊት የተወለደ ልጅ ስንት ጊዜ አጋጥሞታል? (ከ 28 – 37 ሳምንት)	[_____] ጊዜ	
407.	ውርጃ አጋጥሞዎት ያውቃል? (የእርግዝና መቀረጥ ከ 28 ሳምንት በፊት)?	አዎ ……1 አያውቅም ……0 ወደ ጥያቄ 409	
408.	ካለ ስንት ጊዜ ውርጃ አጋጥሞዎት ያውቃል? (የእርግዝና መቀረጥ ከ 28 ሳምንት በፊት)?	[_____] ጊዜ	

409.	እድሜአችው ከ 5 አመት በታች የሆነ ስንት ሴት እና ወንድ ልጆች አሉዎት? (መልሱን ይመዝግቡ)	[_____] ወንድ ልጅ < 5 አመት <u>እና</u> [_____]ሴት ልጅ <5 አመት [_____] በአጠቃላይ ድምር < 5 አመት	
410.	በተወለደ በመጀመሪያ አመቱ/ቷ የሞተ/ች ልጅ ኖሮሽ ያውቃል?	አዎ …….1 አያውቅም …….0	
411.	በተወለደ በ 28 ቀን ውስጥ የሞተብዎ ልጅ ኖሮሽ ያውቃል ?	አዎ …….1 አያውቅም …….0 ወደ ጥያቄ 413	
412.	ካለ በተወለደ በ 28 ቀን ውስጥ ስንት ጊዜ ሞቶቦዎታል?	[_____] ጊዜ	
413.	በተወለደ በ 7 ቀን ውስጥ የሞተብዎ ልጅ ኖሮት ያውቃል?	አዎ …….1 አያውቅም …….0 ወደ ጥያቄ 415	
414.	ካለ በተወለደ በ 7ቀን ውስጥ ስንት ጊዜ ሞቶቦዎታል?	[_____] ጊዜ	
415.	ከዚህ በፊት ባለ እርግዝና ላይ የገጠሞት ችግሮች ነበር? ለምሳሌ፡- ከእርግዝና ጋር የሚመጣ የደም ግፊት፣ በእርግዝና ወቅት የሚከሰት የደም መፍሰስ፣ ወ.ዘ.ተ.	አዎ …….1 አያውቅም …….0 ወደ ጥያቄ 420	
416.	ካለ የገጠመዎትን ችግሮች ዘርዝሩልኝ፡	……..1 …….2 …….3 ……4 ……..5	

ቅድመ ወሊድ እና ድህረ ወሊድ ጤና (ከዚህ በፊት ለወለዱ እናቶች ብቻ)

ተ.ቁ	**ጥያቄ**	የመጨረሻ ልጅ	ከመጨረሻው ቀድሞ የተወለደ ልጅ
420.	በእርግዝና ወቅት ከማንኛውም ባለሙያ የቅድመ ወሊድ (ለእርጉዞች የሚደረግ) ምርመራ አግኝተው ነበር?	አዎ …….1 አላገኘሁም …….0 ወደ ጥያቄ 428	አዎ …….1 አላገኘሁም ……
421.	ምርመራውን ያደረገልዎት ማነው? ሌላስ?	**ጤና ባለሙያ** ዶክትር …….1 ነርስ …….2 አዋላጅ ነርስ …….3 ጤና መኮንን …….4 የጤና ኤክስቴንሽን ሰራተኛ ……5 **ሌላ ሰው**	**ጤና ባለሙያ** ዶክትር …… ነርስ …… አዋላጅ ነርስ …… ጤና መኮንን …… የጤና ኤክስቴንሽን ሰራተኛ …… **ሌላ ሰው** ያልሰለጠነ የልምድ አዋላጅ ……

		ያልሰለጠነ የልምድ አዋላጅ ……6 ሌላ ……7 _____ (ይገለጽ)	ሌላ ……7
422.	በእርግዝና ወቅት የቅድመ ወሊድ (ለእርጉዞች የሚደረግ) ምርመራ ያገኙት የት ነበር? ሌላስ?	**ቤት** በራሳቸው ቤት……1 ሌላ ሰው ቤት ……2 **የመንግሥት ሕክምና ተቋም** ሆስፒታል ……3 ጤና ጣቢያ ……4 ጤና ኬላ ……5 ሌላ የመንግሥት የጤና ተቋም …… _____ (ይገለጽ) **መንግሥታዊ ያልሆነ የጤና ተቋም** የጤና ተቋም ……7 ሌላ መንግሥታዊ ያልሆነ የጤና ተቋም …8 _____ (ይገለጽ) **የግል ሕክምና ተቋም'** የግል ሆስፒታል ……9 የግል ክሊኒክ ……10 ሌላ የግል ……11 _____ (ይገለጽ)	**ቤት** በራሳቸው ቤት…… ሌላ ሰው ቤት ……2 **የመንግሥት ሕክምና ተቋም** ሆስፒታል …… …… ጤና ጣቢያ …… ጤና ኬላ …… ሌላ የመንግሥት የጤና ተቋም …… .1 (ይገለጽ) **መንግሥታዊ ያልሆነ የጤና ተቋም** የጤና ተቋም ……□……7 ሌላ መንግሥታዊ ያልሆነ የጤና ተቋም _____ (ይገለጽ) **የግል ሕክምና ተቋም'** የግል ሆስፒታል … …… የግል ክሊኒክ …… ሌላ የግል ……11 _____ (ይገለጽ)
423.	በእርግዝና ወቅት ለመጀመሪያ ጊዜ የቅድመ ወሊድ (ለእርጉዞች ሚደረግ)ምርመራ ሲያገኙ የስንት ወር እርጉዝ ነበሩ?	[_____][_____] ወራት አላውቅም…….. 99	[_____][_____] ወራት አላውቅም……. 99
424.	በእርግዝና ወቅት ለምን ያህል ጊዜ ለእርጉዞች የሚደረግ ምርመራን አግኝተዋል?	[_____] ጊዜ አላውቅም ……99	[_____] ጊዜ አላውቅም……99

የአሁን እርግዝናን በተመለከተ

ተ.ቁ	ጥያቄ	መልስ	
442.	በአሁን ሰአት ስላለው እርግዝና በተመለከተ ለማርገዝ አቅደሽነበር ወይንስ ለመቆየት ሀሳብ ነበረሽ ወይም ተጨማሪ ልጅ የመውለድ ሀሳቡ አልነበረሽም	አቅጄ ነበር……1 ለመቆየት ሀሳብ ነበረኝ ……2 ተጨማሪ ልጅ የመውለድ ሀሳብ አልነበረኝም 3	
443.	እርጉዝ ከሆንሽ ምን ያህል ጊዜ ሆነሽ? (የመጨረሻ ጊዜ የወር አበባ መቼ እንዳየች ይጠይቁ)	_____ ሳምንት አላውቅም…… ……99	
444.	በዚህ የእርግዝና ወቅት ከማንኛውም ባለሙያ የቅድመ ወሊድ (ለእርጉዞች የሚደረግ) ምርመራ አግኝተው ነበር?	አዎ……1 አላገኘሁም……0 ወደ ጥያቄ 465 አላውቅም……99 ወደ ጥያቄ	

445.	ምርመራውን ያደረገልዎት ማነው? ሌላስ?	**ጤና ባለሙያ** ዶክትር ……1 ነርስ ……2 አዋላጅ ነርስ ……3 ጤና መኮንን ……4 የጤና ኤክስቴንሽን ሰራተኛ ……5 **ሌላ ሰው** ያልሰለጠነ የልምድ አዋላጅ ……6 ሌላ ……7 _____ (ይገለጽ)	
446.	በዚህ የእርግዝና ወቅት የቅድመ ወሊድ (ለእርጉዞች የሚደረግ) ምርመራ ያገኙት የት ነበር? ሌላስ?	**ቤት** በራሳቸው ቤት ……1 ሌላ ሰው ቤት …….. 2 **የመንግሥት ሕክምና ተቋም** ሆስፒታል …….. 3 ጤና ጣቢያ …… 4 ጤና ኬላ …… 5 ሌላ የመንግሥት …… 6 _____ (ይገለጽ) **መንግሥታዊ ያልሆነ የጤና ተቋም** የጤና ተቋም …… 7 ሌላ መንግሥታዊ ያልሆነ የጤና ተቋም……. _____ (ይገለጽ) **የግል ሕክምና ተቋ '** የግል ሆስፒታል ……9 የግል ክሊኒክ …… 10 ሌላ የግል …… 11 (ይገለጽ)	
447.	በዚህ እርግዝና ወቅት ለመጀመሪያ ጊዜ የቅድመ ወሊድ (ለእርጉዞች ሚደረግ) ምርመራ ሲያገኙ የስንት ወር እርጉዝ ነበሩ?	[_____][_____] ወራት አላውቅም 99	
448.	በዚህ እርግዝና ወቅት ለምን ያህል ጊዜ ለእርጉዞች የሚደረግ ምርመራን አግኝተዋል?	[_____] ጊዜ አላውቅም 99	
448.E	ስለየትኞቹ ለመውለድ ስለሚደረግ ቅድመ ዝግጀት ነበር የተነገርዎት? **ከአንድ በላይ መልስ ማክበብ ይቻላል**	ስለሚወልዱበት ቦታ . . . . . 1 ለመውለድ ስለሚያስፈልጉ የእቃ አቅርቦት 2 ለድንገተኛ ጊዜ ስለሚሆን ትራንስፖርት . 3 ለድንገተኛ ጊዜ ስለሚሆን ገንዘብ .. . .4 ሲወልዱ/ከዎለዱ በኋላ ድጋፍ ስለሚያደርጉልዎት ሰዎች …….. 5 ደም ሊለግስዎ ስለሚችሉ ሰዎች .. . . . …. 6 ሌላ . . . . . 8 _____ (ይገለጽ)	

464.	በዚህ የእርግዝና ወቅት ስለአመጋገብዎ ምክር ተሰጥቶዎታል?	አዎ……1 አልተሰጠኝም ……0 አላውቅም…… 99	
የእናትየውን የህመም ሁኔታ የሚመለከቱ ጥያቄዎች			
465.	የታወቀ የልብ በሽታ አለብዎት?	አዎ……1 የለብኝም ……0 አላውቅም…… 99	
466.	የታወቀ የስኳር በሽታ አለብዎት?	አዎ……1 የለብኝም ……0 አላውቅም…… 99	
467.	የታወቀ የእንቅርት በሽታ አለብዎት?	አዎ……1 የለብኝም ……0 አላውቅም…… 99	

በእርግዝና ወቅት የሚከለከሉ ምግቦች

	ጥያቄ	**መልስ**	**የመለያ ስም**
509.	በዚህ አካባቢ እርጉዝ እናቶችን ወይም የሚያጠቡ እናቶችን አንዳንድ ምግቦችን ወይም የምግብ አይነቶችን እንዳይወስዱ የሚከለክል ባህላዊ ልምድ አለ?	1=አለ 0=የለም →**ጥ509** 98 = አላውቅም→**ጥ509**	FDTABOBF FDTABOLAC

አዎን ከሆነ እባክዎን የተከለከሉ ምግቦችን ወይም ዓይነቶችን ይዘርዝሩ (በተቻለ መጠን ውስን ለመሆን የሞክሩ):

የምግብ አይነት FTPTYPE 1	**510. በእርግዝና ወቅት መቼ ነው የተከለከለው?**	**511. ለምንድን ነው የተከለከለው?**	**512. ይህ የምግብ አይነት ለሚያጠቡ እናቶችም ነው የተከለከለው?**	**513. አዎ ከሆነ ምክንያቱን ይግለጹ?**	**514. በተለምዶ ይህን ምግብ ይበላሉ?**	**515. የህንን የምግብ አይነት በእርግዝና ወቅት ወይም ጡት በማጥባት ጊዜ ይመገቡታል?**	**516. በእርግዝና ወቅት ይህ ምግብ መመገብ ይፈልጋሉ/ያምሮታል?**

___ ___ ___ ___ ___	7. በሙሉ እርግዝና ወቅት 8. መጀመሪያ ላይ 9. መጨረሻ 10. መሀከል ላይ 11. ተፈፃሚ የማይሆን 12. ላላውቅም	1. በወሊድ ጊዜ ምጥ እንዳያስቸግር (ትልቅ ልጅ እንዳይሆን) 2. የፅንስ ቀለም መለወጥ እንዳይኖር 3. ውርጃ እንዳይኖር በመፍራት 4. ሌላ: (ይገለፅ_____) 5. ላላውቅም	1=አዎ 2=አይደለም 98 = አላውቅም	ይግለጹ	1= በመደበኛነት 2= አንዳንድ ጊዜ 3= አልፎ አልፎ 4 = በጭራሽ 98 = አላውቅም	1= በመደበኛነት 2= አንዳንድ ጊዜ 3= አልፎ አልፎ 4 = በጭራሽ 98 = አላውቅም	1 = አዎ 2 = አይ 98 = አላውቅም
___ ___ ___ ___ ___	7. በሙሉ እርግዝና ወቅት 8. መጀመሪያ ላይ 9. መጨረሻ 10. መሀከል ላይ 11. ተፈፃሚ የማይሆን 12. ላላውቅም	1. በወሊድ ጊዜ ምጥ እንዳያስቸግር (ትልቅ ልጅ እንዳይሆን) 2. የፅንስ ቀለም መለወጥ እንዳይኖር 3. ውርጃ እንዳይኖር በመፍራት 4. ሌላ: (ይገለፅ_____) 5. ላላውቅም	1=አዎ 2=አይደለም 98 = አላውቅም	ይግለጹ	1= በመደበኛነት 2= አንዳንድ ጊዜ 3= አልፎ አልፎ 4 = በጭራሽ 98 = አላውቅም	1= በመደበኛነት 2= አንዳንድ ጊዜ 3= አልፎ አልፎ 4 = በጭራሽ 98 = አላውቅም	1 = አዎ 2 = አይ 98 = አላውቅም
	10. በሙሉ እርግዝና ወቅት 11. መጀመሪያ ላይ 12. መጨረሻ 13. መሀከል ላይ 14. ተፈፃሚ የማይሆን 15. ላላውቅም	1. በወሊድ ጊዜ ምጥ እንዳያስቸግር (ትልቅ ልጅ እንዳይሆን) 2. የፅንስ ቀለም መለወጥ እንዳይኖር 3. ውርጃ እንዳይኖር በመፍራት	1=አዎ 2=አይደለም 98 = አላውቅም	ይግለጹ	1= በመደበኛነት 2= አንዳንድ ጊዜ 3= አልፎ አልፎ 4 = በጭራሽ 98 = አላውቅ	1= በመደበኛነት 2= አንዳንድ ጊዜ 3= አልፎ አልፎ 4 = በጭራሽ 98 = አላውቅም	1 = አዎ 2 = አይ 98 = አላውቅም

		4. ሌላ: (ይገለፅ_____ ____) 5. ኣላውቅም			ም		

509.	በአካባቢዎ ውስጥ ነፍሰጡር ሴቶች ተጨማሪ ምግቦችን እንዲመገቡ የሚያበረታቱ ባህላዊ ልምምዶች አሉ?	1=አሉ 0=የሉም→**ጥ513** 98 = አላውቅም→**ጥ513**

አዎ ከሆነ, እባክዎን የሚበረታቱትን ምግቦች ወይም የምግብ ዓይነቶች ይዘርዝሩ:

ምግቦች ወይም የምግብ ዓይነቶች	**510** **መቼ ነው የሚበረታታው?**	**511** **ለምንድን ነው የሚበረታታው?**	**512** **የህ ምግብ በመደበኛነት ይጠቀማሉ?**
ሀ _____	5. በሙሉ እርግዝና ወቅት 6. መጀመሪያ ላይ 7. መጨረሻ ላይ 8. በጡት ማጥባት ጊዜ	1. በወሊድ ጊዜ ምጥን ስለሚያፋጥን 2. በወሊድ ጊዜ ህፃኑ እንዳይሞት ይከላከላል 3. ህፃኑ ትልቅ እንዳይሆን ይከላከላል 4. ጤነኛ ልጅ እንዲወለድ ያደርጋል 5. የእናቶች ጤናን ያሻሽላል 6. ሌላ (የገለፅ)	1=ኦዎ 2=አልጠቀምም
ለ _____	5. በሙሉ እርግዝና ወቅት 6. መጀመሪያ ላይ 7. መጨረሻ ላይ 8. በጡት ማጥባት ጊዜ	1. በወሊድ ጊዜ ምጥን ስለሚያፋጥን 2. በወሊድ ጊዜ ህፃኑ እንዳይሞት ይከላከላል 3. ህፃኑ ትልቅ እንዳይሆን ይከላከላል 4. ጤነኛ ልጅ እንዲወለድ ያደርጋል 5. የእናቶች ጤናን ያሻሽላል 6. ሌላ (የገለፅ)	1=ኦዎ 2=አልጠቀምም
	ጥያቄ	መልስ	የመለያ ስም
513	ከፀነሱ በኋላ የሚመገቡት የምግብ መጠን እንዴት ተለውጧል?	1. ከተለመደው በላይ ብዙ ምግብ እበላለሁ 2. ከተለመደው ያነሰ ምግብ እበላለሁ 3. የምበላው ምግብ መጠን አልተቀየረም 4. አላውቀውም	FTAMTCHANG
514	ከፀነሱ በኋላ የሚመገቡት የምግብ አይነቶች እንዴት ተለውጧል?	1. ከተለመደው በላይ ብዙ የምግብ አይነት እበላለሁ 2. ከተለመደው ያነሰ የምግብ አይነት እበላለሁ 3. የምበላው የምግብ አይነት አልተቀየረም 4. አላውቀውም	FTVARCHG

አልኮል እና የጫት ፍጆታ

515.	በዚህ እርግዝና ወቅት አረቄ (ጠላ፣ጠጅ) ወይም ቢራ ይጠጣሉ? (እባክዎን የመጠጡን አይነት እዚህ ይግለጹ ([_____])	አዎ.....1 አይ ……..0→**ጥ535** አላስታውስም.....99→**ጥ535**	
516.	በዚህ እርግዝና ወቅት በየቀኑ [የመጠጥ አይነት] ትጠጫለሽ?	አዎ.....1 አይ .....0 አላስታውስም 99	
517.	አዎ ከሆነ, በቀን ምን ያህል [መለኪያ/ጠርሙስ]ትጠጫለሽ	[_____] መለኪያ/ጠርሙስ/ በቀን	
518.	አዎ ከሆነ, በሳምንት / በወር/ ምን ያህል [መለኪያ/ጠርሙስ]ትጠጫለሽ	[_____] መለኪያ/ጠርሙስ/ በሳምንት [_____] መለኪያ/ጠርሙስ/ በወር አላውቅም……...99	
519.	በዚህ እርግዝና ወቅት ጫት ይቅማሉ?	አዎ.....1 አይ ……..0→**ጥ539** አላስታውስም.....99→**ጥ539**	
520.	በዚህ እርግዝና ወቅት በየቀኑ ይቅማሉ?	አዎ.....1 አይ .....0 አላስታውስም 99	
521.	አዎ ከሆነ, በቀን ምን ያህል [ጥቅል] ይቅማሉ?	[_____] ጥቅል በቀን	
522.	አዎ ከሆነ, በሳምንት / በወር/ ምን ያህል [ጥቅል] ይቅማሉ?	[_____] ጥቅል በሳምንት [_____] ጥቅል በወር አላውቅም……...99	
523.	ሲጋራ አጭሰው ያውቃሉ ?	አዎ.....1 አይ .....0→**ጥ 542** አላስታውስም .....99→**ጥ 542**	
524.	በዚህ እርግዝና ወቅት ሲጋራ ያጨሳሉ ?	አዎ.....1 አይ .....0→**ጥ542** አላስታውስም	

		.....99→**ጥ542**	
525.	ባለፈው 24 ሰአት ውስጥ ምን ያህል ሲጋራ አጨሰው ነበር?	[_____] በቁጥር አላውቅም……...99	
526.	ከቤተሰብ አባላት ሲጋራ የሚያጨስ ሰው አለ?	አዎ.....1 አይ .....0 አላውቅም.....99	

የቤት ውስጥ የምግብ ዋስትና መለኪያ

አሁን ባለፉት አራት ሳምንታት ስለነበረው ስለቤተሰብዎ ምግብ አቅርቦት ጥያቄዎችን እጠይቅዎታለሁ።. የምግብ አቅርቦት የሚባለው እርሶ እና የቤተሰቡ አባላት የሚመገቡት ሁሉንም ምግቦች፤ስጎ፣ እና ሌላ አይነት የምግብ አይነቶችን ያካትታል ***(የተመረጠቸውን ሴት ይጠይቁ)***

	ጥያቄ	**መልስ**	**የመለያ ስም**
562	ባለፈው አንድ ወር ውስጥ ቤተሰብዎ በቂ ምግብ አይኖረውም ብለው ሰግተው/ተጨንቀው ያውቃሉ	☐ 1=አዎ ☐ 0=የለም ☐ 98=አላውቅም	SWORRY
563	አዎ ከሆነ ይህ ችግር ምን ያህል ተከስቷል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ በወር ውስጥ) 2 =አንዳንዴ (ከሶስት እሰከ አስር ጊዜ በወር ውስጥ) 3 = ብዙ ጊዜ (ከአስር ግዜ በላይ በወር ውስጥ)	SWORRYFRQ
564	ባለፈዉ አንድ ወር ውስጥ እርስዎ ወይም ሌላ የቤተሰብ አባል አቅም በማጣት ምክንያት የፈለጉትን ምግብ መመገብ ሳይችሉ ቀርተዋል; **(ለጠያቂ: ለምሳሌ ምስር መብላት ፈልገዉ አልበሉም)**	☐ 1=አዎ ☐ 0=የለም ☐ 98=አላውቅም	SKIND
565	አዎ ከሆን ይህ ችግር ምን ያህል ችግር ምን ያህል ጊዜ ተከስቷል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ በወር ውስጥ) 2 =አንዳንዴ (ከሶስት እሰከ አስር ጊዜ በወር ውስጥ) 3 = ብዙ ጊዜ (ከአስር ግዜ በላይ በወር ውስጥ)	SKINDFRQ

566	ባለፈዉ አንድ ወር እርስዎ ወይም ሌላ የቤተሰብ አባል አቅም በማነስ ምክንያት በየቀኑ አንድ አይነት ምግቦች ተመግበው ያውቃሉ;• (**ለጠያቂ:: ለምሳሌ ሁሌ ምስር ፣ ሁሌ ጎምን ብቻ መብላት)**	☐ 1=አዎ ☐ 0=የለም ☐ 98=አላውቅም	SLIMITED
567	አዎ ከሆን ይህ ችግር ምን ያህል ችግር ምን ያህል ጊዜ ተከስቷል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ በወር ውስጥ) 2 =አንዳንዴ (ከሶስት እሰከ አስር ጊዜ በወር ውስጥ) 3 = ብዙ ጊዜ (ከአስር ግዜ በላይ በወር ውስጥ)	SLIMITEDFRQ
568	ባለፈዉ አንድ ወር እርስዎ ወይም ሌላ የቤተሰብ አባል በአቅም ማነስ ምክንያት **በአካባቢዉ ማህበረሰብ ዘንድ ያልተለመደ ምግብ (የማይበሉ ምግቦችን)** ተመግበው ያውቃሉ<; (**ለጠያቂ: በችግር ጊዜ ብቻ የሚበላ ምግብ)**	☐ 1=አዎ ☐ 0=የለም ☐ 98=አላውቅም	SDISLIKE
569	አዎ ከሆን ይህ ችግር ምን ያህል ችግር ምን ያህል ጊዜ ተከስቷል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ በወር ውስጥ) 2 =አንዳንዴ (ከሶስት እሰከ አስር ጊዜ በወር ውስጥ) 3 = ብዙ ጊዜ (ከአስር ግዜ በላይ በወር ውስጥ)	SDISLIKEFRQ
570	ባለፈዉ አንድ ወር እርስዎ ወይም ሌላ የቤተሰብ አባል በቂ ምግብ ባለመኖሩ ምክንያት **ከሚያስፈልግዎ የምግብ መጠን ያነሰ ተመግበዋል**; **(ለጠያቂ: ለምሳሌ ሙሉ ቂጣ ይመገቡ ከነበረ ግማሽ ቂጣ ፣ አንድ እንጀራ ከብዙ ሰዉ ጋር መብላት ሊሆን ይችላል)**	☐ 1=አዎ ☐ 0=የለም ☐ 98=አላውቅም	SMALL
571	አዎ ከሆን ይህ ችግር ምን ያህል ችግር ምን ያህል ጊዜ ተከስቷል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ በወር ውስጥ) 2 =አንዳንዴ (ከሶስት እሰከ አስር ጊዜ በወር ውስጥ) 3 = ብዙ ጊዜ (ከአስር ግዜ በላይ በወር ውስጥ)	SMALLFRQ

572	ባለፈዉ አንድ ወር እርስዎ ወይም ሌላ የቤተሰብ አባል በቤትዎ በቅ ምግብ ባለኖሩ በቀን ውስጥ **ከተለመደው ያነሰ ጊዜ ምግብ** ተመግበው ያውቃሉ<; **(ለጠያቂ: ለምሳሌ በቀን ሶስቴ ይመገቡ ከነበረ ከሶስት ጊዜ ያነሰ መመገብ ሊሆን ይችላል)**	☐ 1=አዎ ☐ 0=የለም ☐ 98=አላውቅም	SFEW
573	አዎ ከሆን ይህ ችግር ምን ያህል ችግር ምን ያህል ጊዜ ተከስቷል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ በወር ውስጥ) 2 =አንዳንዴ (ከሶስት እሰከ አስር ጊዜ በወር ውስጥ) 3 = ብዙ ጊዜ (ከአስር ግዜ በላይ በወር ውስጥ)	SFEWFRQ
574	ባለፈዉ አንድ ወር በአቅም ማነስ ምክንያት ምንም አይነት ምግብ በቤትዎ ውስጥ **የሚላስ የሚቀመስ ጠፍቶ ያውቃል**;	☐ 1=አዎ ☐ 0=የለም ☐ 98=አላውቅም	SNOFOOD
575	አዎ ከሆን ይህ ችግር ምን ያህል ችግር ምን ያህል ጊዜ ተከስቷል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ በወር ውስጥ) 2 =አንዳንዴ (ከሶስት እሰከ አስር ጊዜ በወር ውስጥ) 3 = ብዙ ጊዜ (ከአስር ግዜ በላይ በወር ውስጥ)	SNOFOODFRQ
576	ባለፈዉ አንድ ወር እርስዎ ወይም ሌላ የቤተሰብ አባል **በቂ ምግብ ባለመኖሩ የተነሳ ሳትበሉ ያደራቹበት** ቀን አለ<;	☐ 1=አዎ ☐ 0=የለም ☐ 98=አላውቅም	SLEEP
577	አዎ ከሆን ይህ ችግር ምን ያህል ችግር ምን ያህል ጊዜ ተከስቷል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ በወር ውስጥ) 2 =አንዳንዴ (ከሶስት እሰከ አስር ጊዜ በወር ውስጥ) 3 = ብዙ ጊዜ (ከአስር ግዜ በላይ በወር ውስጥ)	SLEEPFRQ
578	ባለፈዉ አንድ ወር እርስዎ ወይም ሌላ የቤተሰብ አባል በቂ ምግብ ባለመኖሩ የተነሳ **ሳይበገቡ ውለው አድረው ያውቃሉ**<;	☐ 1=አዎ ☐ 0=የለም ☐ 98=አላውቅም	SNODAY
579	አዎ ከሆን ይህ ችግር ምን ያህል ችግር ምን ያህል ጊዜ ተከስቷል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ በወር ውስጥ) 2 =አንዳንዴ (ከሶስት እሰከ አስር ጊዜ በወር ውስጥ) 3 = ብዙ ጊዜ (ከአስር ግዜ በላይ በወር ውስጥ)	SNODAYFRQ

የሥነ ልቦና ውጥረት መለኪያ

ማብራሪያ: ብዙ ቀናት(2-6ቀን) በአማካኝ ግማሹን ቀን(7-11ቀን) በአማካኝ ሁሉንም ቀን(12-14ቀን) 98 = አላውቅም				
ባለፉት ሁለት ሳምንት ውስጥ ለምን ያህል ጊዜ በሚከተሉት ምልክቶች ተረብሸው ያውቃሉ?				*11
601.	ባለፉት ሁለት ሳምንት ውስጥ ነገሮችን ለማከናወን ትንሽ ፍላጎት የመኖር ስሜት ምን ያህል ጊዜ ተሰምቶታል	በጭራሽ	0	
		ብዙ ቀናት	1	
		በኣማካኝ ግማሹን ቀን	2	
		በአማካኝ ሁሉኑም ቀን	3	
602.	ባለፉት ሁለት ሳምንት ውስጥ , የመደበር የመሰላቸት ወይም ተሰፋ የመቁረጥ ስሜት ምን ያህል ጊዜ ተሰምቶታል	በጭራሽ	0	
		ብዙ ቀናት	1	
		በኣማካኝ ግማሹን ቀን	2	
		በአማካኝ ሁሉኑም ቀን	3	
603.	ባለፉት ሁለት ሳምንት ውስጥ, በእንቅልፍ ማጣት ስሜት ወይም ከመጠን በላይ በመተኛት ምን ያህል ጊዜ ተረብሸዋል	በጭራሽ	0	
		ብዙ ቀናት	1	
		በኣማካኝ ግማሹን ቀን	2	
		በአማካኝ ሁሉኑም ቀን	3	
604.	ባለፉት ሁለት ሳምንት ውስጥ, በአቅም ማጣት ስሜት ወይም ድካም ድካም በመሰማት ምን ያህል ጊዜ ተረብሸዋል	በጭራሽ	0	
		ብዙ ቀናት	1	
		በኣማካኝ ግማሹን ቀን	2	
		በአማካኝ ሁሉኑም ቀን	3	
605.	ባለፉት ሁለት ሳምንት ውስጥ, በምግብ ማጣት ፍላጎት ወይም ከመጠን በላይ በመብላት ምን ያህል ጊዜ ተረብሸዋል	በጭራሽ	0	
		ብዙ ቀናት	1	
		በኣማካኝ ግማሹን ቀን	2	
		በአማካኝ ሁሉኑም ቀን	3	
606.	ባለፉት ሁለት ሳምንት ውስጥ, እራስን በመጥላት ስሜት፣ የተሸናፊነት ስሜት፣ ቤተሰብን የማሳዘን ስሜት ምክንያት ምን ያህል ጊዜ ተረብሸዋል	በጭራሽ	0	
		ብዙ ቀናት	1	
		በኣማካኝ ግማሹን ቀን	2	
		በአማካኝ ሁሉኑም ቀን	3	
607.	ባለፉት ሁለት ሳምንት ውስጥ, ጋዜጣ በማንበብ ወቅት ወይም ቴሌቭዥን በማየት ወቅት በሀሳብ መበታተን ምክንያት ምን ያህል ጊዜ ተረብሸዋል ?	በጭራሽ	0	
		ብዙ ቀናት	1	
		በኣማካኝ ግማሹን ቀን	2	
		በአማካኝ ሁሉኑም ቀን	3	
608.	ባለፉት ሁለት ሳምንት ውስጥ, በጣም ቀስ ብሎ በመናገር ወይም ከወትሮው በተለየ በጣም በፍጥነት በማውራት ወይም በመቅበዝበዝ ስሜት ምክንያት ምን ያህል ጊዜ ተረብሸዋል?	በጭራሽ	0	
		ብዙ ቀናት	1	
		በኣማካኝ ግማሹን ቀን	2	
		በአማካኝ ሁሉኑም ቀን	3	
609.	ባለፉት ሁለት ሳምንት ውስጥ, እራስን በማጥፋት ስሜት ወይም እራስን በመጉዳት ስሜት ምክንያት ምን ያህል ጊዜ ተረብሸዋል	በጭራሽ	0	
		ብዙ ቀናት	1	
		በኣማካኝ ግማሹን ቀን	2	

		በአማካኝ ሁሉኑም ቀን	3	
	ማጠቃለያ PHQ1-PHQ9	_____		
610.	ከሁለቱ ሳምንት ውጪ ባለፊት 12 ወር ውስጥ ለሁለት ሳምንት ወይም ከዛ በላይ የመደበር ወይም ለነገሮች ፍላጎት የማጣት እንዲሁም ቅድም የተወያየንባቸው ችግሮች ገጥሞት ነበር	አይ	0	
		አዎ	1	
611.	መልሱ አዎ ከሆነ እነዚህ ችግሮች ስራዎትን በአግባቡ ለመስራት፣ የቤት ውስጥ ስራን ለመስራት እንዲሁም ከሰዎች ጋር ለመግባባት ምንያህል አስቸጋሪ ሁኔታ ፈጥረው ነበር ?	ምንም ያህል አስቸጋሪ አልነበረም	0	
		በተወሰነ መልኩ አስቸጋሪ ነበር	1	
		በጣም አስቸጋሪ ነበር	2	
		እጅግ በጣም አስቸጋሪ ነበር	3	

በትዳር አጋር/ጓደኛ የሚደርስ ጥቃትን መለያ

እባክዎን የሚከተሉትን ተግባሮች ያድምጡና በምን ያህል ጊዜ የትዳር አጋር/ጓደኛ/ እነዚህን ተግባር እንደሚፈፅም በተሻለ መንገድ የሚገልፀውን ይምረጡ

ነጥብ: 1= በጭራሽ 2= አንድ አንዴ 3=አልፎ አልፎ 4= አዘውትሮ 5= በጣም በተደጋጋሚ 98 = አላውቅም

	ዝርዝር	**ነጥብ**						**መለያ**
በምን ያህል ጊዜ የትዳር አጋር/ጓደኛ/								
601.	አካላዊ ጉዳት አድርሶቦታል	1	2	3	4	5	98	HITS1
602.	መሳደብ ወይም ዝቅ ማድረግ (መናቅ፣ማንቋሸሽ)	1	2	3	4	5	98	HITS2
603.	አደጋን ስለማድረስ አስፈራርቶታል	1	2	3	4	5	98	HITS3
604.	መጮህ ወይም መራገም	1	2	3	4	5	98	HITS4

የምግብብ አጠቃቀም

	ባለፈው ሳምንት (በ7 ቀን ውስጥ) ይህንን ምግብ ለምን ያህል ጊዜ ተመግበዋል	
		---------ቀን 701.
	ጥራጥሬ	**DAYSCON**
1	ነጭ ጤፍ	
2	ቀይ ጤፍ	
3	ገብስ	
4	ስንዴ	
5	በቆሎ	
6	ማሽላ	
7	ዘንጋዳ	
8	ሌላ (ይገለጽ)	
	የምግብ እህሎች	
9	ምስር	
10	ባቄላ	
11	አተር (አኩሪ አተር)	
12	ሽንበራ	
13	ቦሎቄ	
14	ሌላ (ይገለጽ)	
	ወተት እና እንቁላል	
15	ወተት	
16	እርጎ	
17	ቅቤ	
18	እንቁላል	
19	አይብ	
	የቅባት እህሎች	
20	ኑግ	
21	ሰሊጥ	
22	ደቃቃ ሱፍ	
23	ሱፍ	
24	ጎመን ዘር	
25	ተልባ	

26	ለውዝ	
27	ሌላ (ይገለጽ)	
	ስጋ	
28	ከብት ስጋ	
29	የበግ ስጋ	
30	የዶሮ ስጋ	
31	የፍየል ስጋ	
	የስራ ስር ምግቦች	
32	ቆጮ	
33	ድንች	
34	ጎመን	
35	ሰላጣ	
36	ዝንጅብል	
37	ጥቅል ጎመን	
38	ነጭ ሽንኩርት	
39	ፎሶሊያ	
40	አብሽ	
41	ሽንኩርት	
42	ሌላ (ይገለጽ)	
	ስኳር፣ማር፣ዘይት	
43	ስኳር	
44	ጨው	
45	የምግብ ዘይት	
46	ቃርያ	
47	በርበሬ	
48	ማር	
49	ሌላ (ይገለጽ)	

APPROVAL SHEET

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF NUTRITION AND DIETITICS

I, the undersigned MPH student, declare that I have submitted my original work on a title: PREDICTOR OF RATE OF GESTATIONAL WEIGHT GAIN IN BUTAJIRA, ETHIOPIA, A COMMUNITY BASED PROSPECTIVE STUDY for the examination.

Submitted by:

ESET GETAHUN …… 26 / 8 / 2021

Name of student Signature Date

Thesis work has been submitted for examination with my approval as an advisor.

1. ……. ……. …….

Name of Major Advisor Signature Date

2. …… …… ……

Name of Co-Advisor Signature Date