

Research Article

Food Consumption Score and Associated Factors Among Pregnant Women in Injibara Town, Northwest Ethiopia: A Community Based Crss-Sectional Study

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Abstract

Background: Pregnant women are the most vulnerable groups for poor food consumption, particularly for those in resource limiting settings like Ethiopia. Furthermore, there is a scarcity of evidence on food consumption in these population groups and study area. Thus, this study aimed to assess adequate food consumption score and associated factors among pregnant women in Injibara Town, North west Ethiopia. A community based cross-sectional study was conducted from October 7 to November 09, 2024, among 383 pregnant women in Injibara Town. A multistage sampling technique followed by Systematic random sampling technique was used to select study participants. Data were collected using an interviewer-administered questionnaire on Kobo Toolbox and exported to SPSS version 26 for analysis. Binary logistic regression was employed to explore associations between dependent and independent variables. Finally adjusted odds ratio with 95% Confidence Interval at p-value < 0.05 was considered as statistically significant. The result showed that nearly three fifth (58.9%, 95% CI: 54.2%-64.1) of the study participants had adequate food consumption score. Pregnant women who were followed ANC Three times [AOR = 0.46, 95% CI: 0.238, 0.89], prim gravida [AOR = 1.745, 95% CI: 1.036, 2.939], poor wealth status [AOR = 0.269, 95% CI: 0.125, 0.577], middle wealth status [AOR = 0.46, 95% CI: 0.251, 0.843], and skip meal [AOR = 0.288, 95% CI: 0.137, 0.604] were significantly associated with adequate food consumption score. This study revealed that the overall consumption of adequate food during pregnancy was below the World Food Program recommendation. Strengthening antenatal care Services, give special attention to multi grvida women, addressing socioeconomic barriers and reducing meal skipping are recommended to improve adequate food consumption.

Keywords

Ethiopia, Food Consumption Score, Injibara Town, Pregnant Women

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1. Introduction

Food Consumption Score (FCS) is a composite score based on dietary diversity, food frequency, and the relative nutritional importance of the food consumed. It serves as an indicator for the balanced food consumption, composite score of dietary diversity, food frequency, and the relative nutritional significance of various food groups. High food consumption increases the possibility that a pregnant woman achieves nutrient adequacy. FCS measures the adequacy of pregnant women's food consumption. A high FCS increases the probability that a pregnant woman's food intake is adequate, whereas a low FCS indicates that her food consumption is inadequate [1].

All stages of the life cycle require proper nutrition and a healthy diet; however, nutritional needs are highest among pregnant and lactating mothers because of the increased metabolic demand for the majority of nutrients [2]. A woman's life is at its most crucial during pregnancy, as she requires the best nourishment needed to sustain the growing fetus. The fetal growth, the development of the mother's tissues during pregnancy [3] and the production of breast milk raises the need for nutrients [4]. However, pregnant women in low and middle-income countries such as, Ethiopia typically consume diets based on a limited number of staple foods, mostly cereals, resulting in gaps between their food intake and the nutritional requirements for various nutrients [5, 6].

Nutrition problems are still highly prevalent, especially in pregnant women and children [7]. Globally, around 20 million babies are born underweight each year [8], and 800,000 neonatal deaths each year are caused by mothers who eat inadequately, resulting in small for gestational age births [9]. About one million neonates die on the first day and in the first week of life due to poor food intake of the mothers before and during pregnancy, as linked with increasing trends in maternal anemia, mortality, and adverse birth outcomes [10]. In Ethiopia, there are 401 maternal deaths for every 100,000 live births and while the neonatal mortality rate is 28 per 1000 live births [11], and approximately 22% of women are thin, 24% anemic, and 8% obese [12] due to inadequate dietary intake respectively [13].

Inadequate maternal food intake and poor nutritional quality of diet have a negative impact on birth weight and fetal development [14, 15]. An increased risk of fetal morbidity and mortality, post-natal growth retardation, and impaired physical and cognitive development is associated with inadequate food intake during pregnancy. During pregnancy inadequate diets lacking in calories and micronutrients have been linked to stunted fetal development, premature birth, and a higher chance of cardiovascular disease in the future [16].

Socioeconomic and demographic factors, obstetric and pregnancy-related factors, dietary related factors and attitude were the main factors that had a big impact on pregnant women's adequate food consumption score [17-19].

In Ethiopia, much effort has been made by the government

through expanding Ante Natal Care (ANC), delivering the service free of charge and increasing number of trained health professionals and health extension workers [20]. But the prevalence of adequate food consumption in Ethiopia was below World Food Program (WFP) recommendation.

Even though some studies conducted in Ethiopia on FCS among pregnant women consider only food prepared and consumed at home, this study considers foods prepared and consumed at home and outside of the home. There is also a scarcity of evidence for adequate food consumption score in these population groups and study area.

Therefore, this study aimed to assess adequate food consumption score of pregnant women in Injibara Town, Amhara Region, North-west Ethiopia

The findings will provide valuable information for policy-makers, program planners, NGOs, and health offices to design or refine nutrition interventions and will serve as a foundation for future research in this area.

2. Methods and Materials

2.1. Study Design, Area and Period

Community based cross-sectional study design was applied among pregnant women in Injibara Town, Amhara Region, North -West Ethiopia, 2024. Injibara town is the capital of the administrative center of Awi Nationality Administration. It is located about 447 km North-west of Addis Ababa and 118 southwest of Bahir Dar a city of Amhara National Regional State. Injibara is located at 10°57'N 36°56'E, in Banja Shekudad Wereda at an elevation of 2,560 meters (8,400 feet) above sea level. Injibara town has a total population of 46,745, of which 23,466 are females, and women of reproductive age were about 11,048 [21]. At the time of study there were 1,814 pregnant women in the Town. The town has five kebeles and its weather condition is Dega. There are one general hospital, one public health center, and five health posts in the town, which provide maternal and other health services to the population of the town and the surrounding area. The study was conducted from October 7 to November 09/2024.

2.2. Population

2.2.1. Source Population

All pregnant women living in Injibara Town were the source population.

2.2.2. Study Population

All pregnant women who live in selected kebeles in Injibara Town were considered as the study population.

2.3. Inclusion Criteria

All pregnant women who were lived in the selected kebeles for at least six month

2.4. Sample Size Determination and Sampling Procedure

2.4.1. Sample Size Determination

The sample size was computed based on a single population proportion formula assuming;

- 1) The prevalence (p) = adequate food consumption score among pregnant women at Shegaw Motta Hospitals (81.5%) [17].
- 2) $Z_{\alpha/2} = 1.96$ at confidence level of 95%
- 3) D = 5% margin of error.

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

$$n = \frac{(1.96)^2 0.815(1-0.815)}{(0.05)^2} = 231.6$$

By using the design effect of 1.5, it becomes 347.4, and after considering 10% non-response, it becomes 383. So, the final sample size was 383 [18, 22-24].

2.4.2. Sampling Technique and Procedure

A multistage sampling technique was conducted. Injibara town has five kebeles, with a total of 1814 pregnant women [25]. Then kebeles 01 and 05 were selected by the lottery method by taking 30 % of the total town kebeles. The numbers of pregnant women in each kebele are 490 and 506, respectively. Then the study participants from two kebeles were allocated proportionally. The list of all study participants were obtained from the enumeration of all households having pregnant women in selected kebeles. The study participants were selected using a systematic random sampling technique.

The interval K value was determined by dividing the number of units in the study population (N) by the desired sample size (n) ($K = N/n$ = interval size). For each Kebele, the value of K (interval or Kth value) is two. The first respondent was selected by the lottery method, and then every respondent was chosen based on the interval until the desired sample size is attained.

$$n_i = \frac{n}{N} * N_i$$

Where n= total sample size to be selected, N= Total study population, N_i = total target population in each kebele, n_i = required sample size from each kebele. The overall sampling procedure is presented in Figure 1.

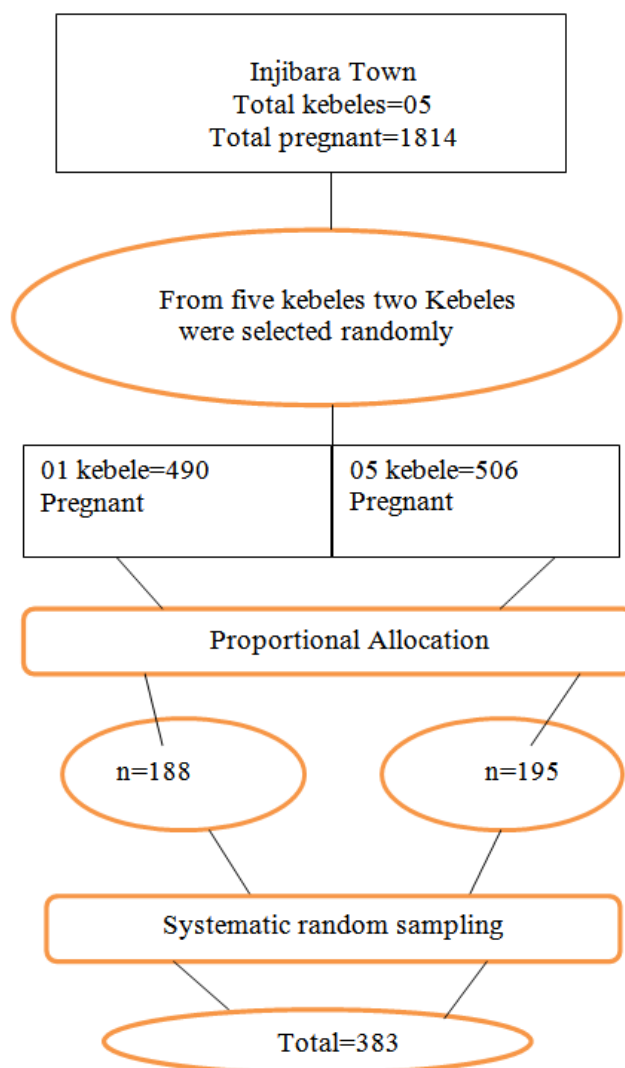


Figure 1. Diagrammatic representation of sampling procedure.

2.5. Study Variables

2.5.1. Dependent Variable

Food consumption score (adequate/inadequate)

2.5.2. Independent Variables

Socio-demographic variables: age, maternal education, maternal occupation, marital status, husband education, husband occupation, family size. Wealth status

Obstetric factors: ANC follow up, number of ANC visit, parity, gravidity, trimester, history of still birth

Maternal Knowledge

Maternal Attitude

Maternal dietary habit: meal per day, habit of eating snack, meal skip, fasting, avoid certain food, history of craving and aversion

2.6. Operational Definitions

Food consumption score: To determine pregnant women's food consumption score; pregnant women were asked to recall all foods consumed in the last seven days before the interview and Each food item was assigned a score of 0 to 7, based on number of days it was consumed, then multiplied by standard weight and then summed up. If the score was greater than forty-two, she was considered as had adequate food consumption score, otherwise she was considered as inadequate food consumption score [1].

Knowledge: pregnant women were considered to be knowledgeable if she correctly answered greater than or equal to 14 of the total knowledge assessing questions otherwise she was considered as poor knowledge [17].

Attitude: pregnant women were considered to be favorable attitude if she answered greater than median value of the total 20 attitudes relating questions, otherwise she was considered as unfavorable attitude [19].

Wealth index: The composite indicator of socioeconomic status, which was computed by the application of principal component analysis (PCA) [18]. Household asset data were prepared for analysis; categorical variable options were converted into binary variables. The binary variables were coded to 0 and 1. From total wealth index assessing question, only five variables were passed, the rest are dropped as, their frequency greater than 95% and their communality scores were less than 50%. Kind of toilet facility, the main material of the dwelling floor, main material of the exterior walls, Source of Drinking water, household that have chickens were considered for wealth index construction. Finally, the index was developed by categorizing the sum of components into three equal parts and the parts were ranked from poor to rich.

2.7. Data Collection Tool and Procedure

2.7.1. Data Collection Tool

Data were collected using an interviewer-administered questionnaire that was developed based on the World Food Program's (WFP) standardized food frequency questions. Maternal knowledge, maternal attitude on food consumption and maternal dietary habit, was evaluated using questions adapted from previous research [18, 23]. In addition to this, a data collection tool was adapted from EMDHS 2019 to collect data on household assets. The questionnaire includes socio demographic factors; obstetrics related factors, knowledge, attitude,

dietary habit, household assets, and food consumption questions.

2.7.2. Data Collection Procedure

Data were collected through face-to-face interviews using the Kobo Toolbox application on mobile phones. Four BSc nursing students served as data collectors under the supervision of a nutritionist.

To assess maternal knowledge of food consumption, participants were asked knowledge-assessing questions. Responses were categorized as either "0" for incorrect answers indicating lack of awareness, or "1" for correct answers indicating awareness. Scores below 14 were categorized as having poor knowledge and those scoring Greater than or equal to 14 were categorized as having good knowledge.

To assess household wealth status, data were prepared for analysis; categorical variable options were converted into binary variables. The binary variables were coded to 0 and 1. From the total wealth index assessing question, only five variables were passed; the rest are dropped as their frequency greater than 95%; their communality scores were less than 50%. Kind of toilet facility, the main material of the dwelling floor, main material of the exterior walls, Source of Drinking water, household that have chickens were considered for wealth index construction. Finally, the index was developed by categorizing the sum of components into three equal parts and the parts were ranked from poor to rich.

The attitude of the study participants towards the consumption of food was measured using 4 item Likert scale questions, the response ranges from strongly disagree to strongly agree. It was considered positive attitude when respondents scored above the median.

To assess food consumption score, participants were asked to recall all foods consumed in the last seven days prior to the interview. Each food item was assigned a score of 0 to 7, based on the number of days it was consumed. Consumption frequencies with the same food group were multiplied by a standardized food group weight (Table 1) (The weights for each group of food are based on the nutrient density analysis. Higher or lower weights are assigned in terms of caloric density and macro- and micronutrient content. The highest weight was attached to foods with relatively high energy, good quality protein, and a wide range of micronutrients that can be easily absorbed). The weighted score were then summed to determine the overall food composition of each pregnant woman. Finally if the score was greater than forty-two, she was considered as had adequate food consumption score, otherwise she was considered as inadequate food consumption score.

Table 1. World Food Program (WFP) food groups with each standard weight [1].

Food items	Food groups	Weight
Rice, oats, wheat, maize, millet, barley, maize porridge, teff (injera), pasta, bread and other cereals. Potato and sweet potatoes	Main staples	2
Beans, chickpea, Peas, groundnuts, soya beans, <i>lentils, almonds, linseeds</i>	Pulses	3
Cabbage, chills, pumpkin, onion, tomato, carrot, kale	Vegetables	1
Banana, orange, apple, mango, papaya, lemon, avocado, peach, watermelon, grapefruit, tangerine, pineapple	Fruit	1
Beef, goat, poultry, pork, eggs and fish	Meat and fish	4
Milk, yogurt and other dairy	Milk	4
Oils, fats and butter (Oils, fats and butter (<i>Vegetable oil, sunflower oil, palm oil, coconut oil, olive oil, sesame oil, butter, Include also deeply fried snacks (e.g., potato chips, doughnuts, Samosas, etc.)</i>	Oil	0.5
Sugar and sugar products (Sugar and sugar products; honey, candy, cakes, jam/marmalade, biscuits/cookies, chocolate, cakes, <i>pastries, condensed milk</i> , fruit juice), sugary drinks (including soda and very sugary tea ((with one tablespoon or more)) , ice cream)	Sugar	0.5

2.8. Data Quality Assurance

To ensure data quality, due emphasis was given to questionnaire design and development. Two-day training was given for the data collectors and supervisor on the contents of the questionnaire, interviewing technique, and purpose of the study. The questionnaires were pretested with 5% of the sample size in Gimjabet town to ensure their validity. Prior to analysis, the data was cleaned up and cross-checked. The principal investigator and the supervisor were closely monitoring the process throughout the data collection period and make any necessary corrections.

2.9. Data Processing and Analysis Technique

The data were collected using the Kobo Toolbox, and then exported into SPSS 26 statistical software for analysis. Descriptive statistical analysis was used to summarize the characteristics of the pregnant women. A binary logistic regression model was used to assess the relationship between dependent and independent variables. Independent variables with a p-value <0.25 in the bi-variable logistic regression analysis were imputed in the multivariable logistic regression analysis. The adjusted odds ratio (AOR) with a 95% confidence interval was used as a measure of the strength of the association. Variables with a p-value <0.05 from the multivariable analysis were considered to have a significant association with the outcome variable. The household wealth index was determined using principal component analysis (PCA) in SPSS by considering household assets. Model fitness was assessed using the Hosmer-Lemeshow goodness-of-fit test. The pearsons chi-square in Hosmer-Lemeshow test was p=0.76. Multicollinearity

among independent variables was checked using collinearity statistics, where variance inflation factors (VIF) greater than 10 indicated the presence of multicollinearity. Then the results were presented using frequencies, summary measures, tables, and figures.

3. Results

3.1. Socio-Demographic Characteristics of the Study Participants

Out of the total 383 pregnant women, 380 participated in this study yielding a response rate of 99.2%. The mean ($\pm$ SD) age of participants was 27.7 ($\pm$ 3.24) years, with, 336 (88.4%) aged between 25 -34 years. Regarding education, 338 (88.9%) of pregnant women attend formal education. Nearly three-fifth, 223 (58.7%) of pregnant women were housewives. Concerning their husbands', 375(98.7%) attend formal education. Based on the principal component analysis (PCA) wealth index, 159 (41.8%) of participants were classified as middle (Table 2).

Table 2. Socio-demographic and economic characteristics of pregnant women.

Variable	N (%)
Age in year	
18-24	31 (8.2)
25-34	336 (88.4)

Variable	N (%)
35-49	13 (3.4)
Maternal educational	
Non formal education	42 (11.1)
Attend formal education	338 (88.9)
Maternal occupation	
House wife	223 (58.7)
Merchant	81 (21.3)
Government employee	65 (17.1)
Private employee	11 (2.9)
Marital status	
Married	378 (99.5)
Divorced	2 (0.5)
Husband education	
Non formal education	5 (1.3)
Attend formal education	375 (98.7)
Husband occupation	
Farmer	14 (3.7)
Daily laborer	40 (10.7)
Government employee	126 (33.2)
Private employee	23 (6.1)
Merchant	177 (46.6)
Family size	
<5	303 (79.7)
>=5	77 (20.3)
Wealth status	
Poor	93 (24.5)
Middle	159 (41.8)
Rich	128 (33.7)

3.2. Obstetric Characteristics of Study Participants

Among the study participants, 208 (54.7%) were multigravida. Regarding parity, 172 (45.3%) were nulliparous. About 349 (91.8%) had started ANC visits and 199 (52.4%) attended ANC for four or more time (Table 3).

Table 3. Obstetric characteristics of pregnant women (n=380).

variable	N(%)
Gravidity	
Primigravid	172(45.3)
Multigravid	208(54.7)
Parity	
Nullparious	172(45.3)
Paraone	53(13.9)
Multipara	155(40.8)
Stillbirth	
Yes	3(0.8)
No	377(99.2)
ANC	
Yes	349(91.8)
No	31(8.2)
Number of ANC visit	
1-2	92(24.2)
3	58(15.3)
>=4	199(52.4)
Trimesters	
First	29(7.6)
Second	189(49.7)
Third	162(42.6)

3.3. Knowledge and Attitude of Food Consumption

A total of 181 (47.6%) of study participants had good knowledge about food consumption, while 176 (46.3%) had a favorable attitude towards it (Table 4).

Table 4. knowledge and attitude of food consumption among pregnant women (n=380).

Variable	N(%)
Maternalknowledge	
good	181(47.6)
poor	199(52.4)
MaternalAttitude	
Favorable	176(46.3)
Unfavorable	204(53.7)

3.4. Dietary Habits of the Study Participants

A total of 291 (76.6%) ate three meals per day. Around 322 (84.7%) of respondents did not regularly eat snacks. A total of, 304 (80%) reported skipping at least one regular meals per day. About 368 (96.8%) fasted during the current pregnancy (Table 5).

Table 5. Dietary habit of pregnant women (n=380).

Variable	Frequency(%)
Mealperday	
<=3	348(91.6)
>3	32(8.4)
Eatsnack	
Yes	58(15.3)
No	322(84.7)
Skipmeal	
Yes	304(80)
No	76(20)
Fasting	
Yes	368(96.8)
No	12(3.2)
Avoidcertainfood	
Yes	250(65.8)
No	130(34.2)
Historyofcravingfood	
Yes	174(45.8)
No	206(54.2)

3.5. Food Consumption Score

This study found that 58.9% [95% CI: 54.1%-63.5%] of participants had adequate food consumption (Figure 2).

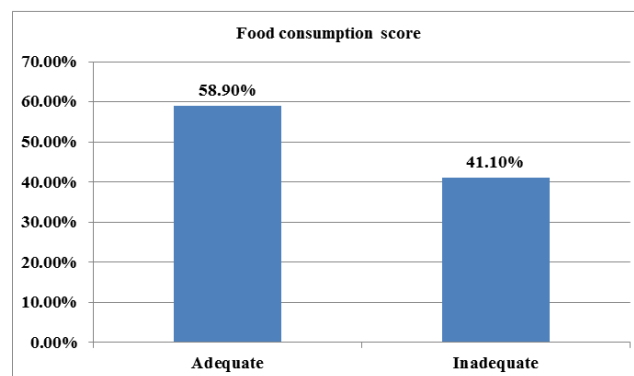


Figure 2. Food consumption score among pregnant women (n=380).

3.6. Factors Associated with Adequate Food Consumption Score

In the bivariable analysis (p-value < 0.25), significant variables were maternal education, number of ANC visit, gravidity, meal skip, snack, knowledge, and wealth status. However, in the multivariable analysis, number of ANC visit, gravidity, skipping meals and wealth status remained statistically significant.

Participants who attended ANC for three times were 54% less likely to have an adequate food consumption score compared to those who attended ANC for four or more times [AOR = 0.46, 95% CI 0.238, 0.89]. Participants who skip meals were 71.2% less likely to have an adequate food consumption score than those who did not skip meals [AOR = 0.288, 95% CI: 0.137, 0.604]. Participants who had first pregnancy were 1.75 times more likely to have adequate food consumption score than those who had multiple pregnancy [AOR = 1.745, 95% CI: 1.036, 2.939]. Participants from poor wealth status were 73.1% less likely to have an adequate food consumption score compared to those who were rich wealth status [AOR = 0.269, 95% CI: 0.125, 0.577]. Participants from middle wealth status were 54% less likely to have an adequate food consumption score compared to those who were rich wealth status [AOR = 0.46, 95% CI: 0.251, 0.843] (Table 6).

Table 6. Factors associated with adequate food consumption score among pregnant women (n=380).

Variable	Food consumption score		COR(95%CI)	AOR (95%CI)	P-value
	Adequate	Inadequate			
Maternal Education					
Non formal education	13	29	0.27(0.135,0.538)	0.925(0.376,2.271)	0.864
Attend formal education	211	127	1	1	
Number of ANC visit					

Variable	Food consumption score		COR(95%CI)	AOR (95%CI)	P-value
	Adequate	Inadequate			
1-2	60	32	0.889(0.527,1.498)	0.686(0.381,1.237)	0.21
3	28	30	0.442(0.244,0.802)	0.46(0.238,0.89)	0.021**
≥4	135	64	1	1	
Eat snack					
No	180	142	0.403(0.213,0.765)	0.81(0.377,1.737)	0.588
Yes	44	14	1	1	
Skip Meal					
No	63	13	1	1	
Yes	161	143	0.232(0.123,0.44)	0.288(0.137,0.604)	0.001**
Gravidity					
Prim gravida	114	58	1.751(1.154,2.658)	1.745(1.036,2.939)	0.036**
Multi gravida	110	98	1	1	
Knowledge					
Poor	92	107	0.319(0.208,0.491)	0.755(0.432,1.321)	0.325
Good	132	49	1	1	
Wealth status					
Poor	37	56	0.202(0.113,0.362)	0.269(0.125,0.577)	0.001**
Middle	89	70	0.389(0.233,0.651)	0.46(0.251,0.843)	0.012**
Rich	98	30	1	1	

Note: COR, Crude odds ratio; AOR, Adjusted odds ratio; CI, Confidence interval;

** Statistically significant, 1 reference category

4. Discussion

This study aimed to assess the adequate food consumption score and associated factors among pregnant women in Injibara Town, Amhara Region, Northwest Ethiopia. The results of this study have shown nearly three-fifths (58.9%, 95% CI: 54.1%-63.5) of the study participants had adequate food consumption score. Adequate food consumption score was associated with wealth status, number of ANC follow-up, gravidity and skipping meals.

This finding is in parallel with a study done in Eastern, Ethiopia district of harmia(54.6%) [18] and the study done in Bangladesh (58%) [27]. However, it is higher than the study done in Addis Ababa, Ethiopia (51.2 %). The reason for the discrepancy between the study conducted in Addis Ababa, Ethiopia (51.2%) and this study is that the study in Addis Ababa was conducted in the fasting season when there is a decreased consumption of animal-source food [19].

Furthermore, the finding has showed that the percentage of

adequate food consumption score was lower than studies from, Food consumption coverage in Ethiopia (77%) [28], Uganda (69%) [29] and Nigeria (80.3%) [30]. The reason for this discrepancy might be; For example, The Food consumption coverage in Ethiopia (77%) report incorporated both the urban and rural parts of the country with a large sample size while our study included only the urban participants. In Ethiopia, pregnant women avoid foods due to cultural and religious reasons, and this might explain the discrepancy between the current study and study from Nigeria where religion and culture has lesser influence over their food choice. In Ethiopia food intake during pregnancy are shaped by restrictions on essential foods considered unacceptable in society, rooted in religious, cultural, historical, and social norms. Animal source foods (such as meat, dairy, and eggs), were the most commonly prohibited foods [31, 32]. This restriction impacts the adequacy of Food consumption score. A recent systematic review in Ethiopia found that around 34.22% of pregnant women are restricted from consuming essential foods due to cultural taboos, with the prevalence varying significantly by region [33].

The finding of this study is also lower than a study conducted in Shegaw Motta, Ethiopia (81.5%) [17] and study carried out in the Amhara region's East Gojjam Zone (80.3%) [34]. The reason for this discrepancy might be, since the study was at institutional level; pregnant women may have gotten knowledge about proper food consumption during ANC visit from health professionals. Receiving nutritional information and counseling will have good knowledge and understanding to increase consumption of adequate food [23]. This study was lower than study conducted in Arba Minch Health and Demographic Surveillance site in Southern Ethiopia (76.96%) [35], the possible reason for this might be that it was conducted during the main harvest season. During winter seasons, food access, including fresh product and staple foods, increases due to harvest time.

Concerning factors associated with adequate food consumption score, this study showed that when the wealth status of the study participants increased, their consumption of adequate food improved. This was also observed in previous studies conducted in eastern Ethiopia [18], Arba Minch Health and Demographic Surveillance site in Southern Ethiopia [35] Addis Ababa, Ethiopia [19] and Bangladesh [27]. The possible reason for this might be the fact that those pregnant women from the wealthiest class may have better purchasing power for a diversified diet, which could be more likely to afford to have adequate food as compared to pregnant women from a lower wealth status. Therefore, it is important to give special attention to pregnant mothers with low socioeconomic status through strengthening sustainable income-generating activities and saving strategies to improve the wealth status of pregnant women.

Number of attending ANC follow-up during pregnancy was significantly associated with consumption of adequate food. When number of ANC visit increase, it makes pregnant women understand their specific food needs during different stage of pregnancy, leading to increased consumption of wider range of food. At first ANC visit, all pregnant women should receive nutritional advice to consume well-balanced and more diversified food during perinatal period and similarly pregnant women who attend regular ANC utilization exhibits good knowledge and practice of the nutritional status during pregnancy [36, 37]. Numerous women do not begin ANC early enough to exploit all chances for ANC, perhaps due to lack of knowing or content or misconceptions of the intention and worth of ANC, the proper period of time to get ANC, and/or absence of assistance from a partner [38]. When pregnant women increase attendance of ANC follow-ups, they get more nutritional information from health professionals about consumption of adequate food.

The odds of having adequate food consumption score was higher among study participants who had first pregnancies. The possible reason for this might be, as the number of pregnancies increased, maternal choice for a healthy and adequate food decreased [39, 40]. This might be due to economic factors; multigravida women may face economic challenges that

affect their ability to prioritize healthy eating habits and access to nutritious foods.

The odds of having adequate food consumption score was higher among study participants who did not skip meals. A similar finding was observed from a study done in Addis Ababa, Ethiopia [19]. The frequency of meals affects nutrient adequacy; an increase in meals per day can improve nutrient adequacy [41], so skipping meals regularly for different reasons is not advisable to have a better pregnancy outcome [41]. Therefore, it is important to give a special attention to pregnant mothers who skip their meal.

4.1. Strength of the Study

The study had the following strength: this study assessed pregnant women's food consumption score by including foods consumed both inside and outside of the home according to updated 2024 WFP Food consumption scores nutritional analysis technical guidance note. Since the study is community-based, it represents the whole pregnant women in the community, and the findings may be generalized to the general population of pregnant women.

4.2. Limitation of the Study

The information on food consumption relies on the memory of the women subjected to recall bias. The data collection was done based on past feeding practice, which might be social desirable bias. Further research is needed to examine this aspect.

5. Conclusion

This study revealed that the overall consumption of adequate food consumption score during pregnancy was below the WFP recommendation. Number of ANC visit, wealth status, number of pregnancy and meal skipping were significant predictors of adequate food consumption score.

6. Recommendations

Based on the findings of the study, the following recommendations were forwarded

For pregnant women

- 1) Pregnant women should avoid skipping meals regularly
- 2) Multi gravida women should consume a wide variety of foods, including fruit, vegetable, whole grain, lean protein and healthy fats.

For Injibara Town Health Office

Intensive activities should be done to Strengthening Antenatal Care (ANC) Services

For the other sectors

The Agriculture sector should addressing socioeconomic barriers (including wealth status) through strengthening sustainable income-generating activities and saving strategies

For researchers

Future researches are encouraged to investigate on food consumption nutrient quality analysis (FCS-N) among pregnant women

Abbreviations

ANC	Antenatal Care
AOR	Adjusted Odds Ratio
CI	Confidence Interval
EMDHS	Ethiopian Mini Demographic and Health Survey
FCS	Food Consumption Score
PCA	Principal Component Analysis
SPSS	Statistical Package for Social Sciences
WFP	World Food Program

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Data Availability Statement

The dataset used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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