

Research Article

Assessment of nutritional status with its associated factors in pregnant women attending antenatal care at Ambo Health Centers, Oromia Region, Ethiopia

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ABSTRACT

Nutritional status during pregnancy, maternal nutrition requires considerable attention; however, pregnant women's nutritional knowledge and practices are less understood. The objective of this study was to assess nutritional knowledge and practices among pregnant women who attend antenatal care at Ambo and Awaro Health Center of Ambo Town, Oromia Region, Ethiopia. The study was conducted from January to May of the year 2022, using a cross-sectional descriptive study on a sample of 284 pregnant women who attended antenatal care services in Awaro and Ambo health centers. Systematic sampling techniques were used to select pregnant mothers by using Health center registration lists. Socio-demographic and socio-economic data were collected using a structured interviewer-administered questionnaire. Mid-Upper Arm Circumference (MUAC) was measured by standard nonstretchable MUAC tape. Binary and multiple logistic regression analysis was conducted using the Statistical Package for Social Sciences (SPSS) program version 20 for further analysis. The finding of associated factors that affect the nutritional status of mothers was the income level of the family has a strong statistical association with the nutritional status of mothers ($p < 0.001$), occupational status of the respondent has a significant association with nutritional status ($p < 0.05$) and also knowledge about the importance of food for growth and development of fetus of mother have significant association ($p < 0.05$). Hence, the government in collaboration with concerned bodies should focus on nutritional education and information of pregnant mothers on maternal nutrition during pregnancy in the study area.

Key words: Knowledge, Practices, Nutrition, Pregnancy

INTRODUCTION

A mother's nutritional status at conception, during pregnancy and lactation, plays a key role in determining her health and well-being, as well as that of her child. During pregnancy and breastfeeding, the recommended intakes for most nutrients increase (Barker *et al.*, 1993). Pregnancy is a time of increased energy and nutrient needs for a woman to meet the needs of the growing fetus and of maternal tissues associated with pregnancy, proper dietary balance is necessary to ensure sufficient energy intake for adequate growth of the fetus without drawing on mother's tissues to maintain her pregnancy (Sahoo & Panda, 2006).

The poor health and nutrition of women and the lack of care that contributes to their death in pregnancy and childbirth also compromise the health and survival of the infants and children (Abdella, 2010). Many women in Africa suffer from chronic energy deficiency, inadequate weight gain during pregnancy, and poor micronutrient status. Insufficient food intake, high-energy expenditure, micronutrient-deficient diets, infections, and the demands of pregnancy and lactation contribute to maternal malnutrition (Daba *et al.*, 2013).

Since the study design is cross-sectional, descriptive studies are carried out at a one-time point or a short period and recall bias. There may be a social desirability bias for dietary information and monthly income. This may overestimate the association between the variables and knowledge among pregnant women. Also as the design of this research is institution based, it did not know some other possible barriers of the service among mothers who did not visit antenatal care (ANC).

Conceptual Framework for the Study

Malnutrition among pregnant women is a major health concern in modern health programming. Pregnancy is a complex process involving various factors such as nutrition knowledge, dietary practices, attitude, socio-economic and demographic factors and cultural factors. These factors are related to each other. The conceptual framework identifies these factors (Figure 1). The education level, occupation and income are some of the factors that have been found to influence food security. These socio-demographic factors may also influence nutrition knowledge. Dietary practices and attitudes consequently influence the nutrition status. In addition, maternal nutrition knowledge affects the dietary

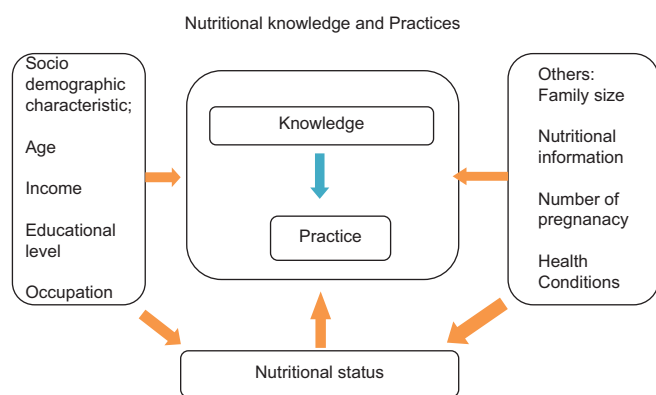


Figure 1: Conceptual framework model

practices adopted. The dietary practices are defined in terms of the number of meals, dietary diversity score and amount of nutrients consumed.

MATERIALS AND METHODS

Description of the Study Area

The study area Ambo Town is located in the West Shoa Zone of the Oromia National Regional State in central Ethiopia, and it is the capital town of the West Shoa Zone. Ambo town is located 114 km to the west of Addis Ababa, the capital city of Ethiopia (Figure 2). Ambo town was established in 1889 and it is one of the oldest towns in Ethiopia. The name Ambo came from a lake, which has salt in it. Afan Oromo is the first language spoken by almost all the people and the development of Ambo town is related to the hot spring called "Ambo Tsebel" (Ambo Town municipality, 2009). The town is divided into six administrative Kebles. The three Kebles in the town started implementing the urban health extension program since 2009. According to the national population and housing census, the total population of the town for 2018 was 83,053; Men constituted 41,692 (50.2%) and Women constituted 41,361 (49.8%). The average family size in the town is 3.8. The geographical location of this town has latitude and longitude of 8°59'N 37°51'E/8.983°N 37.850°E and an elevation of 2101 meters above sea level and it varies from 2060 meters to 2140 meters above sea level. The town and its surroundings have a mean annual precipitation of 912 millimeters and the mean annual temperature of the town is about 17.6 centigrade.

The town is known for the production of carbonated mineral water called 'Ambo Mineral Water' which is bottled outside of town; it is reportedly the most popular brand in Ethiopia. Nearby attractions include Mount Wenchi to the south with its crater lake, and the Guder and Huluka Falls.

Study Design

An institutional based cross-sectional study design was conducted to assess knowledge and practice among pregnant women about maternal nutrition during pregnancy with a quantitative data collection method from January to May 2022.

Data Collection and Procedure

Data Collection Procedures was a semi-structured questionnaire that was initially prepared in English and then translated into the local language; Afaan Oromo was used. The Afaan Oromo version was again translated back to English to check for any inconsistencies or distortion in the meaning of words. Data were collected using an interviewer-administered, and the MUAC measurement questionnaire was adapted from the literature. Data collection was performed by five B.Sc. nurses. To ensure the quality of the properly designed data collection instruments and training of data collectors and supervisors was done, the enumerators and the supervisor were given training for one day on procedures, techniques, ways of collecting the data and monitoring the procedure. 5% was done at the Awaro Health Center to check the consistency of the questionnaire. The collected data were reviewed and checked for completeness by supervisors and principal investigators each week. To proxy maternal nutritional status MUAC was used. A MUAC of less than 23 cm was considered to be a sign of poor nutrition. MUAC doesn't vary much during pregnancy and is therefore an appropriate measure of nutritional status than BMI or weight. The Anthropometric Measurements Pregnancy Standing height and weight were measured using the portable stadiometer (SECA 213) and digital weighing scale (Tanita). We recorded weight to the nearest 100 grams with minimal clothing and barefoot. The height was read to the nearest 0.1 cm. Mid-upper arm circumference (MUAC) was measured for the left arm using circumference tape (Chasmors WM02). The women were asked to sit/stand with their backs to the measurer, and their elbows flexed at about 90 degrees. The tip of the acromion (the point of the shoulder) and the olecranon processes were palpated and marked with a skin pencil. The distance between these two points was measured by a flexible measuring tape, and a point midway between these two processes was marked on the skin. This midpoint marked the vertical level at which the circumference was measured with the arm hanging by the side. The measuring tape was placed around the upper arm such that the tape was horizontal to the surface. It was ensured that the tape rested firmly against the skin but was not pulled too tight to cause indentation of the skin surface. Two readings for each anthropometric measurement were recorded. Head Circumference (Head C) was measured using Chasmors WM02. BMI was calculated by analysis software using the formula: $\text{weight (kg)}/\text{height (m)}^2$ (Mohanty *et al.*, 2005).

Source population

The study targeted all pregnant women 15-49 years who visited Awaro and Ambo health centers and antenatal care follow up during January to May of the year 2022.

Study population

Randomly selected pregnant women, aged between 15-49 years who attended antenatal care follow up during data

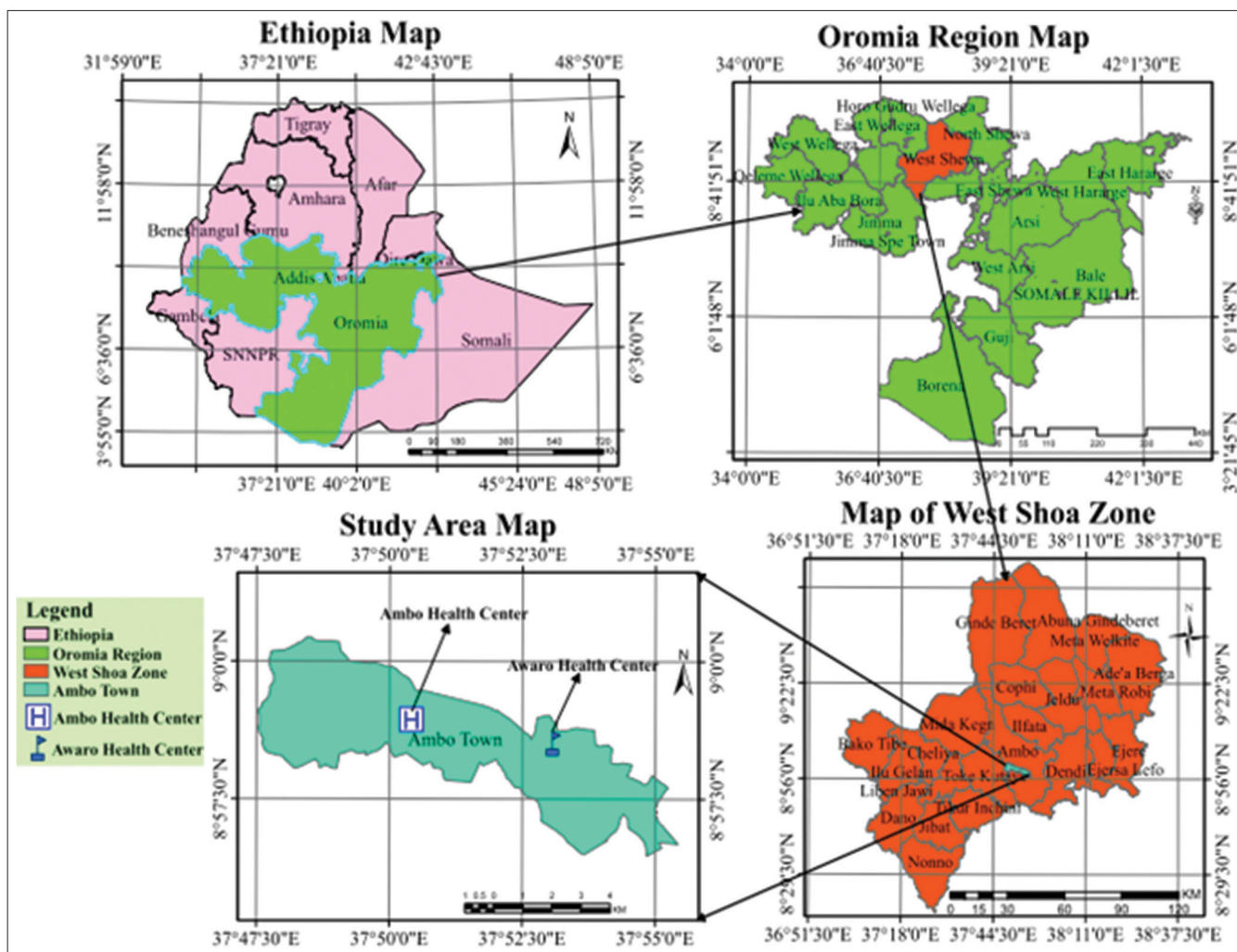


Figure 2: Map of the study area (Source: West Shoa Zone Planning and Development Annual Report, 2022)

collection period at Awaro and Ambo Health centers, Oromia Region, Ethiopia, 2022.

Sample Size Determination

The required sample size for this study was determined by using the single population proportion formula (Cochran formula) Systematic random sampling was conducted using the list of pregnant mothers attending antenatal care and consequently, to determine the sample size for the present study the following formula was used (Since the prevalence rate is not known).

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

Where:

n = is the desired sample size

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

p = expected proportion (0.5) of pregnant mothers nutritional knowledgeable, have good practices during pregnancy.

d = Margin of error (5%), P=prevalence 50%

10% = Non-respondent rate

$$n = \frac{1.96^2 \times 0.5(1-0.5)}{0.05 \times 0.05}$$

Therefore, the sample size of the study is 384 pregnant women.

Since the study population is less than 10,000 based on the finite population correction formula are

$$nf = n/1 + (n/N) = 384/1 + 384/1102$$

Where nf=desired sample size

n= the calculated sample size

N=total population

nf= 284

Sampling Techniques

The sampling technique for the study was using simple random sampling. The selection is based on their pregnancy periods and as the women came for follow-up into the health centers. This descriptive type of cross-sectional study was conducted among pregnant women who are in their 1st and 2nd trimesters aged (15-49) years old attending antenatal care at Ambo Town, Awaro and Ambo health centers from January to May 2022.

Data Collection Tools

Researcher-administered questionnaire

A research-administered questionnaire was used for data collection on socioeconomic characteristics information and nutrition status. A food frequency questionnaire was used to collect information on dietary practices related information. The questionnaire also had a section for collecting data on nutrition status by use of MUAC (mid-upper arm circumference) and measuring BMI (body mass index).

An interviewer-administered structured questionnaire was used to collect the data. The questionnaire was prepared in English language and translated to Afaan Oromo (the local language), then translated back to English to keep the consistency of the questions. In addition, qualitative, focus group discussions (FGDs) and semi-structured open-ended guides were used to triangulate responses obtained by the structured questionnaire on maternal health care utilization from the Health center (specifically ANC and associated factors). Data were supervised by BSc midwives who were trained on the objective of the study, methods of data collection, and content of the questionnaire to avoid any ambiguity raised during data collection. Data was checked for completeness, accuracy, and consistency by supervisors and the principal investigator after the data collection daily. The prepared questionnaire was pre-tested on 5% of pregnant mothers who were not being included in the study to identify the clarity and sequence of question.

Data Processing and Analysis

After all the data were checked for completeness and internal consistency, the data were coded and entered into the Epi Data 3.1 computer software package and exported to SPSS version 23 software for analysis. A p-value <0.05 was considered statistically significant.

Maternal anthropometric measurements were done according to the standards. Mid-Upper arm-Circumference (MUAC) of a pregnant mother was measured at midpoint between the tip of the shoulder and the tip of the elbow of the left arm at half-way between the olecranon process and the acromion process of participants to the adjacent 0.1 cm using both types of measurement types (flexible and non-stretchable) following a standard procedure. MUAC was measured using a non-stretchable tape 25 mm wide to increase the probability of the tape covering the midpoint of the upper arm and to reduce the effect of over-pulling. Numbered, color-coded and double-sided tape was used with the thresholds marked by moderate and severe wasting. For data collection, trained BSc Nurses helped under the supervision of general practitioners and other trained supervisors. Mothers were considered a range <21 cm was an indicator of undernutrition and a range of >21 cm was for normal nutritional status.

Ethical Considerations

A recommendation letter was obtained from the Ambo University Ethical Review Committee and permission was secured from the Ambo Town Health office. The nature of the study was fully explained to the study participants to obtain their oral informed consent before participation in the study and data was kept confidential. Informed consent was obtained from each respondent before the interview. All the information collected from all participants was used for research purposes only. No part of their view and response were disclosed to other parties and confidentiality was kept. Respondent's morals, cultures, values and beliefs were respected during the interviewing and discussion process.

RESULTS

Characteristics of the Respondents

Out of 284 calculated sample sizes, a total of 269 women agreed to participate in this study making the response rate 94.7%. From a total of 269 respondents 228 were from Awaro Health Center and, 41 were from Ambo Health Center. Different questions were asked to assess knowledge, and practices of pregnant mothers during pregnancy on nutrition and socio-demographic determinant factors in the study area.

As shown in Table 1, below 157(58.4%) of respondents were Orthodox religious followers followed by protestant 103(38.3%). Regarding their ethnic group, 254 (94.4%) of them were from Oromo followed by Amara which accounts for 9(3.3 %) of the study participants. Concerning family size, 196 (72.9%) of women had less than five and 73 (27.1%) women had five and above family members. The result indicated that 96(35.7%) of the respondents have primary education, 61(22.7%) have secondary education while 46(17.1%) have a Diploma and above educational level and 66(24.5%) are illiterate. Regarding the estimated income of women, 163(60.6%) of respondents earned less than 1000 ETB and 93(34.6 %) respondents earned ETB.1000-2000 birr per month, the other 13(4.8%) of respondents earned greater than 2000 ETB. per month (Table 1).

Body Mass Index (BMI) Categories of Pregnant Women

Regarding the Body Mass Index (BMI) 31.3% of respondents were underweight (<18.5 kg/m²), 49.2% were normal weight (18.5-24.9 kg/m²), 10.2% were overweight (25-29.9 kg/m²) and the rest 9.3% respondents was Obese (>30 kg/m²) (Figure 3).

Data of Mid-upper - arm Circumference (MUAC) Measurement

Based on the Mid-upper - arm circumference (MUAC) measurement about 65 (24.2%) of the study subjects were MUAC measurements less than 21 cm, 127 (47.3%) were 21

Table 1: Socio-demographic characteristics of the pregnant women ANC in Awaro and Ambo health centers Ambo town, Oromia Region, Ethiopia, 2022 (n=269)

Characteristics	Frequency	Percentage
Age		
15-24	53	19.7
25-34	122	45.4
35-44	84	31.2
45-49	10	3.7
Marital status		
Married	253	94.1
Divorced	15	5.6
Widowed	1	0.4
Educational status		
Illiterate	66	24.5
Primary (1-8)	96	35.7
Secondary (9-12)	61	22.7
Diploma and above	46	17.1
Occupational status		
Employed	60	22.3
Housewife	153	56.9
Daily laborers	31	11.5
Business	25	9.3
Family size		
<5	196	72.9
>5	73	27.1
Estimated monthly income		
< 1000	163	60.6
1000-2000	93	34.6
>2000	13	4.8

Source: Data collected, 2022

cm- 23 cm and the rest 77 (28.5%) were measured greater than 23 cm (>23 cm) (Figure 4).

Mid-upper-arm circumference (MUAC) measurement of Pregnant Women attending antenatal care in Awaro and Ambo health centers Ambo town, Oromia Region, Ethiopia, 2022.

Knowledge of Mothers on Nutrition during Pregnancy

Among study participants, 45.7% of them have adequate knowledge regarding appropriate nutrition during pregnancy (Table 2). Less than half of the pregnant women 43.8% believe to a eat variety of food during pregnancy and 66.5% know the need to eat more during pregnancy than their non-pregnant state. Regarding the main food group or balanced diet questions offered to respondents to assess their nutritional knowledge, the majority 68.8% of the respondents did not know the main food groups or the balanced diet while 31.2% of the respondents knew about the main food groups or the balanced diet.

Concerning the knowledge of the respondents about some common food sources of nutrients, most respondents 68.4%, 66.5%, 63.9%, 64.7% and 57.2% did not know about common

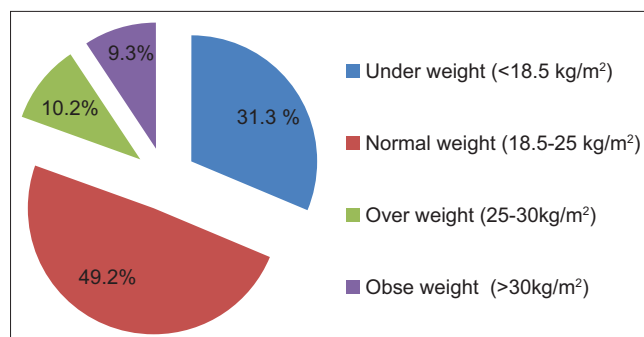


Figure 3: Body Mass Index (BMI) categories of pregnant women in Awaro and Ambo health centers Ambo town, Oromia Region, Ethiopia, 2022(Source: Data collected, 2022)

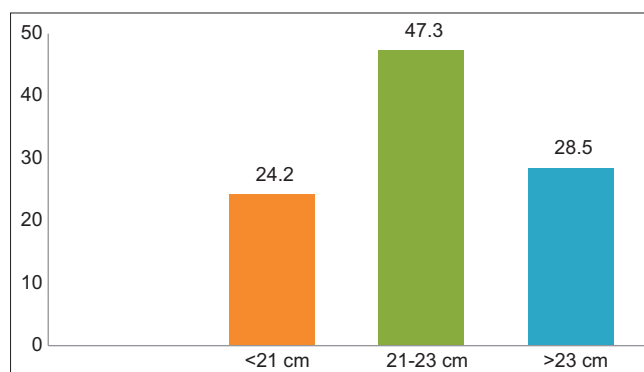


Figure 4: Mid-upper-arm circumference measurement of pregnant women attending ANC in Awaro and Ambo health centers Ambo town, Oromia Region, Ethiopia, 2022 (Source: Data collected, 2022)

food sources of protein, carbohydrates, iron, vitamin A and iodine respectively.

As described in Table 3, regarding to inadequate nutrition during pregnancy, only 46.8% of respondents responded that inadequate nutrition during pregnancy can be the cause of miscarriage and/or preterm birth and 53.2% of respondents did not know whether or not inadequate nutrition during pregnancy the cause of miscarriage and/or preterm birth.

Practice of Mothers on Nutrition during Pregnancy

Regarding avoidance/habits of food aversion/of any food during pregnancy, only 44.6% of the respondents had practiced avoiding food during their pregnancy (Table 4). Out of those who avoided food during their pregnancy, 32.5% reported makes the baby big, 17.5% reported cultures, 25.8% reported makes delivery difficult and 24.2% reported religions as the reason for avoidance of the food respectively. However, 55.4% of the respondents had not avoided any food items during their pregnancy.

This study showed that the meal frequency per day of most of the respondents 64.7% had a diet frequency of meal 1-2 per day during their pregnancy. The rest 31.6% and 3.7 % had a diet frequency of meals 3-4 and >5 per day respectively during their pregnancy.

Table 2: Nutritional Knowledge of the pregnant women ANC in Awaro and Ambo health centers Ambo town, Oromia Region, Ethiopia, 2022 (n=269)

Variable	Yes		No	
	Frequency	%	Frequency	%
The knowledge about the meaning of food	123	45.7	146	54.3
knowledge about the Importance of food for proper functioning	205	76.2	64	23.8
The Knowledge about the main food groups or balance diet	84	31.2	185	68.8
The Knowledge about food sources of protein	85	31.6	184	68.4
The Knowledge about food sources of carbohydrates	90	33.5	179	66.5
The Knowledge about food sources of iron	97	36.1	172	63.9
The Knowledge about food sources vitamin A	95	35.3	174	64.7
The Knowledge about food sources of iodine	115	42.8	154	57.2
Knowledge about inadequate nutrition	126	46.8	143	53.2

Source: Data collected, 2022

Table 3: Nutritional practice of mothers during pregnancy on Awaro and Ambo health centers in Ambo town, Oromia Region, Ethiopia, 2022 (n=269)

Variables	Frequency	%
Food craving during pregnancy		
Yes	90	33.5
No	179	66.5
Avoidance any food or diet in the current pregnancy		
Yes	120	44.6
No	149	55.4
If your answer is yes, Reason of avoidance of any food or diet in		
Religion	29	10.8
Culture	21	7.8
Make the baby big	39	14.5
Makes delivery difficult	31	11.5
Current diet frequency of meal per day?		
1-2	174	64.7
3-4	85	31.6
>5	10	3.7
The habit of eating more carbohydrate		
Yes	85	31.6
No	184	68.4
The habit of eating fresh fruits and vegetables		
Yes	128	47.6
No	141	52.4
Use of iodized salt		
Yes	129	48
No	140	52
At the beginning of cooking	11	4.1
Cook without any salt	10	3.7

Source: Data collected, 2022

As indicated in Table 3, (68.4%) of the respondents did not practice the habit of eating carbohydrates between meals during their pregnancy. However, 29% and 31.6% of the respondents had the practice of eating snacks and carbohydrates between meals during their pregnancy respectively.

Associated Factors of Pregnant Women During Pregnancy

The association of dependent and independent variables was explored by both bivariate and multivariate logistic regression models. The bivariate logistic regression analysis shows women's age, educational level, occupational status, average monthly income, practicing nutritional status, frequency of meals per day, and food cravings during pregnancy. The variables that showed significant association with nutritional status of knowledge, practice and during pregnancy were adjusted for their confounders using a multivariate logistic regression model.

The previous number of pregnancies and the mothers' occupational status of the respondents have a significant association with knowledge, and practices of mothers on nutrition during their pregnancy ($P < 0.05$).

Moreover, in bivariate analysis, the average income level of the respondents have a statistical association with knowledge, and practices of mothers on nutrition during their pregnancy ($P < 0.001$). Whereas the age and educational level of mothers have no association with the practices of mothers on nutrition ($P > 0.05$).

Relationships between Nutrition Knowledge Level and Nutrition Practices of Pregnant women

This was by use of Pearson correlation for non-categorical variables and chi-square for categorical variables Age and Educational level significantly ($p < 0.05$) related with the nutrition knowledge and also in the relationship between nutritional practice and other variables Age, Educational level and family size significantly ($P < 0.05$) related with practice (Table 4). How related to knowledge of nutrition family size ($p = 0.334$) and income level ($p = 0.51$) for this study was not an important predictor of nutrition knowledge and also income level is not related to practice ($P = 0.25$).

Table 4: The relationship of knowledge and practice of pregnant women in Awaro and Ambo health centers Ambo town, Oromia Region, Ethiopia, 2022

Items	Variable	Statistics		
		Chi-square result (X ²)	Degree of freedom	P-value
Relationship between nutritional knowledge and other variables	Age	31.686	3	0.000
	Educational level	15.648	3	0.001
	Family size	0.935	1	0.334
	Family income level	3.255	4	0.51
Relationship between nutritional Practice and other variables	Age	10.18	3	0.017
	Income level	11.171	4	0.25
	Educational level	15.969	3	0.001
	Family size	9.973	2	0.007

Source: Data collected, 2022

DISCUSSION

A third of women in developing countries deliver while below the age of 18 years (Langille, 2007). Studies have shown that several socio-demographic characteristics namely; education level, marital status and age are related to dietary practices and nutrition status of pregnant mothers (Ongosi *et al.*, 2014).

Based on the Body Mass Index (BMI), out of 269 respondents who responded 31.3% were underweight (<18.5 kg/m²), 49.2% were normal weight (18.5-24.9 kg/m²), 10.2% was overweight (25-29.9 kg/m²) and the rest 9.3% respondents was Obese (>30 kg/m²). Gaining less than the recommended amount of weight in pregnancy (<18.5 kg/m²), is associated with delivering a baby who is too small. Some babies born too small may have difficulty starting breastfeeding, may be at increased risk for illness, and may experience developmental delays. On the other hand, Gaining more than the recommended amount of weight (>30 kg/m²) in pregnancy is associated with having a baby who is born too large, which can lead to delivery complications, and cesarean delivery. So in this study, most of the respondents 49.2% are found in the recommended amount.

To proxy maternal nutritional status MUAC was used. A MUAC of less than 23cm was considered to be a sign of poor nutrition. MUAC doesn't vary much during pregnancy and is therefore, an appropriate measure of nutritional status (Assefa *et al.*, 2012). Based on the mid-upper-arm circumference (MUAC) measurement 24.2% less than 21 cm, 127 47.5% between 21-23 cm and the rest 28.5% above 23 cm. So, this study revealed most of the participants are found at the recommended measurements of MUAC which is in average between 21-23 cm.

Nutrition specific knowledge of the study participants was assessed. Adequate knowledge is the most important factor that determines the nutritional habits of pregnant women. Studies suggest that knowledge and belief are related to healthy eating, health maintenance and nutritional behavioral change. Knowledge and positive change must mediate an adequate dietary process. In this study, a high proportion of the respondents claimed to have some knowledge of what they should eat during pregnancy. However, their knowledge of the recommended diet was generally assessed as being fair.

Findings revealed that knowledge of adequate nutrition and practices of adequate diet during pregnancy is significantly related. This means that as pregnant women's dietary knowledge increases, the likelihood of good dietary practices of pregnant women could be increased.

Concerning the knowledge of the respondents about some common food sources of nutrients, most respondents did not know about common food sources of protein, carbohydrates, iron, vitamin A and iodine. Regarding inadequate nutrition during pregnancy, only 46.8% of respondents responded that inadequate nutrition during pregnancy can be the cause of miscarriage or preterm birth.

Generally, Low nutrition knowledge was found to lead to poor dietary practices (AbuBaker, 2015). Nutrition knowledge is associated significantly with nutrition status (Zhao *et al.*, 2011). Pregnant women with high nutrition knowledge had a high dietary diversity (Liao & Zhou, 2010).

Good dietary practice during pregnancy is one of the most determinant factors for the mothers and their long-term fetus health and nutritional status. The finding of this study shows, only 39.5% of pregnant women had good dietary practices. This is in line with the study finding from Gondar town which revealed that around 40.1% of pregnant women had good dietary practices (Alemayehu & Tesema, 2014). It is also slightly in line with the study findings from Addis Ababa city (Zelalem *et al.*, 2018), Bahir Dar town (Nana & Zema, 2018) and Dessei town (Diddana *et al.*, 2018), found around 34.5%, 39.3% and 45.2% of pregnant women had good dietary practice respectively. However, the current study is higher than the study conducted in Wando Gannet district, Southern Ethiopia which was 21.6%, in Mizan-Aman town, southwest Ethiopia which was 25.1%, in Ambo district, West Shoa Zone, Oromia region, Ethiopia which was 26.9%, and in Guto Gida woreda, East Wollega Zone which was 33.9%, during pregnancy (Daba *et al.*, 2013).

On the contrary, this study finding was lower than studies finding from the Mettu referral hospital (Shemsu *et al.*, 2020), Horo Guduru Wolega zone (Keyata, 2018) were found around 78%, 74.6% pregnant women had good dietary practices respectively. This discrepancy might be due to

socio-demographic and economic factors, seasonal variation of food production and consumption, measurement variation, and study setting differences. For example, most of the studies used different types of measurement tools to assess dietary practice; this might be a reason for this finding variation. Accordingly, the focus group discussion (FGD) report shows that the majority of pregnant women in the study area ate three meals and few of them ate two per day. Diversified diets are necessary for pregnant mothers to ensure the availability of all the required nutrients to support fetal growth.

A study by Zelalem *et al.* (2017) found that the number of meals relates to dietary diversity, amount of energy and nutrient intake. In addition, dietary diversity influences the intake of vitamins and minerals. The consumption of fruits and vegetables was found to increase the intake of vitamins and minerals, especially vitamin A iron and zinc. Also, energy consumption related to weight addition trends during pregnancy. The amount of nutrients consumed influences the morbidity status of pregnant mothers.

Average monthly income of the family, nutrition information, and occupation were identified as important factors affecting the dietary practice of pregnant mothers during pregnancy. The finding of this study identified that average monthly income of the family had strong statistical association with the nutrition practices of mothers during pregnancy ($p < 0.000$). Similar findings had also been reported from a study done in Guto Gida Woreda, East Wollega Zone; Ethiopia identified that average monthly income and nutrition information had a statistical association with dietary practice.

The finding of this study also identified that pregnant woman occupational status, knowledge about the importance of food for the growth and development of the fetus and food cravings for items that they would normally not consume during pregnancy had statistical association with nutritional practice ($p < 0.05$).

Regarding avoidance of any food during pregnancy, only 44.6% of the respondents had practiced avoiding food during their pregnancy. Out of those who avoided food during their pregnancy, 32.5% reported makes the baby big, 17.5% reported cultures, 25.8% reported makes delivery difficult and 24.2% reported religions as the reason for avoidance of the food respectively. But 55.4% of the respondents had not avoided any food item during their pregnancy. This figure is higher than the study conducted in Bahir Dar town, Northwest Ethiopia, which was 33% (Nana & Zema, 2018), in Guto Gida Woreda, East Wollega Zone; Ethiopia, which was 35.8%. This discrepancy may be due to differences in the culture, religion and socio economic background of study participants of the studies.

This study showed that the meal frequency per day of most of the respondents 64.7 % had a diet frequency of 1-2 meals day during their pregnancy. The rest 31.6% and 3.7 % had diet frequency of 3-4 and >5 meals per day respectively during their pregnancy. The figure resulted by this study

about frequency of meal consumption of greater than three per day is lower than the study conducted in Accra, Ghana, that a greater proportion 37.7% of the women are more than three times meal frequency during pregnancy as compared to 11.5% before pregnancy (Koryo-Dabrah *et al.*, 2012). This discrepancy may be the difference in the economic background of the study participants in the studies. In general, 33.9% of the respondents were found to have good practice depending on questions offered to them to assess practices of mothers' nutrition during their pregnancy. This figure is lower than the study conducted in Malawi that 57% of the pregnant women had good practices on nutrition and food groups during pregnancy (Naomi, 2010). This low nutritional practice may be due to low nutritional knowledge of the pregnant mother and family members during pregnancy, low income, and relatively high family size, lack of information about nutrition during pregnancy and low educational status of the study participants in this study.

CONCLUSIONS

Pregnancy is a period of remarkable physiological changes that require healthy dietary intake and lifestyle choices. During pregnancy, the demand for nutrients increases in the mother due to the growing fetus. The results indicated that the majority of the pregnant women attending ANC were housewives. The pregnant women's knowledge of adequate diet during pregnancy was rated fair while their practice of adequate diet was poor.

Based on the findings of the current study, it can be concluded that the prevalence of good dietary practices among pregnant women was very low. The pregnant mother found in the study area suffered from poor dietary practices due to not having additional meals during pregnancy. According to the study, factors affecting dietary practice were nutrition information, average monthly income, and women's occupation of pregnant women.

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