

# Dietary Practices among pregnant women in Wa Municipality Upper West Region, Ghana

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## Abstract

**Introduction:** Dietary practices play a vital role in promoting the nutritional status of pregnant women, directly influencing maternal health, birth outcomes, and child development. In the Wa Municipality of Ghana, this issue has become a public health concern, prompting the study to assess the dietary behaviors of pregnant women.

**Methodology:** The study employed a cross-sectional study design to select 384 participants through systematic sampling, while health facilities were chosen using simple random sampling. Data collection was conducted with structured questionnaires, and statistical analyses such as chi-square and binary regression were applied to examine relationships between dietary practices and influencing factors.

**Results:** The study found that respondents had an average age of 26.3 years, ranging from 16 to 42. Among pregnant women surveyed, 51% practiced adequate dietary habits, while 49% had inadequate practices. Dietary behaviors were influenced by educational level, marital status, employment, and monthly income, with income and education identified as the strongest predictors. These findings emphasize the critical role of socioeconomic and educational factors in shaping nutritional practices during pregnancy.

**Conclusion:** The study revealed that dietary practices among pregnant women are generally discouraging, though a notable proportion demonstrated good habits. This situation calls for targeted interventions. It is recommended that the Ghana Health Service, in collaboration with community women's groups, implement food demonstration programs. Such initiatives would enhance dietary practices, strengthen maternal nutrition, and contribute to healthier pregnancy outcomes in the Wa Municipality.

**Keywords:** Dietary practice, Nutrition, Pregnancy, Education, Income, Wa Municipality.

## Introduction

Every year, more than half a million women die as a result of pregnancy and childbirth-related factors (World Health Organization, 2020). Globally, over 200 million women who become pregnant each year live in underdeveloped countries, and suffer from ongoing nutritional inadequacies, recurring illnesses, and the long-term cumulative effects of childhood malnutrition [1].

Pregnant women are more vulnerable to malnutrition, and this poses a risk to the health of the mother and the unborn child. As such, malnutrition may be passed from one generation to another if not properly managed. One of the most critical elements affecting the health of both mother and child is a woman's diet during pregnancy. The way a woman prepares for pregnancy has a big impact on the embryo's development. Poor dietary habits

put women at risk for unhealthful prenatal weight gain, which can have a detrimental impact on mothers' and babies' health and result in a variety of undesirable maternal and newborn outcomes [2]. Pregnant women's nutritional status during and after pregnancy has a significant impact on their own health, as well as the health of their children and other family members. Early nutrition, from conception to nursing, has a significant impact on women's growth, development, and long-term health and well-being [3]. Essential nutrients and sufficient weight gain are very important for pregnant women. Nutrients in a women's diet are important for a child's development during gestation, particularly folic acid, calcium, iodine, iron, zinc, and long-chain polyunsaturated omega-3 fatty acids [4].

Existing studies across sub-Saharan Africa have consistently shown poor maternal nutritional status, iron deficiency anemia, and inadequate dietary knowledge negatively affecting pregnancy outcomes [5]. For instance, in Nigeria, 80.2% of pregnant women lacked adequate nutritional information to prevent malnutrition, while in Zambia, inadequate maternal knowledge contributed to under nutrition, anemia, and low birth weight [6, 7]. Similarly, in Ghana, only 19.3% of pregnant women demonstrated good dietary practices, resulting in high anemia prevalence and low birth weight babies.

However, despite these regional findings, there is limited localized evidence on the dietary practices of pregnant women in Wa Municipality, where anemia prevalence has steadily increased from 19.6% in 2018 to 27.1% in 2020, with corresponding rises in low-birth-weight cases [8]. This lack of context-specific research creates a gap in understanding the determinants of maternal nutrition in Wa Municipality, thereby hindering the development of tailored, community-based interventions to improve maternal and fetal health outcomes.

### Materials and Methods

A cross-sectional study design was employed to assess the dietary practices among pregnant women in Wa Municipality in the Upper West region of Ghana using a quantitative approach. The study consisted of all pregnant women who attended antenatal care (ANC) at the various health facilities in the Wa Municipality. Cochran's sample size estimation formula of 1963 was used to estimate a sample size of 384.

$$\text{Sample size } n = \frac{z^2 pq}{d^2}$$

Where n = Sample Size,

### Results

**Table 1:** Dietary Practices among Pregnant Women

Variable	Frequency (N)	Percentage (%N)
Do you eat all the recommended food nutrients as you are pregnant (N=384)		
Yes	279	72.7
No	105	27.3
If yes to Q1, must you eat anything you crave for at any time? (N=279)		
Yes	105	37.6
No	174	62.4
If yes to Q2, what do you always crave to eat?(N=105)		

z = z-score for a 95% confidence level and 1.96 as critical level  
 p = assumed proportion of pregnant women who attend ANC in the Municipality (50%=0.5)

q = the acceptable deviation from the assumed proportion (1-0.5=0.5)

And d = precision or margin of error (5% = 0.5)

$$\text{Therefore, } n = \frac{(1.96)^2 (0.5)(0.5)}{(0.05)^2}$$

$$n = 384.16 \approx 384$$

In sampling techniques, all the health facilities in the Wa Municipality were identified and sampled using simple random sampling. The calculated sample size was divided among these facilities according to the proportion of pregnant women registered at each facility. However, the Wa Municipal Hospital was chosen purposively because it is the main hospital in the Wa Municipality.

From each health facility, systematic sampling was adopted to select the participants from a list of pregnant women. The total number of registered pregnant women in a facility was divided by the number of respondents required for that facility. To find the sampling interval, the average monthly attendance was divided by the required sample size of each health facility as follows,

$$\text{Kth} = \frac{\text{Average monthly attendance}}{\text{Required sample size}}$$

Based on the above, every Kth pregnant woman to arrive at the health facility was interviewed until the sample size was achieved. This was done daily on weekdays for one month until the target sample size was reached. Data was collected within a month to avoid bias, which was brought in by pregnant women who revisited the health facility for follow-up in the following month. However, the first respondent was selected using the table of random numbers, and then every Kth number was taken to be part of the study in data collection, a structured questionnaire was used to collect all data needed for the study via the Kobo Collect Server. The questionnaire was pre-tested in the Wa East District, where all necessary corrections were made before its final administration to participants.

The dataset was exported from the Kobo Collect server into Excel for data management. The data was then imported into Stata version 16 for analysis. Descriptive statistics were done at the variable level and presented in frequencies and percentages. Chi-square analysis was performed to test dietary practices and nutritional knowledge. In addition, binary regression analysis was performed to further establish the dietary practices that influenced the knowledge.

Chocolate	50	47.6
Clay	43	41
Others	12	11.4
Which of the following food nutrients do you consume frequently?(N=384)		
Carbohydrates sources of food	260	67.7
Proteins sources of food	84	21.9
Fat and oil sources of food	2	0.5
Vitamin sources of food	29	7.6
Mineral sources of food	9	2.3
Do you apply the concept of balanced diet when choosing and preparing your foods?(N=382)		
Yes	303	79.3
No	29	7.7
How many times do you eat major food in a day? (N=384)		
1 time a day	44	11.5
2 times a day	162	42.2
3 times a day	178	46.4
Which of the following food do you eat mostly as your major meal (N=384)		
cereal based food	256	66.7
root and tubers	62	16.2
legumes and nuts	34	8.9
fruits and vegetables	32	8.3
What do you normally take in between your major meals (N=384)		
nothing	145	37.8
fruits	144	37.5
soft drink	63	16.4
nuts	32	8.3
Which of the following may prevent you from eating any of the food nutrients (N=382)		
Taboo	98	25.7
Fear of fetus becoming big	186	48.7
Religious belief	69	18.1
Society belief	29	7.6

From table 1, 72.3% of respondents did not consume all recommended nutrients, with carbohydrates being the most frequently eaten (67.7%) and proteins at 21.9%. Very few consumed fats (0.5%), vitamins (7.6%), or minerals (2.3%), though 79.3% applied the concept of a balanced diet in food preparation. Eating patterns showed 46.4% had three major meals daily, 42.2% had

two, and 11.5% had one, with cereals (66.7%) dominating as major meals compared to roots/tubers (16.2%), legumes/nuts (8.9%), and fruits/vegetables (8.3%). Cultural and personal beliefs influenced food avoidance, with 48.7% fearing large fetuses, 25% citing taboos, 18% religious reasons, and 7.6% societal beliefs.

**Table 2:** Association between dietary practices and knowledge level on nutrition among pregnant women

Variable	Knowledge level		chi x2(P value)
	Adequate	Inadequate	
Do you eat all the recommended food nutrients as you are pregnant?			
yes	157(56.3)	122(43.7)	11.17(0.001)
No	39(37.1)	66(62.9)	
Do you eat anything you crave for at any time?			
yes	40(51.3)	38(48.7)	1.09(0.295)
No	113(58.3)	81(41.8)	
What do you always crave to eat?			

Chocolate	24(64.9)	13(35.1)	8.79(0.012)
Clay	15(46.9)	17(53.1)	
Others	1(11.1)	8(88.9)	
Which of the following food nutrients do you consume frequently?			
carbohydrates sources	158(60.8)	102(39.2)	31.05(0.000)
Proteins sources of food	26(30.9)	58(69.1)	
Fat and oil sources of food	1(50)	1(50)	
Vitamin sources of food	9(31.0)	20(68.9)	
Mineral sources of food	2(22.2)	7(77.8)	
Do you apply the concept of a balanced diet when choosing and preparing your food?			
Yes	175(57.8)	128(42.2)	26.4(0.000)
No	7(25)	21(75)	
Don't know	13(25.5)	38(74.5)	
Which of the following may prevent you from eating any of the food nutrients?			
Taboo	40(40.8)	58(59.2)	21.4(0.000)
Fear of the fetus becoming big	117(62.9)	69(37.1)	
Religious belief	26(37.7)	43(62.32)	
Society belief	11(37.9)	18(62.1)	

From table 2, a chi-square analysis was performed to establish the dietary practices and knowledge of respondents on nutrition in order to ascertain the significance of the different variables. From the table, there were significance association of the following variables with dietary practices and knowledge on nutrition with their correspondence P-value: Do you eat all the recom-

mended food nutrients as you are pregnant? ( $p=0.001$ ), what do you always crave to eat? ( $p=0.012$ ), which of the following food nutrients do you consumed frequently? ( $p<0.000$ ), do you apply the concept of balanced diet when choosing and preparing your foods? ( $p<0.000$ ), which of the following may prevent you from eating any of the food nutrients ( $p<0.000$ )

**Table 3:** Predictive Dietary Practices on the Knowledge Level of Nutrition among Pregnant Women

Variable	COR	P value	95% Conf. Interval
Do you eat all the recommended food nutrients as you are pregnant?			
No	-		
Yes	2.2	0.001	1.373235, 3.453771
What do you always crave to eat?			
Clay	7.1	0.081	0.7886303, 63.18168
Chocolate	14.8	0.016	1.66008, 131.3974
Which of the following food nutrients do you consume frequently?			
Carbohydrates sources	1		
Proteins sources of food	0.3	0	0.1711384, .4893611
Fat and oil sources of food	0.6	0.758	0.0399316, 10.43685
Vitamin sources of food	0.3	0.003	0.1272907, 0.6630017
Mineral sources of food	0.2	0.037	0.0375742, 0.9054552
Do you apply the concept of a balanced diet when choosing and preparing your food?			
No	0.9	0.89	0.3246183, 2.656181
Yes	3.8	0.000	1.984672, 7.308706
Which of the following may prevent you from eating any of the food nutrients?			
Taboo			
Fear of the fetus becoming big	2.5	0.000	1.49012, 4.056843

Religious belief	0.9	0.683	0.4660399, 1.649387
Society belief	1	0.912	0.4615733, 2.375949

From table 3: A binary regression analysis was performed to further establish the dietary practices that influenced respondents' nutrition knowledge, using variables that continued to show significant associations. The analysis showed that respondents who eat all the recommended food nutrients are 2.2 times more likely to have adequate knowledge on nutrition compared to respondents who do not eat all the recommended food nutrients [COR; 2.2 (C.I; 1.373235, 3.453771), p=0.001], participants who always crave to eat chocolate are 14.8 times more likely to have knowledge on nutrition than others [COR; 14.8 (C.I; 1.66008, 131.3974), p=0.016]. Furthermore, study participants who apply the concept of balanced diet when choosing and preparing foods are 3.8 times more likely to have adequate knowledge of nutrition than those who don't know [COR; 3.8 (C.I; 1.984672, 7.308706), p= 0.000]. In addition, study participants who may not eat any of the food nutrients for the fear of the fetus becoming big are 2.5 times more likely to have adequate knowledge as compared to taboo [COR; 2.5 (C.I; 1.49012, 4.056843), p=0.000]

### Categorization of Dietary Practices among Pregnant Women

The dietary practices of respondents are summarized in Figure 1. To determine the dietary practices, some questions were pulled together to generate a score for practice. These questions were: Do you eat all the recommended food nutrients as you are pregnant? If yes, must you eat anything you crave at any time? Do you apply the concept of a balanced diet when choosing and preparing your food?

Each question was recorded into a binary question (Yes/No), where yes was re-coded 1 and no was re-coded 0. A score for practices was generated, where the minimum score was 1 and the maximum score was 6. To determine the dietary practices of respondents, the researcher assumed that respondents who scored all questions (6) had good dietary practices and respondents who scored below 6 were classified as having poor dietary. The results are presented in the figure 1 below:

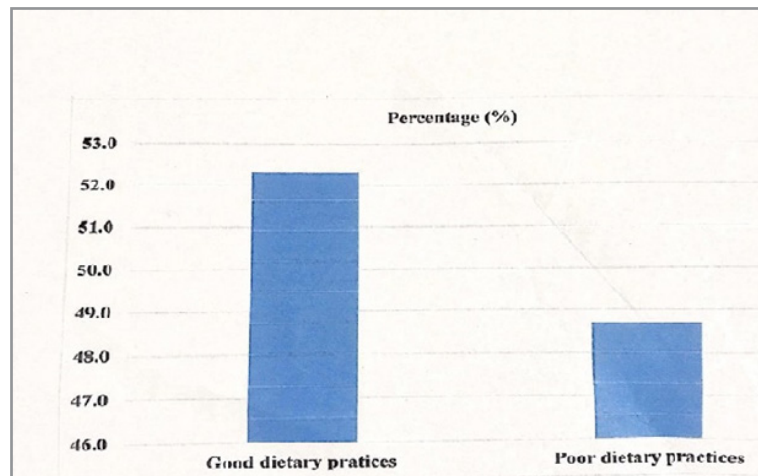


Figure 1: Dietary Practices of Pregnant Women

### Discussion

The study revealed that the majority (72.7%) of the respondents ate all the recommended food nutrients. However, despite the fact of them indicating they eat all the recommended food nutrients, 62.4% indicated they must not eat everything they crave during pregnancy. Also, the application of the balanced diet concept was good, with 73.3% of pregnant women incorporating it into meal preparation. This is an indication that their diet is diversified, which is good because diversified diets are necessary for pregnant women to ensure the availability of all the required nutrients to support fetal growth and development. This can be compared to a study by Aliwo et al., (2019) which indicated that, good dietary practices refer to healthy eating habits or the process of eating foods that contain all of the nutrients in the right proportions to promote growth and development, whereas poor dietary practices refer to eating foods that lack all of the nutrients required for growth and development or eating foods that are unhealthy. This study further revealed that most (46.4%) of the respondents ate a minimum of 3 times a day, with 66.7% of them eaten cereal based food which is a major source of carbohydrate. This is good because, eating at least three balanced

meals daily during pregnancy ensures steady nutrient supply, supports maternal health, and promotes optimal fetal growth and development. This study supports the human model work of an association between decreased frequency of eating and preterm delivery by, which indicated that women who consumed meals/snacks less frequently were slightly heavier during pregnancy. Hence, these women had a lower total energy intake, and are higher risk of delivering preterm [9].

The implications of eating these macronutrients, such as carbohydrates, during pregnancy help to maintain maternal homeostasis while supporting fetal growth and development. Also, certain micronutrients such as vitamins and minerals, which complement these carbohydrates helps to prevent neural tube defects and cretinism. These findings can be compared to a similar study by, which revealed that consumption of macro and micro nutrients by pregnant women were 41.7%, 38.8%, and 77.4% of carbohydrate, protein, and vitamins, respectively, and has helped reduce several birth defects such as spinal bifida among infants [10].

### Limitation of the Study

These findings highlight the positive impact of dietary practices on maternal nutrition; however, the study has some limitations. The main limitations are the small sample size and the focus on a specific geographical area, which affects the generalizability. However, the findings provide a strong foundation for future larger-scale studies.

### Conclusion

The study revealed that, the dietary practices among pregnant women are not encouraging, even though, a considerable number of them had good dietary practices. The Ghana Health Service needs to deploy nutrition officers to antenatal care sites to counsel pregnant women on appropriate dietary intake. This will help to improve the nutritional status of pregnant women, leading to overall birth outcomes. Also, adequate dietary practices will result in anemia reduction during pregnancy, which normally causes low-birth weight [11-13].

### Ethics Approval and Consent to Participate

This study was approved by the Ghana Health Service Ethics Review Committee with reference number GHS-ERC: 051/06/22. All respondents provided informed consent before participating in the study. Respondents were informed that participation was voluntary. However, they have the power and right to withdraw from the study at any point they wish. Anonymity and privacy were assured by giving the respondents codes for identification instead of using their names. The purpose of the study was made known to the respondents. A written consent was signed before questionnaires were administered. The information provided by respondents were kept confidential.

### Declaration of Conflict of Interest and Funding

There was no conflict of interest of any kind in the study. No sponsorship was secured for this study. This study was solely funded by the researchers.

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