Assessment of Dietary Habits in Pregnant Women Attending Primary Health Care Centers

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Abstract

Introduction :Pregnancy is the greatest critical and nutritionally demanding phase in a female's lifespan. Overall increased need for nutrients to facilitate power storage as new tissue, the expansion of established mother organs such as the breasts and uterus, and the increased energy demands for tissue synthesis make expectant women more susceptible to inadequate nutrition. Dietary habits are characterized as visible actions or behaviors related to eating patterns and can be categorized as beneficial or detrimental dietary practices. Nutritional deficits resulting from dietary habits and patterns are more prevalent while pregnant than at any other life phase.This study assessed dietary habits and associated factors among pregnant women attending primary health care centers in Najaf.

Methods: A cross-sectional analytical research was performed from November 19, 2024 to March 10, 2025, including 150 pregnant women receiving prenatal services at primary health care clinics in Najaf city. Six centers were chosen using basic random selection. A questionnaire was utilized to collect data, which included socio-demographic information, reproductive health, body mass index, and dietary habits.

Result: The results showed no statistically significant associations between dietary habits and sociodemographic variables, including (age group, education level, occupation, monthly income , and residency) ($p = 0.497$, 0.800, 0.744, 0.630, 0.823). A significant association was found between gestational age and dietary habits ($p = 0.034$), with poor dietary practices reported in 90.12% of women in the third trimester, 80.39% in the second trimester, and 66.67% in the first trimester. No significant associations were observed with gravidity, parity, type of pregnancy, abortion history, birth interval, or medical visits ($p > 0.05$). Dietary habits also showed no significant relationship with BMI ($p = 0.620$), although poor habits were prevalent among overweight (85.29%) and obesity class II (100%) participants. Overall, 84.0% of pregnant women exhibited poor dietary habits, with a mean score of 1.60 ± 0.367, while only 16.0% demonstrated a moderate level. The study found that most pregnant women had poor dietary habits, mainly linked to gestational age, with worse practices in later pregnancy. Irregular meal timing, meal skipping, and food avoidance showed a lack of nutritional awareness.

Keywords: Pregnant, Pregnant women, Dietary habits, Healthy eating , Maternal health, Primary health care.

1. Introduction

Pregnancy demands raised energy and nutrient requirements for a woman to support the developing fetus and maternal tissues. A proper dietary balance is essential to ensure adequate energy intake for optimal fetal growth without depleting the mother's own tissues to sustain her pregnancy (Abu-Saad & Fraser, 2010) .

Since maternal health is defined as the health of women from the time of conception through pregnancy, delivery, and the postpartum period, maternal nutritional status is a significant factor of pregnant women's health. Women's nutritional and energy requirements rise throughout pregnancy, especially in the second and third trimesters, and they must have access to enough wholesome food to satisfy their demands (Al-Mosawy & Faris, 2024) . A balanced and nutritious diet is essential for adequate nutrient intake. Pregnant women should meet recommended levels of key nutrients like folic acid, iron, calcium, and omega-3 fatty acids. Folic acid is crucial for normal neural tube development, and its deficiency can lead to defects (Demilew et al., 2020). The Centers for Disease Control and Prevention advise that all women of reproductive age should intake 400 micrograms of folic acid daily, alongside a diverse diet high in folic acid, to avert neural tube abnormalities (Georgieff, 2020) . Iron facilitates the synthesis of red blood cells and aids in the prevention of problems such as low birth weight (Gibore et al., 2021). Increased calcium and vitamin D are necessary for the fetus's bone development and maternal health (Kebbe et al., 2021). Inadequate calcium can cause serious issues like restricted growth , preterm birth and preeclampsia (Desalegn Kuche et al., 2015) . Inadequate diets that cause food and caloric consumption defects can have a significant influence on newborn health and pregnancy outcomes. Restriction of energy and nutrients disrupts appropriate fetal development and may lead to diseases such as cardiovascular disease, type II diabetes, and hypertension (Madhavi & Singh, 2011) . Chronic lack of energy is prevalent among women of reproductive age and pregnant women in developing countries, attributed to factors including inadequate diet quality, large family size, rural residency, insufficient meal frequency, and low socioeconomic status (Mahmood et al., 1997; Molan et al., n.d.) .Maternal and child undernutrition is a significant worldwide challenge, impacting approximately half of the global population and resulting in 3.5 million fatalities annually (Najpaverova et al., 2020) . Prevalent reasons including inadequate nutritional practices, insufficient knowledge, and socioeconomic influences (Olatona et al., 2021) . In Ethiopia, around 34.5% of pregnant women receiving prenatal care at public hospitals in Addis Ababa reported adhering to excellent dietary habits (Oleiwi et al., 2021) .Dietary habits refer to the variety of choices individuals or groups have to choose regarding vital meals (Olloqui-Mundet et al., 2024) . Sociocultural, individual, and familial factors shape them (Roba et al., 2015) .Good food habits during pregnancy have a substantial impact on the long-term nutritional condition of both the mother and the unborn child. According to studies, nutritional insufficiency caused by dietary habits and patterns is more prevalent during pregnancy than at any other stage of the life cycle (Rodríguez et al., 2011) . Many women in underdeveloped nations restrict their food consumption during pregnancy for cultural and fear-based reasons, according to research (Safi et al., 2012). Approximately 800 women die every day from pregnancy-related causes, which is an extremely high maternal mortality rate, especially in underdeveloped nations . 289,000 women lost their lives during or after giving birth in 2013, primarily in areas with few resources, particularly in sub-Saharan Africa (Sahoo & Panda, 2006) . Iron deficiency is the main cause of anemia, which contributes significantly to 20% of

maternal mortality in Africa. In 2011, just 16.8% of pregnant women in Ethiopia used iron supplements, and only 34% of them received prenatal care (Tejayanti, 2019) .This study assessed dietary habits and associated factors among pregnant women attending primary health care centers in Najaf.

2. Methodology

2.1. Design of the Study

A cross-sectional analytical study was performed on pregnant women attending antenatal care at primary health care centers.

2.2. Setting of the Study

primary health care centers (PHCCs) in Najaf city from November 19, 2024 to March 10, 2025.

2.3. Sample of the Study

Simple random sampling method selected six out of thirty primary health care centers, with three from each of the south and north health care sectors, using a lottery method for selection. The study included a purposive sampling of 150 pregnant women. The sample size was estimated using the Steven K Thompson formula for targeted population size, allowed error 5%, prevalence (ratio of the studied phenomenon in the population in a similar study), and the 95% confidence interval.

2.3. Inclusion criteria

pregnant women with anemia identified by a healthcare professional, attending primary health care facilities, in any trimester, who provide consent to participate.

2.4. Exclusion criteria

pregnant women with eating disorders, high-risk pregnancies (e.g., severe preeclampsia, gestational diabetes), and chronic diseases (e.g., renal failure, cancer).

2.5. The Study Instrument

Consisted of four part components. The first part consisted of a socio-demographic information sheet that collected data on participants' age, level of education, occupation, household income and place of residence. The second part entails the gathering of data regarding reproductive health, with particular emphasis on gestational age, number of pregnancies and births ,and frequency of antenatal care (ANC). The third part include of body mass index. The fourth component dietary habits (Ward et al., 2005) . The instrument was presented to a panel of twelve nursing experts to enhance its validity. Twenty pregnant women participated in a pilot study conducted at the Imam al-Jawad Health Care Center from December 1 to December 21, 2024. The reliability was evaluated at 0.791 using the alpha correlation coefficient. Upon obtaining consent from the pregnant women, data collection was conducted through interviews, each lasting approximately 10 to 12 minutes.

2.6. Statistical Data Analysis

The analysis of data was performed utilizing SPSS software version 26.0 (IBM SPSS Statistics). Descriptive statistics such as frequency (f), percentage (%), mean (M), and the following statistical data analysis approaches have been used through Chi-square test(X^2).

3. Results

Table (3.1): Demographic associated with the Dietary Habits of pregnant women

		Dietary Habits						X^2	P- value
		Poor		Moderate		Total			
		N	%	N	%	N	%		
Age Groups								2.381	.497
	14-20	23	79.310	6	20.690	29	100.000		
	21-27	47	83.929	9	16.071	56	100.000		
	28-34	37	82.222	8	17.778	45	100.000		
	35-42	19	95.000	1	5.000	20	100.000		
Level of education								3.071	.800
	Doesn't read & write	25	83.333	5	16.667	30	100.000		
	Read & write	25	80.645	6	19.355	31	100.000		
	Primary school	29	80.556	7	19.444	36	100.000		
	Intermediate school	17	85.000	3	15.000	20	100.000		
	Secondary school	11	91.667	1	8.333	12	100.000		
	Graduate	9	81.818	2	18.182	11	100.000		
	Postgraduate	10	100.000	0	.000	10	100.000		
Occupation								1.238	.744
	Housewife	103	83.065	21	16.935	124	100.000		
	Employee	17	85.000	3	15.000	20	100.000		
	Free works	1	100.000	0	.000	1	100.000		
	Student	5	100.000	0	.000	5	100.000		
Monthly income								.925	.630
	Sufficient	72	85.714	12	14.286	84	100.000		

	Barely sufficient	35	79.545	9	20.455	44	100.000		
	Insufficient	19	86.364	3	13.636	22	100.000		
Residency								.117	.823
	Urban	73	84.884	13	15.116	86	100.000		
	Rural	53	82.813	11	17.188	64	100.000		

f: Frequency, %: Percentage

The table (3.1) shows the association between dietary habits (poor vs. moderate) and selected sociodemographic variables. Results from the Chi-square test indicate no statistically significant association between dietary habits and any of the examined variables, including age group (p = 0.497), level of education (p = 0.800), occupation (p = 0.744), monthly income (p = 0.630), and residency (p = 0.823).This show that differences in dietary habits were not significantly influenced by these demographic factors within the studied sample.

Table (3.2): Significant Differences in Reproductive Health History associated with the Dietary Habits of pregnant women

		Dietary Habits							
		Poor		**Moderate**		**Total**		**X^2**	**P-value**
		N	**%**	**N**	**%**	**N**	**%**		
Gestational age								6.778	.034
	First semester (1 – 13)	12	66.67	6	33.33	18	100.00		
	Second semester (14 – 26)	41	80.39	10	19.61	51	100.00		
	Third semester (27 – 40+)	73	90.12	8	9.88	81	100.00		
Gravidity									
	Primigravida (1)	29	82.86	6	17.14	35	100.00		
	Multigravida (2-4)	65	85.53	11	14.47	76	100.00		
	Grand multigravida (5+)	32	82.05	7	17.95	39	100.00		
Parity								.276	.781
	Primiparous (1)	64	84.2	12	15.8	76	100.0		
	Multiparous (2-4)	53	84.1	10	15.9	63	100.0		
	Grand multiparous (5+)	9	81.8	2	18.2	11	100.0		

Type of pregnancy								.291	.962
	Singleton	41	91.11	4	8.89	45	100.00		
	Twin	85	80.95	20	19.05	105	100.00		
Abortion								2.419	.148
	No	85	80.95	20	19.05	105	100.00		
	1	30	100.00	0	.00	30	100.00		
	2	8	72.73	3	27.27	11	100.00		
	3	2	66.67	1	33.33	3	100.00		
Interval between birth (year)								.415	.813
	Primigravida	30	83.33	6	16.67	36	100.00		
	< 2	66	85.71	11	14.29	77	100.00		
	≥ 3	30	81.08	7	18.92	37	100.00		
Medical visits								.324	.851
	First semester	91	85.05	16	14.95	107	100.00		
	Second semester	30	81.08	7	18.92	37	100.00		
	Third semester	5	83.33	1	16.67	6	100.00		

f: Frequency, %: Percentage, X^2: chi-square, P- value: p = probability value, P < 0.05=Significant, P, P > 0.05= non-significant

The Table (3.2) analysis revealed a statistically significant association between gestational age and dietary habits (p = 0.034), with poor dietary practices being more prevalent in the third trimester (90.12%) compared to the first (66.67%) and second trimesters (80.39%). However, no significant associations were observed between dietary habits and other reproductive health history including gravidity, parity, type of pregnancy, abortion history, interval between births, and medical visits (p > 0.05). These findings display that gestational age may influence dietary behavior during pregnancy, while other factors appear to have no significant impact.

Table (3.3): Significant Differences in Dietary Habits among Pregnant Women based on Body Mass Index

		Dietary Habits						X^2	P-value
		Poor		Moderate		Total			
		N	%	N	%	N	%		
BMI Categories								2.637	.620
	Underweight	1	50.00	1	50.00	2	100.00		
	Within normal	39	82.98	8	17.02	47	100.00		
	Overweight	58	85.29	10	14.71	68	100.00		
	Obesity class I	24	82.76	5	17.24	29	100.00		
	Obesity class II	4	100.00	0	.00	4	100.00		
	Obesity class III	0	.00	0	.00	0	.00		

f: Frequency, %: Percentage, X^2: chi-square, P- value: p = probability value, P < 0.05=Significant, P, P > 0.05= Non-significant

Table (3.3) shows no significant association between BMI categories and dietary habits (p = 0.620). Poor dietary habits were prevalent across all BMI groups, especially among overweight (85.29%) and obesity class II (100%) participants. Despite slight variations, BMI did not significantly influence dietary behavior in this sample.

Table (3.4): Assessment of Dietary Habits among Pregnant Women (N=150)

List	Dietary behaviors	Scale	f (%)	M	SD	Assessment
1	Number of meals per day	One	0 (0)	2.69	.517	Moderate
		Two	50 (33.3)			
		Three	96 (64)			
		Four+	4 (2.7)			
2	Eat meals at regular times	No	83 (55.3)	1.45	.499	Poor
		Yes, but some of them	67 (44.7)			
		Yes, All of them	0 (0)			
3	Number of days you skip meals per week	None	75 (50)	1.00	1.193	Poor
		Rarely (1 – 2)	25 (16.7)			

		Moderate (3-4)	31 (20.7)			
		Frequent (5-6)	13 (8.7)			
		Daily (7)	6 (4)			
4	Skipping meals	No	75 (50)	.91	1.141	Poor
		Breakfast	42 (28)			
		Launch	4 (2.7)			
		Dinner	29 (19.3)			
5	Avoid certain foods during pregnancy?	No	12 (8)	.92	.272	Poor
		Yes	138 (92)			
6	Causes of avoidance	No	11 (7.3)	2.70	1.733	Moderate
		Religion	1 (.7)			
		Hate/Annoyance	91 (60.7)			
		Difficulty in childbirth	1 (.7)			
		Others	46 (30.7)			
7	Relying on restaurants for main meals during the week	None	113 (75.3)	.32	.659	Poor
		1 – 2	34 (22.7)			
		3 – 4	3 (2)			
8	Consumption of tea and coffee	None	16 (10.7)	1.32	.745	Poor
		During meal	79 (52.7)			
		2 Hours before	46 (30.7)			
		2 Hours after	9 (6)			

f: Frequency, %: Percentage

M: Mean, SD: Standard Deviation, *Reverse score

Poor= 1 – 1.99, Moderate= 2 – 2.99, Good= 3 – 4

The findings from Table (3.4) reveal important insights into the dietary habits of pregnant women vary in quality . While the majority (64%) consume three meals per day—reflected in a moderate mean score (M=2.69)—a significant portion (33.3%) eat only two meals, suggesting inadequate meal frequency. More than half (55.3%) do not eat meals at regular times, with this behavior rated as poor (M=1.45). Meal skipping is also common, reported by 50% of women, with breakfast being the most frequently missed (28%). This is supported by poor scores for meal skipping frequency (M=1.00) and general meal skipping (M=0.91). Food avoidance during pregnancy is widespread (92%), primarily due to dislike or annoyance (60.7%) and other non-religious reasons (30.7%), with a poor score for avoidance (M=0.92) but a moderate rating for the causes (M=2.70). Most women (75.3%) do not rely on restaurants for their main meals, reflected in a low score (M=0.32), indicating a preference for home-cooked food. However, tea and coffee consumption during meals is prevalent (52.7%) and rated poorly (M=1.32) due to potential negative effects on nutrient absorption

Table (3.5): Overall Assessment of Dietary Habits among Pregnant Women

Dietary habits	F	%	M	SD	Ass.
Poor	126	84.0	**1.60**	**0. .367**	**Poor**
Moderate	24	16.0			
Good	0	0			
Total	***150***	***100***			

f: Frequency, %: Percentage

M: Mean for total score, SD: Standard Deviation for total score, Ass: Assessment

Poor= 8 – 15.99, Moderate= 16– 23.99, Good= 24 – 32

The Table (3.5) exhibits that the majority of pregnant women show poor dietary habits (84.0%) with mean score (M±SD= 1.60 ± 0.367). While 0nly 16.0% exhibited moderate level of dietary habits .

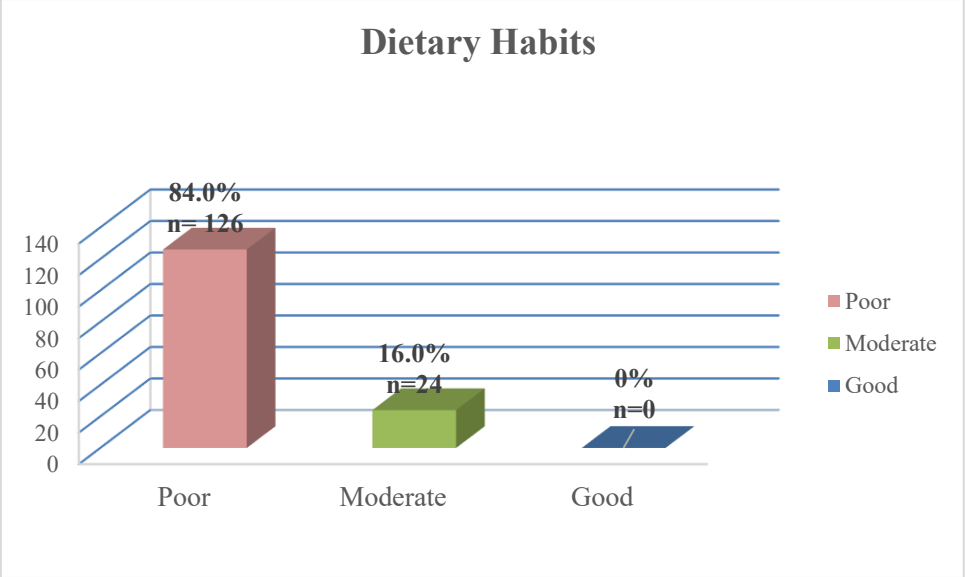

Figure (1): Levels of Dietary Behaviors among Pregnant Women (N=150)

This figure shows that 84.0% of pregnant women associated with poor dietary behaviors.

4. Discussion

There was no statistically significant difference in the association between dietary habits and any demographic characteristics. Subsequent post hoc analysis indicates that variations in dietary habits were not notably affected by the demographic factors within the examined sample. This finding corresponds to the research conducted by Molan et al., which indicates that the dietary practices of pregnant women show no significant correlation with maternal age, educational attainment, occupation, and family income (Ward et al., 2005) . But the conclusion disagrees with a study done in Nigeria that found a significant relationship between monthly income and the dietary diversity of the women (Willemse et al., 2020) .

There was a statistically significant association between gestational age and dietary habits ($p = 0.034$) Further post hoc analysis reveals that poor dietary practices being more prevalent in the third trimester ninety point one two percent compared to the first sixty-six point six seven percent and second trimesters eighty point three nine percent. This finding is inconsistent with Molan the is study finding displayed that no significant association dietary practices and stage of pregnancy (Ward et al., 2005) .

This study found that there were no important links between eating habits and reproductive health history, such as the number of pregnancies, childbirths, type of pregnancy, history of abortions, time between births, and medical visits ($p > 0.05$). This finding is inconsistent with that reported by Kebbe (2021), which revealed a significant association between parity, trimester, and eating behaviors (Wubie et al., 2020) .

The research indicated no statistically significant relationship between BMI categories and dietary habits ($p = 0.620$). Subsequent post hoc analysis indicates that inadequate dietary habits were common across all BMI categories, particularly among overweight (85.29%) and obesity class II (all of them) participants. This finding contradicts Kebbe , (2021) the current study revealed distinct eating behaviors. Women with obesity were more likely to adopt healthy dietary behaviors compared to normal-weight women, as well as reduce meal size ($p = 0.012$)

and food quantity (p = 0.002), rather than maintaining their pre-pregnancy behaviors (Wubie et al., 2020) .

There was a statistically significant difference in dietary habits among pregnant women Further post hoc analysis reveals that most women sixty-four percent eat three meals a day, but many thirty-three point three percent have only two, suggesting they may not eat enough. Over half fifty-five and three-tenths percent do not have regular meal times, and many skip meals, especially breakfast twenty-eight percent. A large number avoid certain foods ninety-two percent , mainly due to dislike. Most seventy-five point three percent don't eat out, and over half fifty-two and seven-tenths percent drink tea or coffee with meals ,as shown in table 4. This finding is consistent with Olatona et al ,(2021) the is study finding displayed that more than half fifty-two percent of the respondents ate 3 times per day, forty-three point one percent skipped meals, and disagree with result of lunch thirty-seven point four percent was the most skipped meals and the majority seventy-one point seven percent ate outside their homes (Willemse et al., 2020) . Also the result agree wirh Gibore et al,(2021) the is study finding displayed that eighty-one and four-tenths percent of participate consuming tea or coffee during meal times (Rodríguez et al., 2011) .

A statistically significant difference was observed in the dietary habits of pregnant women, with a majority demonstrating poor dietary practices at eighty-four percent while just sixteen percent exhibited a moderate level of dietary habits. This finding contradicts the report by Mahmood et al. (1997), who conducted an assessment of nutritional beliefs and practices among pregnant and lactating mothers in both urban and rural areas of Pakistan (Wubie et al., 2020) .

5. Conclusion

The study revealed that most pregnant women exhibited poor dietary habits, with limited influence from sociodemographic or reproductive health factors. However, gestational age emerged as a significant factor affecting dietary habits, with poorer practices observed in later stages of pregnancy. Body mass index showed no meaningful association with dietary habits, though unhealthy patterns were common across all weight categories. Specific behaviors such as irregular meal timing, frequent meal skipping, and avoidance of certain foods were notably poor, indicating gaps in nutritional awareness and practice.

7. Recommendations

It is suggested that you include regular dietary evaluations into prenatal care and increase nutrition education during antenatal visits in order to improve dietary practices among expectant mothers. Healthy eating settings can be promoted by supporting policies and family and community engagement. To determine the origins of unhealthy eating habits and evaluate successful therapies, further study is required.

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