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Exploration of Dietary Habits: A Study of Pregnant Women Attending Antenatal at Cape Coast Metropolitan Hospital

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Abstract:

- ***Background:***

Maternal nutrition during the first trimester significantly influences fetal development and pregnancy outcomes. However, various physiological, cultural and socioeconomic factors affect dietary patterns during early pregnancy in sub-Saharan Africa. We explored the dietary habits, influencing factors and nutritional challenges faced by pregnant women during their first trimester in Ghana.

- ***Methods:***

A descriptive phenomenological study was conducted at Cape Coast Metro Hospital, Ghana. Twelve pregnant women aged 24-38 years in their first trimester (7-11 weeks gestation) were purposively sampled from those attending antenatal care. Data were collected through semi-structured in-depth interviews and analyzed using Braun and Clarke's thematic analysis framework. Ethical approval was obtained from Cape Coast Metro Hospital Research Ethics Committee.

- ***Results:***

Three major themes emerged: dietary patterns, cultural and social influences and nutritional barriers. Women predominantly consumed light, easily digestible foods with small, frequent meals to manage nausea. Cultural beliefs and food taboos strongly influenced choices - all 12 participants were aware of traditional food restrictions, with 9 actively avoiding snails, crabs and certain meats believed to cause fetal birthmarks. Family members, particularly spouses and elders, actively guided dietary decisions in all cases. Physical symptoms, particularly morning sickness (affecting all participants), emotional stress, financial constraints (8/12 participants), and seasonal food availability created substantial barriers to optimal nutrition. Traditional herbal beverages including ginger tea and sobolo were widely used for symptom management.

- ***Conclusion:***

First-trimester nutrition in Ghana reflects a complex interplay of physiological symptoms, deep-rooted cultural practices, family dynamics and socioeconomic constraints. Effective interventions must integrate culturally sensitive counseling, family education, social support programmes addressing food access and multisectoral collaboration to improve seasonal availability of nutritious foods.

Keywords: *Pregnancy, First Trimester, Dietary Habits, Cultural Beliefs, Ghana, Maternal Nutrition, Qualitative Research.*

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I. INTRODUCTION

The health workforce is one of the key building blocks for strengthening health systems in Africa. Among the critical health issues affecting African populations, maternal and child health remains a priority area requiring urgent attention. The first trimester of pregnancy (conception to 13 weeks) represents a pivotal window for fetal development and maternal health [1]. During this period, rapid cellular differentiation and organogenesis occur, making the developing fetus highly susceptible to environmental influences, particularly maternal nutritional status [2]. Adequate maternal nutrition during this foundational stage ensures optimal balance of macro and micronutrients essential for fetal growth, neurological development and long-term health outcomes [3,4].

Africa resultantly records appalling health indices as a consequence of endemic and emerging health issues that are exacerbated by multiple factors including inadequate maternal nutrition [5]. Research consistently demonstrates that suboptimal dietary intake in early pregnancy leads to adverse outcomes such as low birth weight, preterm birth and increased risk of chronic diseases in later life [6,7]. Despite well-established nutritional guidelines, pregnant women frequently encounter significant shifts in their eating patterns during the first trimester driven by a complex interplay of physiological adaptations, hormonal fluctuations, heightened sensitivities and pregnancy-related symptoms such as nausea and vomiting [8].

In low-income countries, efforts to improve maternal nutrition have stalled, due in part, to lack of understanding of the complex factors influencing dietary behaviours. While quantitative studies provide valuable data on dietary intake and outcomes, they often lack the depth to capture the nuanced reasons behind food choices and the daily struggles faced by women during this period. In sub-Saharan Africa, including Ghana, traditional beliefs and cultural practices exert considerable influence on pregnancy-related dietary behaviours [9]. Food taboos, often based on transgenerational knowledge, can paradoxically restrict consumption of nutrient-dense foods [10]. Furthermore, financial constraints and seasonal variations in food availability compound these challenges, particularly affecting vulnerable populations [11].

To strengthen public health systems in Africa and improve maternal health outcomes, we must understand the lived experiences of pregnant women to develop more effective and tailored nutritional interventions. This study therefore aimed to explore the dietary habits of pregnant women during their first trimester, examine the cultural, social and personal factors influencing eating patterns, and identify barriers to optimal nutrition maintenance in Cape Coast, Ghana.

II. METHODS

- *Study Design and Setting*

A descriptive phenomenological study conducted at Cape Coast Metro Hospital, a primary healthcare facility in the Central Region of Ghana providing comprehensive antenatal services. The facility serves both urban and peri-urban populations, making it representative of maternal health service delivery in Ghana. This qualitative approach was selected because it allowed for in-depth exploration of the complex and subjective experiences of pregnant women regarding their eating patterns, providing rich, nuanced data that quantitative methods could not capture.

- *Study Population and Sampling*

The study population comprised pregnant women in their first trimester attending antenatal care at Cape Coast Metro Hospital. It included women who were confirmed to be in first trimester pregnancy; attending the study facility; able to communicate in English or local language (with translator assistance) and willing to provide informed consent. It excluded women beyond their first trimester, those with pre-existing medical conditions significantly impacting dietary intake and women with cognitive impairments hindering informed consent.

Purposive sampling employed to select participants possessing specific characteristics relevant to the research questions. Sample size was determined by data saturation principles, consistent with qualitative research guidelines [12]. According to established qualitative research methods, an adequate sample size typically ranges from 6 to 15 participants to achieve rich, in-depth data. Data saturation was achieved after interviewing 12 participants, as no new themes or insights emerged from additional interviews, indicating that comprehensive understanding of the phenomenon had been achieved.

- *Data Collection*

Semi-structured in-depth interviews were conducted using a pre-tested interview guide developed from research questions and theoretical frameworks (Health Belief Model and Social Cognitive Theory). The interview guide was pre-tested with pregnant women not included in the main study to assess clarity, relevance and effectiveness in eliciting rich data. Feedback from pre-testing was used to refine the instrument before main data collection commenced.

Interviews were conducted in private, comfortable settings at Cape Coast Metro Hospital. Trained interviewers established rapport with participants to encourage open and honest sharing of experiences. With participants' permission, interviews were audio-recorded and transcribed verbatim. Field notes were taken during and after interviews to capture non-verbal cues and contextual information. The interview guide explored: typical dietary patterns and meal frequencies; preferred and avoided foods with reasons; cultural, social and personal influences on food choices and challenges maintaining optimal nutrition during early pregnancy.

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➢ *Data Management and Analysis*

Audio-recorded interviews were transcribed verbatim in the language of interview and translated to English where necessary. The transcripts managed using ATLAS.ti qualitative data analysis software (version 9.1.3.0). Data were analyzed using Braun and Clarke's six-phase thematic analysis framework: (1) familiarizing with data through repeated reading of transcripts; (2) generating initial codes; (3) searching for themes by grouping related codes; (4) reviewing themes for coherence and distinctiveness; (5) defining and naming themes and (6) producing the report [13]. Analysis was iterative and inductive, allowing themes to emerge directly from the data rather than imposing pre-conceived categories.

➢ *Rigor/Trustworthiness*

To ensure trustworthiness and credibility of qualitative findings, we implemented several measures. Credibility was established through prolonged engagement with data, persistent observation and triangulation of data sources. Member checking was employed whereby participants reviewed transcripts and interpretations for accuracy. Transferability was addressed through thick description of study context, participants and findings, enabling readers to determine applicability to other similar settings. Confirmability was ensured through comprehensive audit trails documenting all research decisions, data collection procedures and analytical processes. Reflexivity involved critical researcher reflection on personal biases and assumptions throughout the study.

➢ *Dependability*

Dependability in this study was ensured by maintaining a clear and detailed record of all research procedures, allowing for transparency and potential replication. Every step of the data collection and analysis process was documented, including interview procedures, transcription, coding and theme development, creating an audit trail that reflected methodological consistency. Regular peer debriefing with supervisors and colleagues helped to verify interpretations and enhance the stability of findings. Braun and Clarke's [13] structured thematic analysis was employed which helped adhered to established qualitative research protocols and maintained reliability and consistency in the interpretation of participants' experiences.

➢ *Ethical Considerations*

Ethical approval was obtained from Cape Coast Metro Hospital Research Ethics Committee before commencing the study. All participants provided written informed consent after receiving comprehensive information about study purpose, procedures, potential risks and benefits and their right to withdraw at any time without penalty. Confidentiality and anonymity were by assigning pseudonyms (Participant 1-12) and securely storing all collected data. Data were only accessible to the research team. The study adhered to all ethical guidelines for research involving human participants as recommended by the International Committee of Medical Journal Editors.

III. RESULTS

➢ *Participant Characteristics*

The demographic characteristics of the twelve participants reflected a diverse group of pregnant women (Table 1). Ages ranged from 24-38 years (median 30 years), with majority (8/12, 67%) aged 26-35 years, representing typical reproductive age range. Educational attainment varied from basic education certificates to bachelor's degrees. Most participants (9/12, 75%) were married, while three were single including one single mother. Occupations included nursing (3/12, 25%), trading (3/12, 25%), teaching (1/12), farming and vending (2/12), accounting (2/12) and school assistance (1/12). Parity ranged from primigravidae to fifth pregnancy. Gestational age at interview ranged from 7-11 weeks, focusing on first trimester as intended by study design.

Table 1 Demographic Characteristics of Study Participants

Participant	Age (years)	Education	Marital Status	Occupation	Number of Pregnancies	Weeks Pregnant
1	28	Diploma in Nursing	Married	Nurse	2nd	10
2	34	Senior High School	Single	Trader	1st	9
3	26	Bachelor's (Business)	Married	Accountant	1st	8
4	31	Senior High School	Married	Trader	3rd	11
5	29	Senior High School	Single Mother	School Assistant	2nd	7
6	35	Certificate in CHN	Married	Community Health Nurse	4th	9
7	24	Senior High School	Single	JHS Teacher	1st	10
8	32	Diploma (Agriculture)	Married	Farmer & Vendor	2nd	10
9	30	Bachelor's (Business)	Married	Accountant	1st	8
10	27	Diploma in Nursing	Married	Staff Nurse	1st	11
11	33	Senior High School	Married	Trader	3rd	10
12	38	Basic Education	Married	Farmer & Vendor	5th	9

CHN = Community Health Nursing; JHS = Junior High School

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➢ *Thematic Analysis Summary*

Three main themes with 12 subthemes emerged from the analysis (Figure 1): (1) dietary habits and food choices during first trimester; (2) cultural, social and personal factors influencing eating patterns; and (3) challenges and barriers to maintaining optimal nutrition.

➢ *Theme 1: Dietary Habits and Food Choices During First Trimester*

- *Meal Patterns and Frequency*

All 12 participants described consuming light or small meals, particularly in mornings, primarily due to nausea. A 28-year-old nurse explained:

"In the mornings, I usually take a bowl of oats with some fresh fruit like bananas or pawpaw, which I find easier to digest... But honestly, my appetite varies a lot. There are days when I barely feel like eating anything." Similarly, a 38-year-old farmer stated: "Breakfast is usually light - a bowl of millet or maize porridge, sometimes with a little sugar or milk if available. Often, the nausea makes me not want to eat much in the morning."

Small, frequent meals throughout the day were adopted by most participants (10/12, 83%) as coping strategy. A 32-year-old farmer noted*: "I try to eat small, frequent meals throughout the day to keep my energy up, especially because fatigue is a constant issue in early pregnancy."*

A 29-year-old single mother stated: *"Because of morning sickness, my appetite is not as strong, so I eat smaller meals more frequently."*

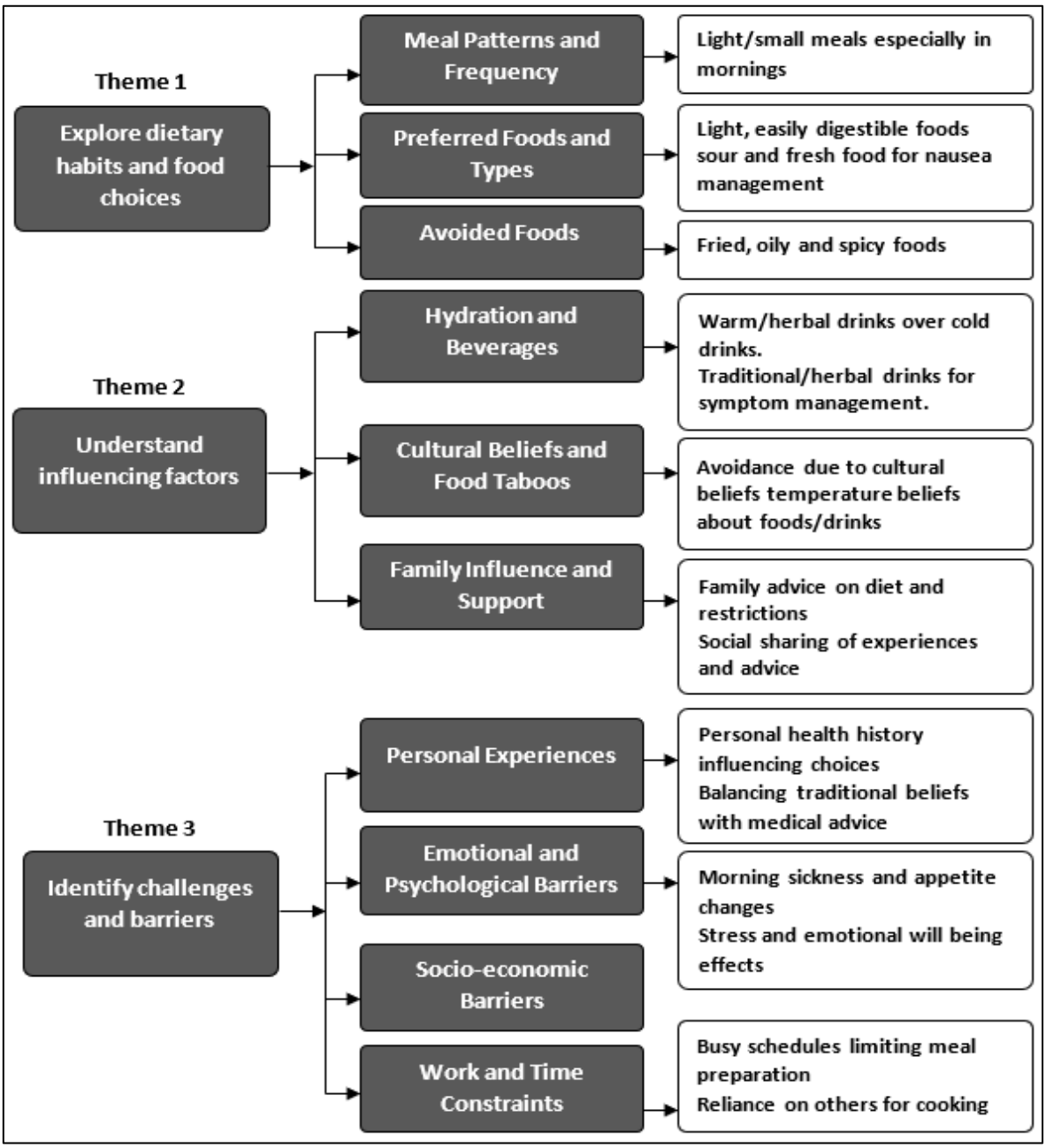

Fig 1 Summary of Thematic Analysis

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- *Food Preferences*

Participants overwhelmingly preferred light, easily digestible foods including boiled yam, plantain, rice with vegetable soup and fresh fruits. A 31-year-old trader noted: *"I prefer foods that are light and easy to digest, such as boiled yam, plantain, rice with vegetable soup, and fresh fruits. These foods do not upset my stomach and I feel comfortable eating them even when my nausea is strong."*

Fish and chicken were favored protein sources (11/12, 92%) due to perceived lightness compared to red meats. A 24-year-old teacher explained: *"I prefer fish and chicken because they are lighter and easier to digest. When I eat these, I do not experience the heaviness or discomfort that sometimes comes with eating beef or goat meat during pregnancy."*

Sour and fresh foods were actively craved and consumed to manage nausea by most participants (9/12, 75%). A 28-year-old nurse stated:

"I crave sour foods, like citrus fruits or tomatoes, maybe because they help with the nausea. When I feel sick, eating these helps calm my stomach." A 38-year-old farmer explained: "I often crave sour foods like lemon, tamarind, or even unripe mangoes because they help reduce the nausea. These foods are easy to find in my community and drinking tamarind juice or eating unripe mangoes makes me feel better when the nausea is strong."

- *Food Avoidance*

Fried, oily, and spicy foods were systematically avoided by most participants (10/12, 83%) to mitigate nausea, heartburn and indigestion. A 27-year-old nurse stated:

"I avoid fried and oily foods because they upset my stomach and worsen the nausea. Eating such foods makes me feel heavy and uncomfortable, so I try to stick to lighter meals." A 31-year-old trader noted: *"Spicy and oily foods are not good for me right now because they trigger heartburn and nausea. Even the smell of spicy foods can make me feel queasy."*

Some participants linked avoidance to concern for baby's health. A 29-year-old single mother stated: *"I avoid fried foods and sweets because I know they are not good for the baby. I want to eat foods that will nourish my baby and keep me feeling well during this pregnancy."*

- *Hydration Practices*

Warm or herbal beverages were strongly preferred over cold drinks (11/12, 92%). This preference reflected both cultural beliefs and practical symptom management. A 32-year-old farmer explained:

"I avoid drinking cold water or consuming ice-cold foods because there is a strong belief here that cold items can cause stomach cramps or other pregnancy complications. Instead, I drink warm water, herbal teas, or sobolo."

Traditional beverages, particularly ginger tea and sobolo (hibiscus drink), were regularly consumed by most participants (11/12, 92%) for nausea relief and hydration. A 32-year-old farmer stated:

"I also drink fresh fruit juices or sobolo (hibiscus drink) to keep hydrated. These drinks are refreshing and help me feel better, especially when the nausea is strong." A 35-year-old community health nurse noted: *"I drink fresh fruit juices and herbal teas that are recommended for pregnancy. Ginger tea in particular helps me calm my stomach and reduces the feelings of nausea during the day."*

➢ *Theme 2: Cultural, Social and Personal Factors Influencing Eating Patterns*

- *Cultural Beliefs and Food Taboos*

Cultural food taboos exerted substantial influence on dietary choices. All 12 participants (100%) acknowledged awareness of traditional food restrictions, with 9 (75%) actively adhering to them. Snails, crabs, red meat and chevon were commonly avoided based on traditional beliefs that these foods could cause birthmarks or skin conditions in babies. A 28-year-old nurse explained:

"Yes, my family is very traditional, and there are certain foods that I've been advised to avoid. For example, my mother told me to stay away from snails and crabs during early pregnancy because she believes they can cause complications." A 34-year-old trader stated: *"In my community, pregnant women are told not to eat snails or crabs during early pregnancy because it is believed these foods can cause the baby to be born with skin problems."*

Temperature-related beliefs also shaped consumption patterns. A 32-year-old farmer noted:

"I avoid drinking cold water or consuming ice-cold foods because there is a strong belief here that cold items can cause stomach cramps or other pregnancy complications." A 30-year-old accountant stated: *"Drinking cold water or eating cold foods is discouraged because it is thought that coldness can harm the baby or cause stomach problems."*

- *Family Influence and Support*

Family members, particularly spouses, mothers and elders, played pivotal roles in guiding dietary decisions and providing practical support. All participants (12/12, 100%) described receiving dietary advice from family members, with 10 (83%) reporting active family involvement in meal preparation.

A 28-year-old nurse noted: *"My husband is very supportive and often helps by preparing meals that are safe and nutritious. My mother calls every few days to remind me to eat well and avoid certain foods."* A 35-year-old community health nurse stated: *"My mother and auntie are always reminding me what I should eat and what to avoid. They prepare meals for me when I visit home and make sure, I eat healthy food."*

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Spouses provided crucial support through purchasing nutritious foods, meal preparation assistance, and emotional encouragement. A 35-year-old community health nurse explained: *"My husband often helps by buying fresh fruits and vegetables and encouraging me to rest and eat properly. My mother and mother-in-law give me advice about what to eat and avoid."*

- *Personal Experiences and Health Knowledge*

Personal health history significantly influenced food choices. Women with previous anemia (3/12, 25%) consciously prioritized iron-rich foods. A 31-year-old trader stated: *"I have had anemia before, so I make sure to eat iron-rich foods like spinach and beans. I understand how important iron is, especially during pregnancy and I try to include these foods regularly in my diet."*

Healthcare professionals among participants (4/12, 33%) described actively balancing traditional beliefs with medical knowledge. A 28-year-old nurse explained: *"While I'm a healthcare professional and don't always fully believe these, I still try to respect these customs because they are important in my community. It is about honoring my family's values even as I apply my medical knowledge."*

- *Emotional and Physical Pregnancy Experiences*

Morning sickness universally affected dietary behaviours, with all participants (12/12, 100%) reporting nausea impacting appetite and food choices. A 28-year-old nurse stated: *"I usually start my day with a light breakfast because I experience nausea in the mornings. Eating heavier meals early in the day often makes me feel worse."*

Emotional factors including anxiety, stress, and worry about pregnancy substantially influenced eating patterns in 8/12 participants (67%). A 26-year-old accountant explained: *"Emotionally, I sometimes feel anxious about the pregnancy, especially in the early weeks, which also impacts my appetite. When I'm worried, I find it hard to eat properly and sometimes I just lose interest in food altogether."*

➢ *Theme 3: Challenges and Barriers to Maintaining Optimal Nutrition*

- *Physical Symptoms Affecting Nutrition*

Morning sickness represented the most significant barrier to adequate nutrition, universally reported by all participants (12/12, 100%). Severity ranged from mild nausea to frequent vomiting causing nutrient loss. A 28-year-old nurse explained: *"The biggest challenge has been dealing with morning sickness, which often suppresses my appetite. There are days when even the smell of food makes me feel sick, so eating becomes a struggle."*

Associated symptoms including heartburn (7/12, 58%), indigestion (6/12, 50%) and fatigue (10/12, 83%) further restricted dietary options and meal preparation capacity. A 31-year-old trader stated: *"Spicy and oily foods are not good for me right now because they trigger heartburn and nausea."*

- *Emotional and Psychological Barriers*

Stress, anxiety, and worry about pregnancy substantially affected nutritional behaviors in 8/12 participants (67%). A 34-year-old trader noted: *"Emotionally, I sometimes feel overwhelmed balancing work, pregnancy, and personal life, which impacts my eating habits. On such days, I don't feel like cooking or eating much, which affects my nutrition."*

Combined with physical exhaustion, these factors diminished appetite and motivation for meal preparation. A 26-year-old accountant stated: *"Stress and fatigue from work affect my appetite and interest in food. When I'm tired and stressed, I eat less and prefer quick, easy meals rather than balanced, nutritious ones."*

- *Socioeconomic Barriers*

Financial constraints limited access to nutritious foods for 8/12 participants (67%). Fresh produce, fish, and protein sources were often unaffordable, forcing women to prioritize basic household expenses over optimal nutrition. A 34-year-old trader explained: *"Sometimes, fresh fruits and vegetables are expensive, so I have to buy less or none at all. It is frustrating because I know these foods are good for me and the baby, but the cost makes it hard to afford them regularly."*

Seasonal variations in food availability exacerbated these challenges. A 38-year-old farmer stated: *"During the dry season, fresh vegetables and fruits are scarce or very expensive, so I have to adjust my diet accordingly. I try to find alternatives, but sometimes it means eating less of the foods I know are good for me."*

- *Work and Time Constraints*

Demanding work schedules limited meal preparation time and healthy eating practices for employed participants (9/12, 75%). Long shifts, particularly among nurses, necessitated reliance on convenient but less nutritious options. A 28-year-old nurse noted: *"Working long shifts as a nurse means I don't always have time to prepare balanced meals and sometimes I have to settle for less nutritious options. It's challenging to maintain a good diet when my schedule is so hectic."*

Fatigue from work and pregnancy combined to create substantial barriers to adequate nutrition. Many participants (7/12, 58%) depended on family members for meal preparation. A 31-year-old trader stated*: "Because of fatigue, sometimes I don't cook as much as I would like and rely on my husband or family to prepare meals. Their help is essential to ensure I eat even when I feel too tired to cook."*

IV. DISCUSSION

This study provides comprehensive insights into dietary habits, influencing factors and nutritional challenges faced by pregnant women during first trimester in Ghana. Our findings reveal that early pregnancy nutrition is shaped by complex interplay of physiological symptoms, deep-rooted cultural practices, family dynamics and

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socioeconomic constraints - all factors requiring urgent public health attention to improve maternal and child health outcomes in Africa.

- *Dietary Patterns and Adaptations*

The predominance of light, easily digestible foods and small, frequent meals observed in our study aligns with existing literature documenting pregnancy-related gastrointestinal adaptations [8,14]. The universal experience of morning sickness substantially disrupted normal eating patterns, corroborating findings from high-income settings where nausea affects up to 90% of pregnant women [15]. However, our study uniquely documents the specific cultural context of these adaptations in Ghana, including heavy reliance on traditional staples such as porridge, boiled yam and plantain.

The strong preference for sour foods, particularly citrus fruits and tamarind, for nausea management reflects both physiological responses and cultural availability. While Western literature documents similar cravings for acidic foods during pregnancy [16], our findings highlight the role of locally available traditional foods like tamarind and unripe mangoes in symptom management. This suggests that culturally appropriate dietary counseling should leverage these familiar foods; a practical strategy that public health programmes can immediately implement.

The systematic avoidance of fried, oily and spicy foods to prevent gastrointestinal distress differs from some Western populations where dietary variety may be maintained despite symptoms [17]. This finding likely reflects both physiological tolerance and cultural dietary norms, underscoring the importance of context-specific nutritional guidance in maternal health programmes across Africa.

- *Cultural Beliefs and Family Influence - Critical Factors for Intervention Design*

A particularly striking finding was the pervasive influence of cultural food taboos on dietary choices during early pregnancy. The widespread avoidance of snails, crabs and certain meats based on beliefs about causing fetal birthmarks represents significant departure from evidence-based nutritional recommendations. While some traditional practices may offer protective benefits, indiscriminate restriction of nutrient-dense foods poses risks for maternal and fetal health [10,18].

The persistence of temperature-related beliefs specifically avoidance of cold foods and beverages demonstrates the deep cultural embedding of pregnancy dietary practices in Ghana. These beliefs, shared across all participants regardless of education level or profession, highlight the powerful role of traditional knowledge systems in shaping health behaviours. Even healthcare professionals among our participants largely adhered to cultural food restrictions to maintain family harmony and cultural identity. This finding underscores the complexity of behaviour change and the need for interventions that respectfully bridge traditional and biomedical knowledge systems rather than dismissing cultural practices outright [19].

Family involvement emerged as a double-edged sword: providing crucial practical and emotional support while simultaneously reinforcing potentially restrictive food taboos. The active role of spouses, mothers, and elders in dietary decision-making reflects Ghana's collectivist culture where pregnancy is viewed as communal rather than individual experience. This finding contrasts with Western contexts characterized by more autonomous maternal decision-making [20] and suggests that effective interventions in Ghana must engage entire family systems rather than targeting pregnant women alone; a crucial lesson for public health programme design in similar African settings.

- *Barriers to Optimal Nutrition - Requiring Multisectoral Solutions*

The multifaceted barriers to optimal nutrition identified in our study reflect challenging realities faced by pregnant women in low-resource settings. Physical symptoms, particularly morning sickness, created immediate challenges to adequate intake. However, socioeconomic factors - financial constraints affecting 67% of participants and seasonal food availability represented structural barriers requiring systemic rather than individual-level solutions [11,21].

The financial inaccessibility of fresh produce and protein-rich foods highlights the inadequacy of nutritional counseling alone in addressing maternal malnutrition. Seasonal variations in food availability, a factor often overlooked in static dietary guidelines, created additional challenges requiring adaptive strategies and potentially year-round food security interventions. These findings echo broader challenges in strengthening public health systems in Africa, where individual behavior change interventions must be coupled with structural improvements in food systems and social protection [22].

Work-related time constraints and physical exhaustion created practical barriers to meal preparation, with 58% of participants relying on family support to maintain dietary intake. This finding emphasizes the importance of adequate rest periods during pregnancy and supportive workplace policies accommodating pregnant women's needs; policy areas requiring urgent attention to improve maternal health outcomes.

V. STRENGTHS AND LIMITATIONS

Study strengths include use of rigorous qualitative methodology with attention to trustworthiness criteria, achievement of data saturation and inclusion of diverse participants across socioeconomic and educational backgrounds. The purposive inclusion of healthcare professionals (25% of sample) provided unique insights into negotiation between biomedical knowledge and cultural practices; a phenomenon rarely documented in maternal health literature.

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However, several limitations warrant consideration. The study's single-site design in urban hospital setting may limit transferability to rural populations facing different resource constraints and cultural contexts. The relatively small sample size, while appropriate for qualitative inquiry and consistent with established guidelines [12], precludes quantitative generalization. Self-reported dietary information may be subject to recall and social desirability biases. Additionally, the cross-sectional design captured experiences at one time point, potentially missing longitudinal changes in dietary patterns across first trimester. Future research should explore these dynamics across multiple sites and throughout pregnancy continuum.

- *Implications for Public Health Practice and Policy in Africa*

Our findings have several important implications for maternal health programmes in Ghana and similar African settings. First, nutritional counseling must be culturally sensitive, respectfully engaging with traditional beliefs rather than dismissing them. Healthcare providers should be trained to identify harmful food restrictions while acknowledging beneficial cultural practices, creating space for dialogue between biomedical and traditional knowledge systems. This approach aligns with WHO recommendations for culturally competent health service delivery [23].

Second, interventions must extend beyond individual pregnant women to engage families, particularly spouses and mothers-in-law who exert substantial influence over dietary decisions. Community-based education programmes involving family members could more effectively promote optimal nutrition than targeting pregnant women alone. This family-centered approach recognizes African cultural contexts where health decisions are collective rather than individual [19].

Third, addressing socioeconomic barriers requires multisectoral approaches. Social protection measures such as food subsidies or voucher programmes could improve access to nutritious foods among vulnerable pregnant women. Strategies to mitigate seasonal food scarcity, including support for food preservation techniques and diversified local production, warrant investigation. Such interventions align with broader efforts to strengthen health systems and improve population health outcomes in Africa [5].

Fourth, workplace policies supporting pregnant women need strengthening. Adequate rest periods, flexible schedules and access to healthy meal options at workplaces could substantially improve nutritional behaviours during pregnancy. Policy advocacy in this area should be priority for maternal health programmes.

Finally, health system strengthening should prioritize training healthcare providers in culturally competent nutritional counseling that balances respect for traditional practices with evidence-based guidance. Developing locally adapted dietary guidelines acknowledging cultural food preferences and seasonal availability would enhance relevance and acceptability. This capacity building aligns with broader field epidemiology training efforts across Africa aimed at strengthening public health workforce competencies [24].

VI. CONCLUSION

Pregnant women's dietary habits during first trimester in Ghana reflect complex negotiation of physiological symptoms, deep-rooted cultural beliefs, family influences and socioeconomic realities. Morning sickness universally disrupts normal eating patterns, prompting adaptations including small, frequent meals and preference for light, easily digestible foods. Cultural food taboos substantially restrict dietary choices, often limiting access to nutrient-dense foods despite potential health consequences. Family members play pivotal roles, providing essential practical support while simultaneously reinforcing traditional restrictions.

Financial constraints and seasonal food availability create structural barriers to optimal nutrition that individual behavior change cannot overcome. Addressing these multifaceted challenges requires holistic interventions that: respectfully integrate cultural and biomedical knowledge; engage families as partners in supporting maternal nutrition; implement social protection measures improving food access; strengthen supportive workplace policies and foster multisectoral collaboration ensuring year-round availability of nutritious foods.

As we continue strengthening public health systems in Africa and striving to improve maternal and child health outcomes, attention to social determinants of pregnancy nutrition alongside biomedical factors will be essential for achieving sustainable improvements. The field epidemiology approach of combining rigorous investigation with practical public health action provides framework for developing and implementing effective, context-appropriate interventions to improve maternal nutrition in Ghana and across the African continent.

- *Competing Interests*

The authors declare no competing interests.

- *Authors' Contributions*

All authors have read and approved the final version of the manuscript.

- Nancy Akyea-Mensah: Conceptualization, Investigation, Data Curation, Formal Analysis, Writing - Original Draft, Project Administration.
- Marvel Hinson: Methodology, Investigation, Validation, Writing - Review & Editing.
- Diana Adebessah: Investigation, Validation, Writing - Review & Editing.
- Manasseh Komla Amu: Supervision, Methodology, Validation, Writing - Review & Editing.

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- Supplementary Materials
- Semi-structured interview guide
- [Available upon request from corresponding author]

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APPENDIX

Table 3 Recommendations for Public Health Practice and Policy Based on Study Findings

Domain	Specific Recommendations	Target Audience	Implementation Level
Healthcare Service Delivery	Integrate culturally sensitive nutritional counseling into routine antenatal care; Train providers in respectful engagement with traditional beliefs	Healthcare providers, Medical/nursing schools	Health facility level
	Develop locally adapted dietary guidelines acknowledging cultural preferences and seasonal availability	Ministry of Health, Nutrition directorates	National policy level
	Provide practical strategies for managing morning sickness using locally available foods	Midwives, Community health nurses	Health facility and community level
Family and Community Engagement	Implement community-based family education programs involving spouses, mothers, and elders	Community health workers, NGOs	Community level
	Create male partner involvement programs focusing on nutritional support	Gender and health programs	District and community level
	Establish community dialogue platforms to harmonize traditional and biomedical knowledge	Traditional leaders, Health committees	Community level
Social Protection	Design and implement food voucher or subsidy programs for vulnerable pregnant women	Ministry of Gender/Social Protection	National and district level
	Establish seasonal food security interventions (food preservation, storage)	Ministry of Agriculture, Food security agencies	District and community level
	Create emergency food assistance programs for pregnant women in extreme need	Social welfare departments	District level
Workplace Policies	Develop and enforce workplace accommodations for pregnant women (rest periods, flexible hours)	Ministry of Employment/Labour	National policy level
	Ensure access to healthy meal options in workplace settings	Employers, Occupational health services	Workplace level
	Strengthen maternity protection policies and enforcement	Labour unions, Inspectorates	National and district level
Health Systems Strengthening	Include cultural competency training in field epidemiology and maternal health curricula	Training institutions, FELTP programs	National level
	Develop monitoring and evaluation frameworks for tracking maternal nutrition outcomes	Disease surveillance units	National and regional level
	Strengthen multisectoral coordination (health, agriculture, social protection)	Intersectoral coordination committees	National level
Research and Knowledge Generation	Conduct longitudinal studies tracking dietary patterns across all trimesters	Research institutions, Universities	Research level
	Evaluate effectiveness of culturally adapted nutrition interventions	Implementation science teams	Programmatic level
	Investigate cost-effectiveness of social protection programs for pregnant women	Health economists, Policy researchers	Policy level

➢ *What is Known About this Topic*

- Maternal nutrition during the first trimester is critical for fetal development and long-term health outcomes;
- Nausea and vomiting commonly disrupt dietary intake during early pregnancy;
- Cultural beliefs and food taboos influence pregnancy dietary practices in many African settings;
- Financial constraints affect access to nutritious foods in low-resource settings.

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➢ *What this Study Adds*

- Comprehensive documentation of the complex interplay between physiological symptoms, cultural practices, family dynamics, and socioeconomic factors shaping first-trimester nutrition in Ghana;
- Evidence that even healthcare professionals adhere to cultural food restrictions to maintain family harmony, highlighting the powerful influence of traditional knowledge systems;
- Quantification of specific barriers: 100% experienced morning sickness, 75% actively followed food taboos, 67% faced financial constraints, and 58% relied on family for meal preparation;
- Practical insights into the use of traditional beverages (ginger tea, sobolo) for symptom management, which can be leveraged in culturally appropriate dietary counseling;
- Framework for designing family-centered interventions recognizing the collectivist nature of pregnancy experiences in African contexts;
- Evidence-based recommendations for multisectoral approaches addressing structural barriers to optimal maternal nutrition.