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Assessment of Iron Deficiency Anaemia among Pregnant Women Attending Antenatal Care at General Hospital Maru, Zamfara State, Nigeria



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Abstract

Iron deficiency anaemia (IDA) is one of the most prevalent nutritional disorders among pregnant women, especially in developing nations. The main contributing factors include insufficient dietary iron intake, poor absorption, increased physiological demand during growth and pregnancy, and blood loss. The aim of this study is to determine the prevalence of iron deficiency anaemia among pregnant women attending antenatal clinics at General Hospital Maru, Zamfara State, Nigeria. A cross-sectional study design was adopted, involving 97 pregnant women. Serum ferritin, haemoglobin concentration, and packed cell volume (PCV) were analysed to evaluate iron deficiency anaemia status. Sociodemographic and obstetric information was collected through a structured questionnaire. Among the 97 participants, 50 (52%) were found to have iron deficiency anaemia, suggesting that approximately one out of every two pregnant women in the study population was anaemic. This study revealed a high prevalence of iron deficiency anaemia (IDA) among pregnant women attending ANC at General Hospital Maru. IDA affected women across all socio-demographic groups, with no significant associations found between IDA and variables like age, education, or income. The findings point to a low-consumption or unaffordability of iron-rich foods, especially those from animal sources.

Key words: Iron Deficiency; Anaemia; Ferritin; Haemoglobin; PCV; Pregnant women; General Hospital Maru.

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INTRODUCTION

Anaemia is characterised by reduced haemoglobin levels in the blood. A frequent cause of anaemia is iron deficiency, which is believed to account for about 50% of anaemia cases among women and children worldwide (NDHS, 2018). Women frequently experience anaemia during pregnancy because the body's demand for iron and other vitamins rises due to the physiological changes associated with pregnancy (Anenga et al, 2022). About 75% of anaemia cases diagnosed during pregnancy are attributed to iron deficiency (Idoko et al, 2022). Iron deficiency is the most recognised cause of nutritional anaemia worldwide and is considered a significant public health issue, particularly in developing countries (Qamar et al, 2019). Iron deficiency anaemia represents 70-85% of anaemia cases during pregnancy globally, with a high prevalence in Africa (Hassan et al, 2014). Risk factors for iron deficiency anaemia during pregnancy include having multiple pregnancies, being in the third trimester, low socioeconomic status, limited education, unemployment, and poor living conditions (Ugwu & Uneke, 2020). Anaemia is estimated to affect half a billion women aged 15 to 49 and 269 million children aged 6 to 59 months globally (WHO, 2023). In 2019, 30% (539 million) of non-pregnant women and 37% (32 million) of pregnant women in this age group were affected (WHO, 2023). The regions of Africa and South-East Asia are particularly affected, with approximately 106 million women and 103 million children in Africa and 244 million women and 83 million children in South-East Asia experiencing anaemia (WHO, 2023). Sub-Saharan Africa is the most affected region, with an estimated prevalence of 57% among pregnant women, equating to about 17.2 million women. This situation poses serious risks to human health as well as social and economic development (Ademuyiwa et al, 2020). Specifically, iron deficiency was found in 25 to 46% of pregnant women diagnosed with anaemia in Nigeria (Ugwu & Uneke, 2020). The World Health Organization estimated that iron deficiency accounts for about 50% of anaemia cases during pregnancy (WHO, 2023). Several hospital laboratories routinely conduct Haemoglobin (Hb) and Packed Cell Volume (PCV) tests to determine anaemia during pregnancy. However, these parameters alone do not distinguish iron deficiency anaemia (IDA) from other types of anaemia. Serum ferritin assay, which serves as the most specific and sensitive biomarker for assessing iron stores and diagnosing iron deficiency anaemia, is rarely measured routinely. Therefore, this study focuses on assessing iron deficiency anaemia among pregnant women attending antenatal care (ANC) at General Hospital Maru, using serum ferritin as a key diagnostic marker.

Materials and Methods

Study site

The study was conducted at the Antenatal Care (ANC) Unit of General Hospital Maru, Maru, Zamfara State. According

to 2006 census, Maru has a population of 293, 141 (Gazette Africa, 2009). The land area of Maru is 6654 km². The postal code of Maru is 890, the latitude is 12.325542 °N, and the longitude is 6.406642 °E (ZITDA, 2025).

Study design and sampling technique

The study followed a cross-sectional design to evaluate iron deficiency anaemia in pregnant women receiving antenatal care at General Hospital Maru, Zamfara, Nigeria. Blood samples were taken from consenting pregnant women. Simple random sampling and stratification were employed for the selection of pregnant women who were visiting ANC at General Hospital Maru, Zamfara. Approximately a total of 97 participants were selected for the study.

Study participants

Pregnant women aged 15-49 years in their first, second, and third trimesters, who were attending the ANC at General Hospital Maru during the study period, were enrolled in this research.

Inclusion criteria

Apparently healthy pregnant women attending the Antenatal Clinic at General Hospital Maru who gave verbal consent after counselling were enrolled. Participants were considered apparently healthy based on self-reported health status and absence of major complications.

Note: Few participants later reported some illnesses (e.g., malaria, ulcer, typhoid, cancer), which were documented but did not warrant exclusion.

Exclusion criteria

Non-pregnant women, pregnant women who declined consent, pregnant women on long term hematinic therapy and pregnant women with known chronic or severe medical conditions such as HIV, pregnancy induced hypertension, pre-eclampsia and bleeding disorders.

Sample size

The sample size for this study was determined using the formula of Fisher et al. (1991): $n = Z^2PQ/d^2$. where: n = the desired sample size (when population is greater than 10,000), z = standard normal deviation, usually set at 1.96 (or more simply at 2.0), which corresponds to the 95 percent confidence level, p = the proportion in the target population estimated to have a particular characteristic. If there is no reasonable estimate, then use 50 percent (.50), $q = 1.0 - p$, d = degree of accuracy desired, usually set at 0.05 or occasionally at 0.02. This yielded a final sample size of 97 pregnant women, which was used for data collection.

Data collection

Demographic, dietary and medical/obstetrics data

A modified semi-structured questionnaire adapted from Saliu et al. (2021), consisting of three sections demographic, dietary, and medical/obstetric information was administered to consenting pregnant women by a trained interviewer.

Blood Sample Collection

A trained phlebotomist collected three millilitres of blood using venipuncture. Immediately, 3 ml was transferred into an EDTA tube. For the determination of haemoglobin and PCV concentrations, 1 ml of blood was used, and the remaining 2 ml was centrifuged and placed into a plain tube, which was preserved at -20°C for further analysis. Precautionary measures and standard biosafety practices were adopted (WHO, 2010).

Haematological Analysis Using Automated Haematology Analyser

The validated haematology analyser, URIT 3300 autoanalyzer (Urit Medical Electronic Group Co., Ltd, Guilin, China), was employed for this study. Validation of the instrument was undertaken to ensure that the measurement procedures were accurate, reliable, and appropriately calibrated. The analyser operates on the principle of electrical impedance for the measurement of WBC, RBC and platelets, and photoelectric colourimetry for haemoglobin estimation. Packed cell volume (PCV), expressed as haematocrit (Hct), was automatically calculated by the analyser from red blood cell count and mean corpuscular volume (MCV). Its validation involved assessment of performance parameters, which were compared with the manufacturer's specifications provided in the package insert.

Serum Ferritin Assay

The serum ferritin assay was measured through Enzyme-linked Immunosorbent Assay (ELISA) according to the

manufacturer's instructions, Seoul, South Korea (Fine Test, 2023).

Statistical Analysis

Data collected from the questionnaires and laboratory analyses were entered and analysed using R (4.5.2) and Python (3.13.7) statistical software. Descriptive statistics, including frequencies, percentages, mean, and standard deviation were employed to summarize the characteristics of the study population. To assess the association between iron deficiency anaemia (IDA) and various categorical socio-demographic and obstetric variables, either the Chi-square test of independence or Fisher's Exact Test was applied, depending on the distribution of data in the contingency tables. A p-value of less than 0.01 was considered statistically significant for all analyses. Results were reported as mean and standard deviation, with significance determined using the Kruskal-Wallis test. One-Way ANOVA was used to evaluate the significance of associations between dietary parameters and iron indices.

Results**Sociodemographic characteristics**

The sociodemographic characteristics of the respondents are presented in Table 1. The findings revealed that (28; 28.9%) of the participants were below 20 years of age. Most respondents (70; 72.0%) lived in households with a family size of three or fewer members. All the subjects were married, 41 (42.0%) had no formal education, 40 (41.2%) were within the lower-income category.

Table 1: Sociodemographic characteristics of study participants (n=97)

Characteristics	Category	Number (%)
Age Group	< 20	28 (28.9%)
	20 – 24	21 (21.6%)
	25 – 29	27 (27.8%)
	30 – 34	14 (14.4%)
	≥35	7 (7.2%)
Family Size	0-3	70 (72.2%)
	≥4	27 (27.8%)
Marital Status	Married	97 (100.0%)
	Single	0 (0.0%)
	Divorced	0 (0.0%)
Highest Education attained	Non-formal	41 (42.3%)
	Primary	6 (6.2%)
	Secondary	39 (40.2%)
	Tertiary	11 (11.3%)
Socioeconomic Status	Lower income	40 (41.2%)
	Middle income	20 (20.6%)
	Higher income	37 (38.1%)

The medical and obstetric data of the respondents are presented in Table 2. The results showed that 16 participants (16.5%) reported suffering from one underlying condition such as ulcer, malaria, typhoid, or cancer, while the majority (81; 83.5%) reported no such conditions. In terms of supplementation intake, most women (75; 77.3%) reported taking iron/folic acid supplements, while 22 (22.7%) did not take any supplements. With respect to gravidity, 28 (28.9%)

were nulliparous, 19 (19.6%) primiparous, 32 (33.0%) multiparous, and 18 (18.6%) grand multiparous. Regarding gestational age, 53 (54.6%) were in their third trimester, 36 (37.1%) in the second trimester, and 8 (8.2%) in the first trimester. Most respondents (64; 66.0%) had a birth spacing greater than two years, while 33 (34.0%) had a birth spacing of less than two years. Furthermore, 68 women (70.1%) had experienced miscarriage, while 29 (29.9%) had not.

Table 2: Medical/obstetrics indices of pregnant women attending ANC at General Hospital Maru

Medical/Obstetrics Data	Frequency (n=97)	Percentage (%)
Disease Status		
Yes	16	16.5
No	81	83.5
Disease Type		
Ulcer	12	12.4
Malaria	4	4.1
Typhoid	1	1
Cancer	1	1
Supplementation intake		
Yes	75	77.3
No	22	22.7
Type of Supplement		
Iron/Folic Acid	75	77.3
Gravidity		
Nulliparous	28	28.9
Primiparous	19	19.6
Multiparous	32	33
Grand multiparous	18	18.6
Gestational age		
First trimester	8	8.2
Second trimester	36	37.1
Third trimester	53	54.6
Birth spacing		
< 2 years	33	34
> 2 years	64	66
Miscarriage		
Yes	29	29.9
No	68	70.1

The daily, weekly, and monthly consumption patterns of haem and non-haem iron-rich foods, enhancers, and inhibitors are presented in Table 3. In the narrative below, emphasis is placed on participants who consumed these food items 1–3 times, although the table also provides information on those who consumed the foods four or more times. For haem iron-rich foods, the proportion of participants who

consumed fish, chicken, liver, and red meat daily were 11.3%, 27.8%, 12.4%, and 10.3%, respectively. Weekly consumption was 36.1%, 25.8%, 30.9%, and 40.7%, while monthly consumption was 4.1%, 6.2%, 2.1%, and 13.4%, respectively. Among non-haem iron-rich foods, the proportion of pregnant women who consumed moringa, spinach, soybeans, beans, pumpkin, and eggs daily were

2.1%, 4.1%, 1.0%, 0%, 6.2%, and 10.3%, respectively. Weekly consumption was 43.3%, 46.4%, 20.6%, 19.6%, 36.1%, and 41.2%, while monthly intake was 25.0%, 11.3%, 48.5%, 62.9%, 10.3%, and 3.1%, respectively. For enhancers of iron absorption, the proportion of participants who consumed carrots, oranges, lettuce, and sweet potatoes daily were 5.2%, 6.2%, 0%, and 6.2%, respectively. Weekly consumption was 20.6%, 45.4%, 40.2%, and 59.8%, while monthly consumption was 2.1%, 8.2%, 14.4%, and 8.2%,

respectively. With respect to inhibitors, none of the participants reported consuming tea or coffee daily, while 24.7% and 19.6% reported weekly intake, and the remainder indicated monthly consumption. The results of the Kruskal-Wallis test (Table 4) revealed that there were no statistically significant differences ($p > 0.01$) in the mean values of haemoglobin, packed cell volume (PCV), and serum ferritin among the pregnant women attending ANC at General Hospital Maru.

Table 4: Iron indices of pregnant women attending ANC at General Hospital Maru

Biochemical Parameter	Overall (n=97)	First Trimester (n=8)	Second Trimester (n=36)	Third Trimester (n=53)	p-value
Haemoglobin (g/dL)	11.03 ± 2.24	11.08 ± 1.76	10.77 ± 2.83	11.20 ± 1.80	0.56
Packed Cell Volume (%)	32.63 ± 5.97	32.15 ± 4.59	32.11 ± 7.76	33.06 ± 4.60	0.72
Serum Ferritin (ng/mL)	0.10 ± 0.03	0.11 ± 0.04	0.10 ± 0.02	0.10 ± 0.03	0.76

Values are expressed as mean ± standard deviation for pregnant women (n = 97). The Kruskal-Wallis test was applied to assess differences in the iron indices. The diagnostic thresholds for iron deficiency anaemia include packed cell volume (PCV) <33% and haemoglobin (Hb) <11 g/dL in the 1st and 3rd trimesters, PCV <32% and Hb <10.5 g/dL in the 2nd trimester (Jessian, 2024), and serum ferritin <15 ng/mL (Cancado et al., 2025). Normal reference ranges are Hb 11–12 g/dL (Cui et al., 2017), PCV 37–54% (Mutua et al., 2018), and serum ferritin 10–150 ng/mL (Lin, 2023). $P < 0.01$ was considered statistically significant.

The prevalence of iron deficiency anaemia (IDA) based on haemoglobin, PCV, and serum ferritin levels among pregnant women attending ANC at General Hospital Maru across trimesters were 50.0% in the first trimester, 52.8% in the second trimester and 50.9% in the third trimester (Table 5).

Table 5: Prevalence of iron deficiency anaemia among pregnant women attending ANC at General Hospital Maru

Trimester	IDA	Non-IDA	Prevalence (%)
First	4	4	50.0
Second	19	17	52.8
Third	27	26	50.9
Overall	50	47	51.5

The analysis of potential risk factors for iron deficiency anaemia among pregnant women (Table 6) revealed no statistically significant associations ($p > 0.01$) between IDA and the examined risk factors, including age group, education level, socio-economic status, family size, parity, gravidity, history of miscarriage, type of medication, and disease status.

The results of the association between food consumption patterns and iron indices among pregnant women attending ANC at General Hospital Maru are presented in Table 7. Analysis revealed no significant associations ($p > 0.01$) between haem iron-rich foods such as fish, chicken, liver, and red meat and the measured iron indices (Hb, PCV, and serum ferritin). Also, non-haem sources such as moringa, spinach, pumpkin, and eggs were not significantly associated with any of the iron indices ($p > 0.01$). Similarly, dietary enhancers (e.g., fruits and vegetables) and inhibitors (e.g., tea/coffee) did not show any significant associations with iron indices ($p > 0.01$).

Table 7: Association between food consumption and iron indices of pregnant women attending ANC at General Hospital Maru

Food Category	Food	Hb	PCV	SF
Haem-Iron Rich Foods	Fish	0.849	0.460	0.190
	Chicken	0.646	0.579	0.557
	Liver	0.707	0.679	0.491
	Red meat	0.690	0.720	0.332
	Moringa	0.671	0.408	0.849
	Spinach	0.237	0.267	0.276
Non-Haem Iron Rich Foods	Soybeans	0.028	0.018	0.052
	Beans	0.035	0.035	0.069
	Pumpkin	0.816	0.730	0.099
	Egg	0.521	0.572	0.930
	Carrots	0.959	0.926	0.814
Enhancers	Oranges	0.809	0.899	0.970
	Lettuces	0.461	0.313	0.272
	Sweet potatoes	0.213	0.116	0.877
Inhibitor	Coffee/Tea	0.918	0.780	0.102

ANOVA was employed to assess the association between haem and non-haem iron-rich foods, dietary enhancers, inhibitors, and anaemia. An asterisk (*) indicates a statistically significant association at $p < 0.01$.

The overall prevalence of IDA presented in Figure 1 showed that 51.5% of the pregnant women had IDA while 48.5% did not have IDA. The correlation heatmap of biochemical parameters (Figure 2) illustrates the relationships between haemoglobin (Hb), packed cell volume (PCV), and serum ferritin. Hb shows a perfect self-correlation ($r = 1.0$) and a very

strong positive correlation with PCV ($r = 0.92$). Similarly, PCV displays perfect self-correlation ($r = 1.0$). In contrast, Hb and ferritin demonstrate a weak negative correlation ($r = -0.054$), while PCV and ferritin also show a weak negative correlation ($r = -0.04$). Ferritin displays a perfect self-correlation ($r = 1.0$).

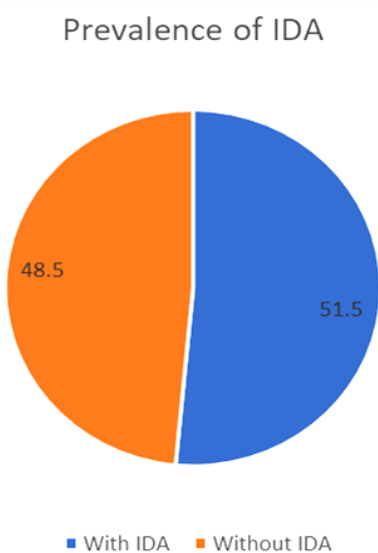


Figure 1: Prevalence of IDA

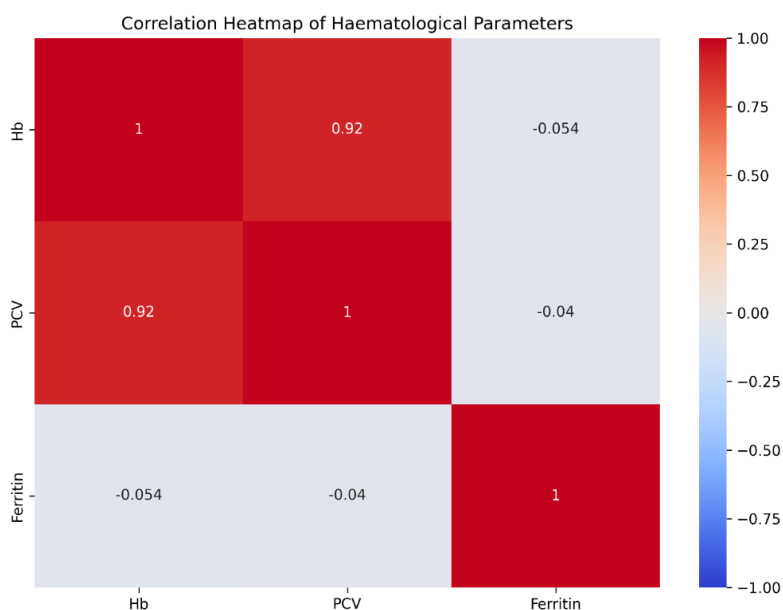


Figure 2: Correlation Heatmap of Haematological Parameters

Discussion

Iron deficiency is the most recognised cause of nutritional anaemia worldwide and is considered a significant public health issue, particularly in developing countries (Qamar et al, 2019). The mean family size of the participants was 6.46, demonstrating variability in relatively small household structures. Also, the mean age of the respondents 24.88 years

is consistent with reproductive age of the respondents which falls within the internationally recognised reproductive age range of 15 to 49 years (Jiang et al., 2022). Educational attainment was largely at the non-formal level than primary and secondary school levels. Additionally, all respondents were married, a trend commonly observed in pregnancy-related demographic profiles, particularly in traditional or closely-knit community settings. Furthermore, the average

parity was found to be 2 births per woman, and the average number of living children was about 2 children per woman. Additionally, most of the participants had a parity of less than five, indicating that most were not grand multiparous. However, the presence of grand multiparous (up to 11 pregnancies) women within the study population points to a potentially vulnerable subgroup. Multiparity has been widely recognised as a significant risk factor for iron deficiency anaemia (Idoko et al., 2022). The mean gestational age among participants was 25-26 weeks, suggesting that most were in either the second or third trimester, a period marked by increased physiological demand for iron. Notably, about 66% of the participants reported child spacing intervals exceeding two years, which is generally considered beneficial for maternal nutritional recovery. Despite this, the recorded miscarriage rate of 29.9% may suggest medical or nutritional deficiencies. This observation is consistent with a recent finding of Obeagu (2024), who also identified high parity as a contributing factor to maternal anaemia. Moreover, the findings of this study align closely with those reported by Benson et al. (2022), who identified advanced maternal age (≥ 35 years), multiparity (≥ 2 pregnancies), history of multiple childbirths (>1), recurrent abortions (≥ 3), and the consumption of strong tea or coffee as significant risk factors for iron deficiency Anaemia (IDA). These parallels reinforce the robustness of the current study's results, suggesting that both physiological and lifestyle factors play a critical role in the development of IDA among pregnant women. Additionally, the pattern of iron-rich food consumption among the pregnant women in this study varied considerably. Plant-based foods such as beans, soybeans, and moringa were consumed more frequently compared to animal-based foods like liver, and to a lesser extent, carrots. Notably, the limited intake of liver, an excellent source of highly bioavailable iron may be a contributing factor to the observed prevalence of iron deficiency anaemia (IDA). Although a moderate level of fruit and vegetable intake was reported, it may not sufficiently compensate for the deficiency in iron-rich animal products. These findings are consistent with the study conducted by Babah et al. (2024), which highlighted a significant association between high soybean consumption and increased likelihoods of developing IDA due to the presence of iron absorption inhibitors in legumes. In addition, the finding of this research indicates that tea consumption, recorded at 44.3%, may be one of the contributing factors to the high prevalence of iron deficiency anaemia. This aligns with findings from epidemiological studies by Nyakundi et al. (2024), which reported an anaemia prevalence of 86.3% among women of reproductive age in Kenya's Nandi County, a region known for high tea consumption with iron deficiency responsible for 45% of the cases. Similarly, Babah et al. (2024) also emphasized the significant impact of dietary patterns on the iron status of pregnant women. More so, few women reported medically diagnosed conditions (16.5%). About 77.3% were on medication which is related to antenatal care. Most of the

medications were prescribed by health professionals. This agrees with reports from Alyami et al. (2023), indicating that most pregnant women rely on prescribed supplements and medications during pregnancy. The prevalence of iron deficiency anaemia was higher in the second trimester (52.8%) followed by third trimester (50.9%), with a slight decline in the first trimester (50%). The overall prevalence of anaemia of 52% indicates a significant health concern. The prevalence of iron deficiency anaemia observed in this study exceeds the range reported in the systematic review by Ugwu and Uneke (2020), which claimed that iron deficiency accounted for 25–46% of anaemia cases among pregnant women in Nigeria. Likewise, the current findings are higher than those of Obeagu et al. (2025), who recorded a 41% prevalence of iron deficiency among pregnant women in Lagos and Kano states, situated in the Southwestern and Northwestern regions of Nigeria, respectively. Likewise, a study conducted by Oladipo et al. (2015) reported a high prevalence of anaemia in all the states surveyed, with Jigawa at 71.1%, Katsina at 61.4%, Yobe at 88.8%, and Zamfara at 62.2%. A serum ferritin concentration of <15 ng/mL confirmed widespread iron deficiency. This agrees with the guidelines of Cancado et al (2025) which identified low ferritin as a hallmark of iron deficiency anaemia. The chi-square test revealed no significant association between educational level and IDA ($p = 0.97$). Similarly, there was no significant correlation ($P > 0.01$) between the use of medication and IDA ($p = 0.30$). This aligns with the findings of Kumar et al. (2022), who reported that the absence of a clear correlation between iron intake and the prevalence of iron deficiency anaemia (IDA) indicates that other significant risk factors may play a role in the development of IDA and should be considered in its prevention. There was also no association between income level and IDA ($p = 0.51$). These findings contradict those of Okunade et al. (2024), who found that socio-demographic factors significantly contribute to the development of iron deficiency anaemia (IDA) among pregnant women in Lagos, Nigeria. The data on the haematological and biochemical parameters showed mean haemoglobin (11.03 g/dL), mean PCV (32.63%), and mean serum ferritin (0.1ng/mL), indicating moderate anaemia and widespread iron deficiency. Low variability in ferritin levels suggests uniformly depleted iron stores. This supports the assertion by Song et al. (2025), who identified serum ferritin as the most reliable indicator for diagnosing iron deficiency. Also, a strong positive correlation was found between haemoglobin and PCV, confirming their physiological connection. Ferritin had weak and negative correlations with both Hb and PCV, suggesting that ferritin levels do not directly correlate with haematological indices. Conversely, the findings reported by Ali et al. (2024) indicate that serum ferritin is positively correlated with haemoglobin concentrations.

This study has certain limitations. The sample size of 97 participants may limit the generalizability of the findings to

the wider population of pregnant women. Even though serum ferritin was assessed as an indicator of iron stores, other biomarkers for iron status such as soluble transferrin receptor, hepcidin, zinc protoporphyrin, serum iron, and transferrin were not evaluated. Moreover, anaemia was primarily determined using haemoglobin concentration and packed cell volume. Accordingly, while iron deficiency was assessed, a more comprehensive biomarker-based evaluation and exclusion of other contributory causes of anaemia were not undertaken.

Conclusion

This study revealed a high prevalence of iron deficiency anaemia (IDA) among pregnant women attending ANC at General Hospital Maru. IDA affected women across all socio-demographic groups, with no significant associations found between IDA and variables like age, education, or income. The findings point to a low-consumption or unaffordability of iron-rich foods, especially those from animal sources.

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Ethical Approval

The study was conducted after obtaining ethical approval from the Zamfara State Ministry of Health with a reference number: ZSHREC25112024/265.

Conflicts of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

Data Availability

All the data regarding socio-demographic information and medical/obstetric can be obtained from the library of General Hospital Maru.

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Tables

Table 3: Consumption patterns of some haem and non-haem-iron-rich foods and enhancers/inhibitors of iron absorption among pregnant women attending antenatal care at General Hospital Maru

Consumption Patterns							
	Daily (%)		Weekly (%)		Monthly (%)		None
Food Category	(1-3 times)	(4+ times or more)	(1-3 times)	(4+ times or more)	(1-3 times)	(4+ times or more)	
Haem-Iron Rich Foods							
Fish	11.3	0.0	36.1	9.3	4.1	0.0	39.2
Chicken	27.8	0.0	25.8	4.1	6.2	0.0	36.1
Liver	12.4	0.0	30.9	6.2	2.1	1.0	47.4
Red meat	10.3	1.0	47.4	15.5	13.4	1.0	11.3
Non-Haem-Iron Rich Foods							
Moringa	2.1	1.0	43.3	18.6	25.8	0.0	9.3
Spinach	4.1	1.0	46.4	6.2	11.3	0.0	30.9
Soybeans	1.0	0.0	20.6	20.6	48.5	2.1	7.2
Beans	0.0	0.0	19.6	13.4	62.9	2.1	2.1
Pumpkin	6.2	0.0	36.1	5.2	10.3	0.0	42.3
Egg	10.3	1.0	41.2	9.3	3.1	0.0	35.1
Enhancers							
Carrots	5.2	0.0	20.6	3.1	2.1	0.0	69.1
Oranges	6.2	1.0	45.4	6.2	8.2	0.0	33.0
Lettuces	0.0	0.0	40.2	8.2	14.4	0.0	37.1
Sweet potatoes	6.2	0.0	59.8	12.4	8.2	0.0	13.4
Inhibitor							
Coffee/Tea	0.0	1.0	24.7	7.2	19.6	1.0	46.4

Values are presented as the percentage distribution of food consumption among pregnant women (n = 97).

Table 6: Distribution of potential risk factors for iron deficiency anaemia among pregnant women attending ANC at General Hospital Maru

Characteristics	Iron Deficiency Anaemia (n=50)	Non-Iron Deficiency Anaemia (n=47)	P-value
Age group			
<20	4	2	0.77
20–24	22	21	
25–29	14	13	
30–34	7	7	
≥35	3	4	
Education level			
Non-Formal	20	21	0.97
Primary	3	3	
Secondary	21	18	
Tertiary	6	5	
Socio-economic status			
Lower income	30	30	0.51
Middle income	7	4	
Upper income	13	13	
Family size			
<4	21	19	0.59
≥4	29	28	
Parity			
0	15	13	0.93
1–2	20	16	
3–4	7	8	
≥5	8	10	
Gestational age			
1 st trimester	4	4	0.43
2 nd trimester	21	18	
3 rd trimester	25	25	
Miscarriage			
Yes	14	15	0.82
No	36	32	
Medication type			
Iron/Folic acid	38	36	0.30
Other drugs	6	5	
Disease status			
Yes	7	9	0.59
No	43	38	

Values are expressed as frequency. Chi-square or Fisher's exact test applied. $p < 0.01$ considered statistically significant.