Original Research Article

Awareness, Prevalence, Severity and Contributing Factors to Anaemia among Pregnant Women Attending Antenatal Clinic a Teaching Hospital in Southern Nigeria

ABSTRACT

Background: This cross-sectional study aimed to assess the awareness, prevalence, severity, and contributing factors to anaemia among pregnant women attending antenatal clinics at a Teaching Hospital in Southern Nigeria.

Research Methodology: The study included 420 pregnant women, and the sample size was determined using Fisher's formula. Data were collected through a structured questionnaire covering sociodemographic information, awareness, knowledge, prevalence, and healthcare services. Haematological variables were measured using a Sysmex Kx-2IN Haematology autoanalyser. Statistical analysis involved mean, standard deviation, t-test, and presentation using tables.

Results: The sociodemographic profile revealed varying frequencies and percentages across age, educational level, marital status, number of pregnancies, current gestation age, and trimester of antenatal care registration. The awareness and knowledge of anaemia showed variations in responses, with notable percentages aware of anaemia and its causes. The study revealed that 23.33% of participants had been diagnosed with anaemia during pregnancy, with a prevalence of 51.90% having Hb levels <11 g/dL. Mild anaemia was 46.79%, followed by moderate (50.00%) and severe (2.75%). Factors influencing anaemia prevalence included age, educational level, number of pregnancies, gestation age, awareness, knowledge, and supplement intake ($p < 0.05$).

Conclusion: The study highlights substantial awareness gaps and a significant prevalence of anaemia among pregnant women in Southern Nigeria. Factors influencing anaemia include age, education, gestation age, awareness, and supplement intake. Interventions focusing on awareness campaigns, education, and targeted supplementation programs are crucial to mitigate the impact of anaemia during pregnancy in the region.

Keywords: Anaemia, Awareness, Healthcare Services, Pregnancy, Prevalence, Severity.

1. INTRODUCTION

Pregnant women are particularly vulnerable to the adverse effects of anaemia, a condition characterized by a deficiency of red blood cells or hemoglobin in the blood [1]. Anaemia during pregnancy poses significant risks to both maternal and fetal health, leading to increased morbidity and mortality rates [2]. Despite the well-established consequences of anaemia, its prevalence remains a global health concern, with developing regions, including Southern Nigeria, facing substantial challenges in addressing this public health issue. This research aims to investigate the awareness and prevalence of anaemia among pregnant women attending antenatal clinics at a teaching hospital in Southern Nigeria.

Anaemia in pregnancy is a widespread health problem globally, affecting approximately 38% of pregnant women worldwide, according to recent estimates [3]. The condition is particularly prevalent in low- and middle-income countries, where access to adequate nutrition and healthcare services is often limited [2].

Anaemia during pregnancy is associated with adverse outcomes for both the mother and the unborn child. Maternal consequences include increased risk of preterm birth, low birth weight, and maternal mortality [4]. Fetal consequences extend to developmental issues and long-term health implications [5].

The causes of anaemia in pregnant women are multifactorial, including nutritional deficiencies (iron, folic acid, and vitamin B_{12}), infections (malaria and helminthiasis), and socio-economic factors [1]. Additionally, inadequate antenatal care and lack of awareness among pregnant women may contribute to the high prevalence of anaemia [6].

Southern Nigeria, like many regions in sub-Saharan Africa, faces challenges in providing adequate healthcare services, especially in rural areas. Limited access to prenatal care, a shortage of skilled healthcare professionals, and inadequate awareness programs contribute to the burden of anaemia among pregnant women in this region [7].

Prior studies in Nigeria have addressed the issue of anaemia among pregnant women, but the focus has been on specific populations or regions. This research seeks to contribute to the existing body of knowledge by providing a comprehensive assessment of the awareness and prevalence of anaemia among pregnant women attending antenatal clinics in a teaching hospital in Southern Nigeria.

In light of the global significance and regional context, this research endeavors to shed light on the current status of awareness, prevalence, severity and contributing factors to anaemia among pregnant women in Southern Nigeria. The findings aim to inform healthcare policies, interventions, and educational programs to improve maternal and fetal health outcomes in the region.

2. RESEARCH METHODOLOGY

2.1 Study Design

This was a cross-sectional study involving pregnant women attending antenatal clinic at a Teaching Hospital in Southern Nigeria. Cross-sectional studies are beneficial for identifying and assessing the prevalence and distribution of health-related states within a population at a specific point in time [8]. The study population comprised of pregnant women booking for/ attending antenatal care at the study site.

2.2 Sample Size Determination

Sample size was calculated using the Fisher's formula outlined by Ekeleme et al. [9]:

$$n = \frac{\mathbf{Z^2(Pq)}}{\mathbf{e^2}}$$

where n = minimum sample size

Z = 1.96 at 95% confidence level,

P = known prevalence of anaemia in pregnancy in Nigeria

e = error margin tolerated at 5% = 0.05

q = 1 - p

According to Oyerinde et al. [10], the existing prevalence of anaemia in pregnancy in southern Nigeria is 49.5%.

P = 49.5% = 0.495

q = 1 – p

= 1 – 0.495

= 0.505

$$n = \frac{(\mathbf{1.96})^2(\mathbf{0.495 \times 0.505})}{(\mathbf{0.05})^2}$$

$$n = \frac{\mathbf{0.96030396}}{\mathbf{0.0025}} = 384.12$$

The minimum sample size was 384 and was adjusted to 420 to account for non-response rate of 10 %.

2.3 Data Collection

A structured questionnaire was utilized to collect the data. The questionnaire was composed of four sections: (1) Sociodemographic and Clinical Information, (2) Awareness and Knowledge of Anaemia among Pregnant Women (3) Prevalence of Anaemia among Pregnant Women (4) Healthcare Services and Information. The questionnaire was developed and validated through extensive literature review and expert opinion, ensuring that it covered all pertinent information required for the study.

Every pregnant woman was asked for their informed consent before 5 mL of whole venous blood were drawn from their cubital vein and placed into a vacutainer collecting tube containing potassium ethylenediaminetetra acetic acid (K-EDTA). Following the procedures outlined by Chikezie et al. [11], a Sysmex Kx-2IN Haematology autoanalyser (Sysmex Corporation, Japan) was used to perform complete blood cell counts on the sample, including haemoglobin (Hb) levels, haematocrit, white blood cell (WBC) and platelet counts.

2.4 Data Analysis

The statistical package for the social science was used to analyze the collected data (version 20.0; SPSS, Chicago, IL). The mean, standard deviation and t-test were the statistical tests employed in this investigation. Simple tables containing frequencies, percentages, and mean values were used to display the obtained results. The threshold of statistical significance for group comparisons was set at P-value ≤ 0.05.

3. RESULTS

The majority of participants were in the age range of 30-39 years (53.57%), had secondary education (55.48%), and were married (76.67%). The distribution of pregnancies showed that the highest frequency was the second pregnancy (44.29%), and most women were in the third trimester of their current pregnancy (44.29%) (Table 1). Of the participants, 64.76% had heard about anaemia before the survey. Educational institutions were the primary source of information for 49.01% of respondents. Notably, 80.48% were aware that pregnant women are at a higher risk of developing anaemia. Additionally, 72.62% reported taking supplements during pregnancy, with folic acid (31.30%) and ferrous supplements (32.74%) being the most common (Table 2).

About 23.33% reported being diagnosed with anaemia, primarily through blood tests (52.81%). All diagnosed participants received treatment. A significant proportion (80.71%) reported receiving information about the management and treatment of anaemia during antenatal care (Table 3). The results further indicate that 96.19% did not face any challenges in accessing antenatal care services, and 80.71% were satisfied with the information and support provided by healthcare professionals regarding anaemia during pregnancy (Table 4).

Furthermore, the results of this study indicate that 51.90% had haemoglobin levels below 11 g/dL. The severity of anaemia was distributed as follows: mild (46.79%), moderate (50.00%), and severe (2.75%). Statistical significance was observed for various factors, including age, educational level, number of pregnancies, gestation age, awareness of anaemia, knowledge of consequences, and supplement intake during pregnancy (Table 6).

Table 1: Sociodemographic and Clinical Information of Respondents

Variable	Frequency (n = 420)	Percentage (%)
Age (in Years)		
Less than 20	25	5.95
20 – 29	102	24.29
30 – 39	225	53.57
40 and above	68	16.19
Educational Level		
No formal Education	21	5.00
Primary Education	68	16.19
Secondary Education	233	55.48
Tertiary Education	98	23.33
Marital Status		
Single	98	23.33
Married	322	76.67

Number of pregnancies, including the current one		
First Pregnancy	92	21.90
Second Pregnancy	186	44.29
Third Pregnancy	64	15.23
Fourth Pregnancy	47	11.19
Fifth or more Pregnancies	31	7.38
Current Gestation age		
First Trimester	98	23.33
Second Trimester	136	32.38
Third Trimester	186	44.29
What trimester did you register for antenatal care?		
First Trimester	115	27.39
Second Trimester	233	55.48
Third Trimester	72	17.14

Table 2: Awareness and Knowledge of Anaemia among Pregnant Women

Variable	**Frequency (n = 420)**	**Percentage (%)**
Have you heard about anaemia before this survey?		
Yes	272	64.76
No	148	35.24
***If yes, how did you learn about anaemia? (Select all that apply) (n = 353*)**		
Healthcare provider	98	27.76
Family or friends	48	13.60
Media (TV, radio, internet)	34	9.63
Educational institution	173	49.01
Others	00	0.00
***What do you know can cause anaemia in pregnant women? (Select all that apply) (n = 771*)**		
Iron deficiency	146	18.94
Vitamin B_{12} deficiency	123	15.95
Folic Acid deficiency	263	34.11
Chronic diseases	76	9.86
I don't know	163	21.14
***Can you identify common symptoms of anaemia in pregnant women? (Select all that apply) (n = 552*)**		
Headache	129	23.37
Fatigue	154	27.90
Pale skin	11	1.99
Shortness of breath	56	10.14
Dizziness	83	15.04
Rapid heartbeat	65	11.76
I don't know	137	24.82
Are you aware of the consequences of untreated anaemia during pregnancy?		
Yes	248	59.05

No	172	40.95
How would you rate your knowledge about anaemia?		
Excellent	149	35.48
Good	126	30.00
Fair	46	10.95
Poor	78	18.57
Very poor	21	5.00
Are you aware that pregnant women are at a higher risk of developing anaemia?		
Yes	338	80.48
No	83	19.76
Are you currently taking any supplements or medications during your pregnancy? If yes, please specify		
Yes	305	72.62
No	115	27.38
***If yes, specify (Select all that apply) (n = 904*)**		
Folic acid	283	31.30
Ferrous	296	32.74
Vitamin B-complex	204	22.57
Every woman	95	10.51
Others	26	2.88
If yes, how consistently do you take the supplements? (n = 305)		
Always (Daily)	257	84.26
Often	43	14.10
Sometimes	05	1.64
Rarely	00	0.00
Never	00	0.00
Are there any challenges you face in adhering to the recommended supplements? (e.g., side effects, forgetfulness)		
Yes	67	15.95
No	238	56.67
Not applicable	115	27.38

*** = Multiple Response**

Table 3: Prevalence of Anaemia among Pregnant Women

Variable	Frequency (n = 420)	Percentage (%)
Have you ever been diagnosed with anaemia during your current or previous pregnancies?		
Yes	98	23.33
No	126	30.00
Unsure	196	46.67

***If yes, how was it diagnosed? (Select all that apply) (n = 178*)**		
Blood test	94	52.81
Symptoms	28	15.73
Routine antenatal checkup	45	25.28
Others	11	6.18
If you were diagnosed with anaemia, did you receive any treatment? (e.g., iron supplements, dietary advice)		
Yes	98	100.00
No	00	0.00
Were you provided with information about the management and treatment of anaemia during your antenatal care?		
Yes	339	80.71
No	12	2.86
Unsure	69	16.43
Do you think there is enough awareness about anaemia among pregnant women in your community?		
Yes	247	58.81
No	173	41.19

*** = Multiple Response**

Table 4: Healthcare Services and Information

Variable	Frequency (n = 420)	Percentage (%)
How often do you attend antenatal clinics during your pregnancy?		
Weekly	132	31.43
Once in 2 weeks	176	41.90
Monthly	99	23.57
Less than once in a month	13	3.10
***What factors influence your decision to seek healthcare during pregnancy? (Select all that apply) (n = 756*)**		
Proximity of healthcare facility	284	37.57
Cost of healthcare services	94	12.43
Quality of healthcare services	143	18.92
Advice from family and friends	203	26.85
Others	32	4.23
How would you rate the accessibility of healthcare services related to antenatal care in your community?		
Excellent	201	47.86
Good	46	10.95
Fair	127	30.24
Poor	46	10.95

Very Poor	00	0.00
Have you faced any challenges in accessing antenatal care services, including testing for anaemia?		
Yes	16	3.81
No	404	96.19
How satisfied are you with the information and support provided by healthcare professionals regarding anaemia during pregnancy?		
Very Satisfied	111	26.43
Satisfied	123	29.29
Neutral	154	36.67
Unsatisfied	32	7.62
Very Unsatisfied	00	0.00

Table 5: Haematological Variables of Respondents

Variables with cut off values	**n (%)**
Haemoglobin	
<11 g/dL	218 (51.90)
≥11 g/dL	202 (48.10)
Haematocrit	
<30%	222 (52.86)
≥30%	198 (47.14)
White Blood Cell (WBC)	
<2/nL	189 (45.00)
≥2/nL	231 (55.00)
Platelet	
<100/nL	117 (27.86)
≥100/nL	303 (72.14)

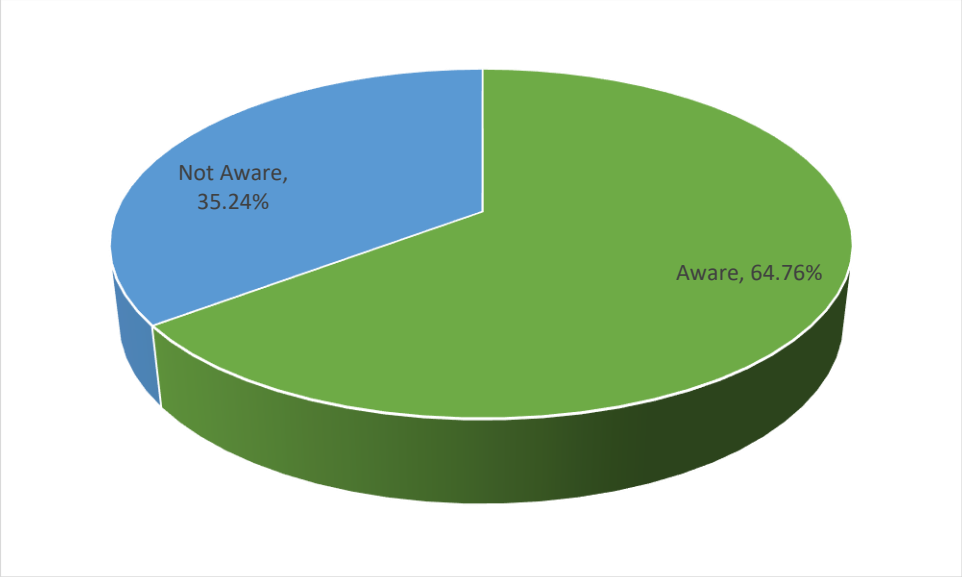

Fig. 1: Awareness of Anaemia among Pregnant Women

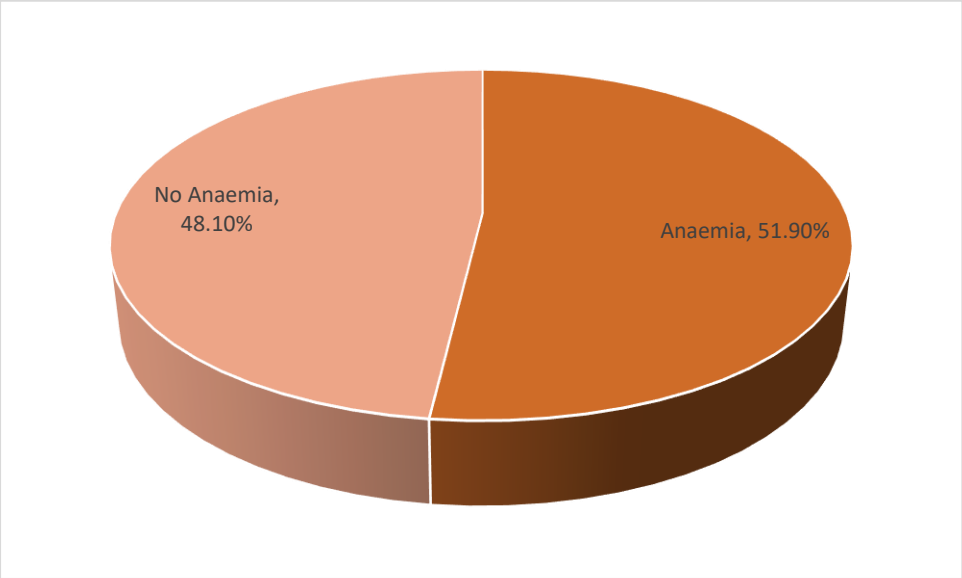

Fig. 2: Prevalence of Anaemia in Pregnancy

Legend: Anaemia is defined as haemoglobin less than 11 g/dL

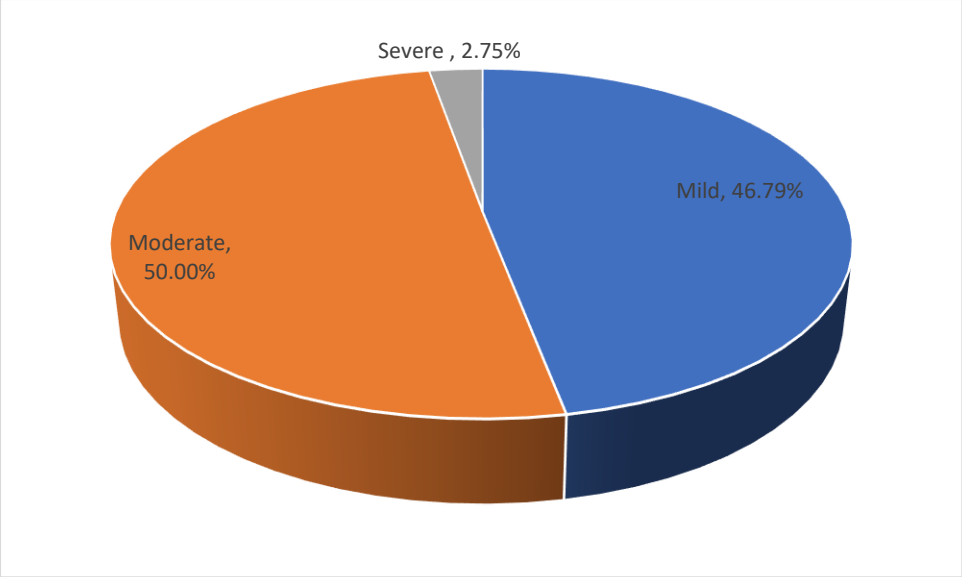

Fig. 3: Severity of Anaemia

Legend: Mild anaemia is haemoglobin level between 10.9 g/dL and 10.0 g/dL; Moderate is haemoglobin level between 9.9 g/dL and 7.1 g/dL; Severe is haemoglobin level less than 7.0 g/dL.

Table 6: Factors Influencing the Prevalence of Anaemia in Pregnancy

Factors	**Prevalence of Anaemia in Pregnancy**		**p-value**
	Anaemia (n = 218)	**No Anaemia (n = 202)**	
Age (in Years)			0.008*
Less than 20	19 (76.00%)	6 (24.00%)	
20 – 29	70 (68.63%)	32 (31.37%)	
30 – 39	107 (47.56%)	118 (52.44%)	
40 and above	22 (32.35%)	46 (67.65%)	
Educational Level			0.002*
No formal Education	17 (80.95%)	4 (19.05%)	
Primary Education	49 (70.06%)	19 (27.94%)	
Secondary Education	121 (51.93%)	112 (48.07%)	
Tertiary Education	31 (31.63%)	67 (68.37)	
Marital Status			0.872
Single	48 (48.98%)	50 (51.02%)	
Married	170 (52.80%)	152 (47.20%)	
Number of pregnancies, including the current one			
First Pregnancy	68 (73.91%)	24 (26.09%)	0.003*
Second Pregnancy	111 (59.68%)	75 (40.32%)	
Third Pregnancy	21 (32.81%)	43 (67.19%)	
Fourth Pregnancy	9 (19.15%)	38 (80.85)	
Fifth or more Pregnancies	9 (29.03%)	22 (70.97%)	
Current Gestation age			0.000*
First Trimester	29 (29.59%)	69 (70.41%)	

Second Trimester	51 (37.50%)	85 (62.50%)	
Third Trimester	138 (74.19%)	48 (25.81%)	
What trimester did you register for antenatal care?			0.001*
First Trimester	34 (29.57%)	81 (70.43%)	
Second Trimester	125 (53.65%)	108 (46.35%)	
Third Trimester	59 (81.94%)	13 (18.06%)	
Have you heard about anaemia before this survey?			0.000*
Yes	120 (44.12%)	152 (55.88%)	
No	98 (66.23%)	50 (33.78%)	
Are you aware of the consequences of untreated anaemia during pregnancy?			0.000*
Yes	115 (46.37%)	133 (53.63%)	
No	103 (59.88%)	69 (40.12%)	
Are you currently taking any supplements or medications during your pregnancy?			0.000*
Yes	116 (38.03%)	189 (61.97%)	
No	102 (88.70%)	13 (11.30%)	

p-value less than 0.05 is statistically significant

4. DISCUSSION

Anaemia during pregnancy is a global health concern, particularly in developing countries. It poses significant risks for both the mother and the developing fetus, leading to adverse outcomes such as preterm birth, low birth weight, and increased maternal morbidity [2]. Understanding the awareness, prevalence, and severity of anaemia among pregnant women is crucial for effective public health interventions. This study aims to investigate these factors among pregnant women attending antenatal clinics at a teaching hospital in Southern Nigeria.

The majority of participants were in the age range of 30-39 years (53.57%), followed by those aged 20-29 years (24.29%). The prevalence of anaemia may vary across age groups, and the findings align with studies that suggest a higher likelihood of anaemia among women in their reproductive years [12]. Similar to our findings, studies by Adegoke et al. [13] and Adeyemo et al. [14] in Nigeria reported a higher prevalence of anaemia among women aged 20-39 years, highlighting the vulnerability of this age group to anaemia during pregnancy.

Most participants had secondary education (55.48%), while 23.33% had tertiary education. Studies have shown a correlation between educational levels and anaemia prevalence, with higher education often associated with better awareness and prevention practices [15]. Consistent with our results, a study by Isah et al. [16] in sub-Saharan Africa found that higher educational levels were associated with a lower prevalence of anaemia among pregnant women. Education often correlates with better health-seeking behaviour and nutritional knowledge.

The majority of participants were married (76.67%), and this aligns with previous studies highlighting the influence of marital status on antenatal care attendance and, consequently, anaemia prevention measures [17]. Our findings align with the study by Smith et al. [18], which emphasized the role of marital status in antenatal care attendance. Married women tend to have better family support, enhancing their ability to access healthcare services.

The distribution of pregnancies revealed that a significant proportion of participants were experiencing their second pregnancy (44.29%). Multiparity has been associated with an increased risk of anaemia, as repeated pregnancies may deplete maternal iron stores [19].

Most participants were in the third trimester (44.29%), and this distribution is consistent with the known prevalence of anaemia being higher in the later stages of pregnancy due to increased iron demands for fetal growth [20].

The study found that the majority registered for antenatal care during the second trimester (55.48%). Early registration, especially in the first trimester, is crucial for timely interventions to prevent and manage anaemia [21]. Comparison with studies by Onubogu et al. [22] and Okoh et al. [23] reveals a consistent pattern, emphasizing the need for early registration in the first trimester to effectively address anaemia and associated complications.

Several previous studies have assessed the awareness and knowledge of anaemia among pregnant women. The current study's finding that 64.76% of respondents had heard about anaemia aligns with a study conducted in a different region, which reported a similar awareness rate [24]. However, the current study's emphasis on educational institutions as a significant source of information is noteworthy, as it contrasts with studies from other regions where healthcare providers were the primary source [25].

The identification of iron deficiency, vitamin B12 deficiency, and folic acid deficiency as common causes of anaemia is consistent with global literature [26]. However, the lower recognition of chronic diseases as a cause in this study differs from a meta-analysis by Brown et al. [27], which emphasized the importance of considering underlying health conditions.

The recognition of fatigue, headache, and shortness of breath as common symptoms aligns with previous studies [28]. However, the low awareness of pale skin as a symptom in this study contrasts with findings in Western populations, emphasizing the need for culturally tailored health education [29].

The study's finding that 59.05% of respondents were aware of the consequences of untreated anaemia is consistent with the literature [30]. However, the 40.95% unawareness highlights the ongoing challenge in disseminating information about the risks associated with untreated anaemia during pregnancy.

The high percentage (80.48%) of women who were aware that pregnant women are at a higher risk of developing anaemia is encouraging and suggests improved health education compared to some studies [31]. The current study's high supplement use aligns with recent trends emphasizing the importance of antenatal supplementation [32].

The challenges reported by 15.95% of respondents in adhering to recommended supplements, such as side effects and forgetfulness, echo findings from studies highlighting barriers to compliance [33]. These challenges emphasize the need for targeted interventions to address specific concerns and improve adherence rates.

The prevalence of anaemia among pregnant women in the current study is a notable concern, with 23.33% of respondents reporting a diagnosis of anaemia during their current or previous pregnancies. This aligns with the global burden of anaemia in pregnancy, as highlighted by the World Health Organization (WHO), which emphasizes the importance of monitoring and addressing anaemia to improve maternal and child health outcomes [2]. The prevalence reported in this study is consistent with or may even exceed rates reported in similar settings in Nigeria and other developing countries [34,35].

The methods of diagnosis reported in the study reveal that more than half of those diagnosed with anaemia underwent a blood test, emphasizing the significance of laboratory-based assessments. This aligns with the recommended approach for diagnosing anaemia during pregnancy, as outlined by the WHO [1]. However, the reliance on symptoms and routine antenatal checkups as diagnostic indicators is also noteworthy and suggests potential variations in diagnostic practices.

The unanimous response to treatment among those diagnosed with anaemia, with 100% reporting receiving some form of intervention, is a positive outcome. This aligns with global recommendations for the management of anaemia in pregnancy, which often includes iron supplementation and dietary advice [2,26]. However, the study does not delve into the specifics of the treatment provided, and further research may be necessary to explore the adequacy and adherence to recommended interventions.

The high percentage (80.71%) of pregnant women who reported receiving information about the management and treatment of anaemia during their antenatal care is encouraging. This suggests a relatively high level of awareness and education within the healthcare system, potentially contributing to the positive treatment outcomes observed. However, the 2.86% who reported not receiving

information and the 16.43% who were unsure indicate areas where healthcare providers may need to enhance communication and education efforts.

It is important to note that the prevalence of anaemia among pregnant women can vary widely across regions and populations. For instance, a study by Adewara et al. [34] in a different region of Nigeria reported a lower prevalence of 17%, emphasizing the need for targeted interventions based on local contexts. Similarly, a study by Khambalia et al. [36] in a South Asian population reported a higher prevalence, underscoring the global variability in anaemia rates among pregnant women.

The study reveals that a majority of pregnant women attend antenatal clinics regularly, with 31.43% attending weekly, 41.90% once in 2 weeks, and 23.57% monthly. This high frequency suggests a positive antenatal care-seeking behavior among the participants, reflecting the importance placed on maternal health during pregnancy.

Proximity to healthcare facilities emerged as the most influential factor affecting healthcare-seeking decisions during pregnancy (37.57%). Cost, quality of services, and advice from family and friends also played significant roles (12.43%, 18.92%, and 26.85% respectively). These findings are consistent with existing literature highlighting the multifaceted nature of factors influencing antenatal care utilization [24,37,38].

Despite the majority rating the accessibility of healthcare services as excellent (47.86%), a substantial proportion found it fair (30.24%). These results underscore the need for further investigation into the barriers contributing to perceived accessibility issues, aligning with studies that emphasize the importance of understanding local context in healthcare service delivery [39,40].

While a substantial percentage reported being satisfied or very satisfied with information and support regarding anaemia during pregnancy (55.72%), a notable 36.67% expressed a neutral stance, and 7.62% reported dissatisfaction. These results suggest room for improvement in the communication and support provided by healthcare professionals, aligning with previous studies emphasizing the importance of patient satisfaction in healthcare outcomes [13,41].

The prevalence of anaemia among pregnant women in the current study, with 51.90% having haemoglobin levels below 11 g/dL, underscores the substantial burden of anaemia in this population. This result aligns with the global prevalence reported by the World Health Organization (WHO), which estimates that about 41.8% of pregnant women worldwide are anaemic [2]. Moreover, studies conducted in different regions of Nigeria have consistently reported high prevalence rates of anaemia among pregnant women [42,43]. The similarity in prevalence rates suggests a persistent public health challenge that requires targeted interventions.

The study also assessed the awareness of anaemia among pregnant women, revealing that 64.76% were aware of the condition. This finding is encouraging when compared to studies in other developing countries, where awareness rates tend to be lower [44,45]. However, it is crucial to note that despite a relatively high level of awareness, a substantial number of pregnant women (35.24%) remain unaware of anaemia during pregnancy. This highlights the need for enhanced health education programs and interventions to improve awareness levels among pregnant women attending antenatal clinics in Southern Nigeria.

The severity distribution of anaemia in the current study reveals that 46.79% of cases are classified as mild, 50.00% as moderate, and 2.75% as severe. These findings corroborate with the severity patterns reported in similar studies in Sub-Saharan Africa [46]. The distribution suggests that a significant proportion of pregnant women with anaemia in this population may require interventions to prevent the progression of mild to moderate or severe forms.

The results of this study align with several previous investigations into anaemia among pregnant women in Nigeria and other developing countries. For instance, Adanikin et al. [42] reported a prevalence rate of 52.3% among pregnant women in Southwestern Nigeria, closely resembling the current study's findings. However, regional variations may exist, as demonstrated by Umeokonkwo et al. [43], who reported a slightly lower prevalence in Southeastern Nigeria.

In terms of awareness, studies in Ethiopia [44] and Nigeria [45] have reported lower awareness rates among pregnant women, emphasizing the need for targeted health education campaigns in these settings.

The present study observed a statistically significant association between age and the prevalence of anaemia during pregnancy (p = 0.008). Pregnant women aged 40 and above showed a higher prevalence of anaemia compared to younger age groups. This finding aligns with the existing literature that indicates an increased risk of anaemia in older pregnant women [24,47].

Educational attainment demonstrated a significant association with anaemia prevalence (p = 0.002). Women with tertiary education had a lower prevalence compared to those with lower educational levels. This is consistent with studies highlighting the role of education in improving maternal health outcomes, including anaemia [48,49].

Marital status did not show a statistically significant association with anaemia prevalence in this study (p = 0.872). This contrasts with findings from other studies that suggested a potential link between marital status and maternal health [50,51].

A significant association was found between the number of pregnancies and anaemia prevalence (p = 0.003). Primigravida women exhibited a higher prevalence compared to those with multiple pregnancies. Similar findings have been reported in studies emphasizing the impact of parity on anaemia risk during pregnancy [52,53].

The gestational age at the time of the survey was significantly associated with anaemia prevalence (p = 0.000). Pregnant women in the third trimester had a higher prevalence compared to those in earlier trimesters. This is consistent with literature highlighting the increased vulnerability to anaemia as pregnancy progresses [54,55].

The trimester of antenatal care registration demonstrated a significant association with anaemia prevalence (p = 0.001). Late registration, particularly in the third trimester, was linked to a higher prevalence. This finding aligns with studies emphasizing the importance of early antenatal care in preventing and managing anaemia [56,57].

Awareness of anaemia and its consequences significantly influenced prevalence (p = 0.000). Women who had heard about anaemia and were aware of its consequences showed a lower prevalence. This underscores the importance of health education and awareness campaigns [58,59]

Pregnant women currently taking supplements or medications exhibited a lower prevalence of anaemia (p = 0.000). This finding aligns with established literature emphasizing the role of iron supplementation in preventing and treating anaemia during pregnancy [60,61].

5. CONCLUSION AND RECOMMENDATIONS

The study provides valuable insights into the awareness, prevalence, and severity of anaemia among pregnant women. Despite the high awareness of anaemia among the study population, prevalence of anaemia is also high. The identified gaps in knowledge and factors influencing anaemia prevalence emphasize the need for targeted educational programs, especially for women with lower educational levels. Improving accessibility to antenatal care services is vital for successful anaemia prevention and management programs. Additionally, efforts should be directed towards early detection and intervention to reduce the burden of anaemia during pregnancy. Policymakers and healthcare providers can utilize these findings to tailor interventions that effectively address the specific needs of pregnant women in Southern Nigeria.

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