

## Original Research Article

# Knowledge, attitude and practice towards prevention of anemia among pregnant women in Ekiti State University Teaching Hospital, Ado-Ekiti, Ekiti State

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## ABSTRACT

**Background:** Anemia in pregnancy is a significant public health concern, particularly in developing countries, where it can lead to severe maternal and perinatal complications. Prevention of anemia in pregnancy is crucial to ensure the health and well-being of both mothers and their unborn babies. This study aimed to assess the knowledge, attitude, and practices of pregnant women regarding anemia prevention at Ekiti State University Teaching Hospital, Ado Ekiti.

**Methods:** Using a descriptive approach which utilizes quantitative method of data collection via a self-structured questionnaire was administered to 109 participants.

**Results:** The study revealed that 59 (54.13%) participants had high knowledge levels regarding anemia prevention, while 63 (57.80%) exhibited positive attitudes towards its prevention. However, despite their high knowledge levels and positive attitudes, 59 (54.13%) participants engaged in poor preventive practices. The preferred outcome of this study was that pregnant women would translate their knowledge and positive attitudes into practice, thereby preventing anemia in pregnancy. However, a significant barrier to achieving thus outcome is the irregular attendance at antenatal care and financial constraints. A statistically significant association was found between attitude and practice, as well as between age and knowledge level.

**Conclusions:** The study's findings highlight the need for targeted interventions to bridge the gap between knowledge and practice. It emphasizes the importance of providing cost-effective nutrition information and promoting regular antenatal care attendance to help prevent anemia in pregnancy.

**Keywords:** Anemia prevention, Antenatal care, Attitude, Knowledge, Practice, Pregnant women

## INTRODUCTION

Anemia is one of the most common nutritional problems among women, especially during pregnancy.<sup>1</sup> Anemia in pregnancy is defined by a hemoglobin concentration of 11.0 gm/dl in the first and third trimesters, and 10.5 gm/dl in the second trimester.<sup>2</sup> The volume of plasma expands during pregnancy, resulting in dilution of hemoglobin.

For this reason, hemoglobin levels below 10 gm/dl are known to be anemia at any point during pregnancy. Serious examination and adequate care are needed for hemoglobin levels below 9 gm/dl.<sup>3</sup>

Worldwide, anemia during pregnancy is a serious public health issue that has far-reaching effects on both expectant women and fetuses.<sup>4</sup> In developing countries,

it is a major cause of morbidity and mortality among pregnant women. In Nigeria, a study conducted among pregnant women attending antenatal clinic at a tertiary hospital in Ekiti State revealed a high prevalence of anemia, with 33.4% of respondents being anaemic; 30.2% had mild anemia, while 3.2% had moderate anemia.<sup>5</sup> Every mother views pregnancy as a life-changing experience that includes a crucial time from conception to the postpartum period and is highly significant for the health and wellbeing of both the mother and the unborn child.<sup>6</sup> Because of the increased need for iron and other minerals during pregnancy, women frequently have anemia due to the physiological burden of pregnancy. Anemia results from a lack of these substances at the necessary level, which can be caused by infections or dietary deficiencies.<sup>7</sup> This stage of pregnancy can be considered one of the most sensitive stages of life, as nutrients have a major impact on the foetus during this period. It is associated with increased iron demand; therefore, the risk of anemia is higher in pregnant women than in non-pregnant women.<sup>2</sup> Globally, the most prevalent cause of anemia in pregnancy is iron deficiency, which is responsible for roughly half of anemia cases in pregnancy. It is also estimated that 38% of pregnant women in developed nations have iron depletion.<sup>8</sup> Iron deficiency anemia results from a lack of iron. Without sufficient iron, the body cannot create enough hemoglobin, which is a critical component of red blood cells, resulting in decreased oxygen supply.<sup>9</sup>

According to Nyasiro et al it is a major cause of morbidity and mortality of pregnant women and increases the risks of fetal and neonatal morbidity and mortality because anemia is the greatest recurrent maternal complication during pregnancy.<sup>10</sup> To prevent the consequences of gestational anemia on mother's health and pregnancy outcomes, several measures have been recommended by the WHO, such as the administration of a daily iron and folic acid supplement in pregnant women.<sup>1</sup> Anemia during pregnancy can cause foetal anemia, low birth weight, premature delivery, intrauterine growth restriction, and perinatal mortality; however, in many cases, these consequences can be avoided and treated if detected early. The most prevalent causes of anemia include repeated pregnancies, inadequate spacing between pregnancies, and nutritional insufficiency.<sup>11</sup>

Anemia in pregnancy is usually detected using a combination of medical and family histories, a physical examination, and laboratory tests and procedures. Since anemia may not always show with evident symptoms, healthcare providers may uncover its presence while exploring other medical issues during standard checkups.<sup>12</sup> Anemia in pregnancy is a significant public health challenge, affecting 36.5% of pregnant women globally.<sup>13</sup> In Nigeria, anemia is a leading cause of maternal mortality, accounting for 20% of deaths.<sup>2</sup> Despite its high prevalence, only 58% of pregnant Nigerian women receive iron supplements during pregnancy.<sup>14</sup>

Anemia is a global health problem which affects children and pregnant women in developing and less developed nations, with a prevalence of 24.8% of the population.<sup>8</sup> Every year, over 510,000 maternal fatalities are reported worldwide, with anemia responsible for around 20% of maternal mortality, mostly in underdeveloped nations.<sup>2</sup> The high incidence of anemia in certain areas of the globe may be attributable to a lack of awareness among pregnant women about anemia prevention and management techniques.<sup>15</sup> Knowledge is a crucial factor in behavior change, and addressing this gap is essential. Anemia is a both direct and indirect cause of maternal and perinatal morbidity and mortality, resulting in delayed intrauterine foetal growth and increased mortality rates.<sup>16</sup> In Nigeria, several women have died from severe anemia during pregnancy due to a lack of awareness and education.

## METHODS

A descriptive design was employed using quantitative approach to assess the knowledge, attitude and practice towards the prevention of anemia among pregnant women in Ekiti State Teaching Hospital, Ado Ekiti, Ekiti State. The study was carried out at the antenatal clinic unit of Ekiti State University Teaching Hospital, Ado Ekiti, Ekiti State (EKSUTH). Purposive sampling technique was used to select respondents consecutively in Ekiti State University Teaching Hospital (EKSUTH), Ado Ekiti.

The estimated sample size for this study was calculated using Taro Yamane's formula.

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = required sample size; N=150; e = level of error tolerance (5%)

$$n = \frac{150}{1 + 150(0.05)^2}$$

$$n = 150/1+0.375; n = 150/1.375=109.1 \cong 109$$

Sample size for this study was 109.

The research instrument for data collection in this study was a self-structured questionnaire that adopted a combination of the binary scale measure and the Likert scale measure. Section A contained the demographic profile of the participants. Section B assessed the level of knowledge of pregnant women regarding anemia prevention, the scale is 0-7, a score of 0-2 indicates low knowledge, 3-4 indicates moderate knowledge while 5-7 indicates high knowledge. Section C determined the attitude of pregnant women towards prevention of anemia, the scale is 0-5, a score of 0-2 indicates negative attitude, 3-5 indicates positive attitude. Section D determined factors influencing anemia prevention.

Section E assessed the practices of anemia prevention among pregnant women; the scale is 0-7, a score of 0-4 indicates poor practice and 5-7 good practice.

This quantitative research study ensured the use of face and content validity. The test-retest method was used to assess reliability. The reliability coefficient was calculated and the reliability score was 0.8. The questionnaire was given to participants who met the inclusion criteria. Each participant was informed about the purpose of the study and was asked to partake in the study. This study was conducted over a period of four weeks. Statistical analysis of this data was done using the Statistical Package for the Social Sciences (SPSS) version 25, software. The data collected was analysed using descriptive statistics. Ethical approval was gotten from

Ekiti State University Teaching Hospital EKSUTH/A67/2024/11/019. Also, consent was sought from the participants before data was collected.

The study period was from September 2024 to April 2025.

## RESULTS

Table 1 showed the demographic data of the respondents, the ages of the respondents showed that majority, 39 (35.8%) of the respondents were between the ages of 20-29 years. Majority 84 (77.1%) of the respondents were married. Furthermore, based on the number of pregnancies carried, most of them, 48(44.0%) have had 3-4 pregnancies.

**Table 1: Socio-demographic data.**

Variables	Parameters	Frequency (n=109)	Percentage
Age in years	Less than 20	13	11.9
	20-29	39	35.8
	30-39	27	24.8
	Above 40	30	27.5
Marital status	Single	25	22.9
	Married	84	77.1
	Divorced	0	0.0
Religion	Christianity	72	66.1
	Muslim	37	33.9
	Traditional	0	0.0
Level of education	Uneducated	12	11.0
	Primary	16	14.7
	Secondary	42	38.5
	Tertiary	39	35.8
Tribe	Yoruba	57	52.3
	Hausa	15	13.8
	Igbo	16	14.7
	Others	21	19.2
Occupation	Civil servants	24	22.0
	Training	25	22.9
	Traders	33	30.3
	House wife	27	24.8
Number of pregnancies carried	1-2	39	35.8
	3-4	48	44.0
	5-6	19	17.4
	None	3	2.8
Number of living children	0	27	24.7
	1-2	51	46.8
	3-4	27	24.8
	5-6	4	3.7
Number of abortion or miscarriage	0	54	49.5
	1-2	51	46.8
	3-4	4	3.7
	5-6	0	0.0
Number of dead children	0	81	74.3
	1-2	28	25.7
	3-4	0	0.0

**Table 2: Level of knowledge of pregnant women about anemia.**

Variables	Parameters	Frequency (n=109)	Percentage
<b>Anemia is a condition in which there is a reduction in the number of red blood cells or haemoglobin in the body</b>	Strongly agree	34	31.2
	Agree	75	68.8
	Disagree	0	0.0
	Strongly disagree	0	0.0
<b>Anemia in pregnancy can lead to low birth weight, premature birth and other complications</b>	Strongly agree	36	33.0
	Agree	66	60.6
	Disagree	7	6.4
	Strongly disagree	0	0.0
<b>Symptoms of anemia include fatigue, weakness, pale skin and shortness of breath</b>	Strongly agree	39	35.7
	Agree	66	60.6
	Disagree	4	3.7
	Strongly disagree	0	0.0
<b>Eating iron-rich foods like meat, egg, and fish can help prevent anemia</b>	Strongly agree	39	35.7
	Agree	54	49.5
	Disagree	12	11.0
	Strongly disagree	4	3.7
<b>Anemia can be diagnosed with a blood test</b>	Strongly agree	27	24.7
	Agree	78	61.6
	Disagree	4	3.7
	Strongly disagree	0	0.0
<b>Stressful activities during pregnancy can cause anemia in pregnancy</b>	Strongly agree	18	16.5
	Agree	54	49.5
	Disagree	33	30.3
	Strongly disagree	4	3.7
<b>Anemia can be prevented by taking folic acid supplements before and during pregnancy</b>	Strongly agree	30	27.5
	Agree	66	60.6
	Disagree	9	8.2
	Strongly disagree	4	3.7

**Table 3: Attitude of pregnant women towards the prevention of anemia in pregnancy.**

Variables	Parameters	Frequency (n=109)	Percentage
<b>I'm willing to make dietary changes to ensure I get enough iron and folate to prevent anaemia</b>	Strongly agree	24	22.0
	Agree	75	68.8
	Disagree	10	9.2
	Strongly disagree	0	0.0
<b>It's important that I attend regular antenatal check-ups to monitor my health</b>	Strongly agree	39	35.8
	Agree	66	60.5
	Disagree	4	3.7
	Strongly disagree	0	0.0
<b>I believe that vitamin C helps increase iron absorption, so I take food high in vitamin C like orange</b>	Strongly agree	24	22.0
	Agree	75	68.8
	Disagree	10	9.2
	Strongly disagree	0	0.0
<b>I know that anaemia can have serious consequences on my health and my baby's health, so I take the prevention of anaemia seriously</b>	Strongly agree	36	33.0
	Agree	69	63.3
	Disagree	4	3.7
	Strongly disagree	0	0.0
<b>I think it's essential to seek advice from my healthcare provider about prevention of anaemia during pregnancy</b>	Strongly agree	36	33.0
	Agree	72	66.1
	Disagree	1	0.9
	Strongly disagree	0	0.0

**Table 4: Factors influencing anemia prevention in pregnancy.**

Variables	Parameters	Frequency (n=109)	Percentage
<b>I have a diet that provides adequate nutrition, including meat, fish, vegetables and egg</b>	Strongly agree	30	27.5
	Agree	51	46.8
	Disagree	28	25.7
	Strongly disagree	0	0.0
<b>I registered for antenatal care early in my pregnancy to monitor my health</b>	Strongly agree	25	23.0
	Agree	42	38.5
	Disagree	42	38.5
	Strongly disagree	0	0.0
<b>My income and job allow me to get the healthcare and food I need</b>	Strongly agree	24	22.0
	Agree	45	41.3
	Disagree	36	33.0
	Strongly disagree	4	3.7
<b>I have been taking the medications prescribed to me by my healthcare provider</b>	Strongly agree	30	27.5
	Agree	69	63.3
	Disagree	10	9.2
	Strongly disagree	0	0.0

**Table 5: Practice taken towards prevention of anemia in pregnancy.**

Variables	Parameters	Frequency (n=109)	Percentage
<b>I take coffee very well</b>	Strongly agree	15	13.8
	Agree	36	33.0
	Disagree	48	44.0
	Strongly disagree	10	9.2
<b>I put in my best to prevent mosquito</b>	Strongly agree	19	17.4
	Agree	84	77.1
	Disagree	6	5.5
	Strongly disagree	0	0.0
<b>I attend ante-natal clinic only at my leisure time</b>	Strongly agree	0	0.0
	Agree	66	60.6
	Disagree	36	33.0
	Strongly disagree	7	6.4
<b>I work 24 hours to make ends-meet even in pregnancy</b>	Strongly agree	15	13.8
	Agree	39	35.8
	Disagree	48	44.0
	Strongly disagree	7	6.4
<b>I eat whatever comes my way because I don't have money</b>	Strongly agree	9	8.3
	Agree	39	35.8
	Disagree	30	27.5
	Strongly disagree	31	28.4
<b>I avoid some foods like snail, okra and banana as it causes sluggishness in children</b>	Strongly agree	6	5.5
	Agree	9	8.3
	Disagree	60	55.0
	Strongly disagree	34	31.2
<b>Family planning is never in my agenda as my religion forbids it</b>	Strongly agree	10	9.2
	Agree	18	16.5
	Disagree	45	41.3
	Strongly disagree	36	33.0

Table 2 showed the level of knowledge of pregnant women attending Ekiti State University Teaching Hospital (EKSUTH) regarding anemia prevention.

Majority, 75 (68.8%) of the respondents simply agreed that Anemia is a condition in which there is reduction in the number of red blood cell or hemoglobin in the body.



While the majority, 66 (60.6%) of the respondents simply agreed that anemia in pregnancy can lead to low birth weight, premature birth and other complications. Furthermore, 54 (49.5%) of the respondents simply agreed that stressful activities during pregnancy can cause anemia in pregnancy, some, 39 (35.7%) of the respondents strongly agreed that eating iron-rich foods like meat, eggs, and fish can help prevent anemia. Finally, it was noted that most, 66 (60.6%) of the respondents agreed that anemia can be prevented by taking folic acid supplements before and during pregnancy.

The findings of this study revealed that the level of knowledge of pregnant women attending Ekiti State University Teaching Hospital (EKSUTH) regarding anemia prevention was high (54.13%).

Table 3 shows that majority, 75 (68.8%) of the respondents agreed that they were willing to make dietary changes to ensure they get enough iron and folate to prevent anemia. While majority, 66 (60.6%) of the respondents agreed that it's important that they attend regular antenatal check-ups to monitor their health. Furthermore, most, 69 (63.3%) of the respondents simply agreed that anemia can have serious consequences on their health and that of their baby's health, so they take the prevention of anemia seriously. Most, 75 (68.8%) of the respondents simply agreed that they believe that vitamin C helps increase iron absorption, so they take food high in vitamin C like orange. Finally, it was noted that majority, 72 (66.1%) of the respondents simply agreed that they think it's essential to seek advice from their healthcare provider about prevention of anemia during pregnancy.

The findings of this study revealed that the attitude of pregnant women towards the prevention of anemia in pregnancy was positive (57.80%).

Table 4 shows the factors influencing anemia prevention in pregnancy; majority 51 (46.8%) of the respondents agreed that they have a diet that provides adequate nutrition, including meat, fish, vegetables and egg. Majority 45 (41.3%) of the respondents simply agreed that their income and job allowed them to get the healthcare and food they needed, while some of the respondents, 36 (33.0%) disagreed. A large proportion, 69 (63.3%) of the respondents agreed that they have been taking the medications prescribed to them by their healthcare provider.

Table 5 shows the practice taken towards prevention of anemia in pregnancy; majority, 48 (44.0%) of the respondents simply disagreed to coffee drinking in pregnancy. A greater proportion, 84 (77.1%) of the respondents agreed that they put in their best to prevent mosquito, while majority, 66 (60.6%) of the respondents agreed that they attended ante-natal clinic only at their leisure time. Most, 48 (44.0%) of the respondents disagreed that they worked 24 hours to make ends-meet even in pregnancy, while some, 39 (35.8%) agreed that they eat whatever comes their way because they don't have money. A greater proportion, 60 (55.0%) of the respondents disagreed that they avoided some foods like snail, okra and banana as it causes sluggishness in children. Majority, 45 (41.3%) of the respondents disagreed that family planning is never in their agenda as their religion forbids it.

The findings of this study revealed that majority, 54.13% of the pregnant women have poor practice towards prevention of anemia in pregnancy while less than half of them (45.87%) engage in the right preventive practice of anemia.

H<sub>01</sub>- There is no significant relationship between the attitude of pregnant women and their practice towards the prevention of anemia.

**Table 6: Association between the attitude of pregnant women and their practice towards the prevention of anemia.**

Attitude towards anemia prevention in pregnancy	Practice of anemia prevention in pregnancy		Total	$\chi^2$	df	P value (2-sided)
	Good practice	Poor practice				
Positive attitude	37	26	63	9.941	1	0.002
Negative attitude	13	33	46			
Total	50	59	109			

Table 6 shows the result of the hypothesis tested using chi-square test. The null hypothesis was rejected since the p value  $0.002 < 0.05$ ,  $\chi^2=9.941$ . This result shows that there was a significant relationship between pregnant women's attitudes towards anemia prevention and their actual practices. Pregnant women with positive attitudes were more likely to have good anemia prevention practice compared to women with negative attitude. This suggests that a positive attitude towards anemia prevention is associated with better preventive practices.

H<sub>02</sub>- There is no significant relationship between the age of respondents and their level of knowledge on prevention of anemia.

The result of the hypothesis tested using Chi-Square test. The null hypothesis is rejected since the p value  $0.001 < 0.05$ ,  $\chi^2=47.456$ . This result shows that there is a statistically significant association between the respondent's age and their level of knowledge on anemia in pregnancy. This means that the age of the respondents

has an impact in their level of knowledge of anemia prevention in pregnancy.

## DISCUSSION

### *Socio demographic characteristics of participants*

This finding is in agreement with a study carried out by Oumer and Hussein where some, 30.5% of the respondents were between the ages of 23-27 years, and majority of the respondents were 83.6% were married, the finding is not in agreement with the study carried out by Aboud et al, which revealed that majority, 51.6% of the respondents have had just one pregnancy.<sup>17,18</sup>

### *Level of knowledge of pregnant women about anemia*

The findings of this study revealed that the level of knowledge of pregnant women attending Ekiti State University Teaching Hospital (EKSUTH) regarding anemia prevention was high (54.13%), meanwhile, the knowledge level of the others moderate and low which was, 27.52% and 18.35%, respectively. This finding is not in agreement with a study carried out by Margwe and Lupindu which showed that 42% of respondents had no knowledge about anemia, 23% and 35% had low and high knowledge respectively but this finding is in agreement with a study carried out by Ademuyiwa et al which revealed that 77.8% of the respondents had good knowledge of anemia and that of Julius et al which showed that 50.3% of the respondents knew that anemia can affect pregnancy as well as the unborn baby.<sup>8,19,20</sup>

### *Attitude of pregnant women towards the prevention of anemia in pregnancy*

Majority, 75 (68.8%) of the respondents simply agreed that they were willing to make dietary changes to ensure enough iron and folate. The majority, 66 (60.6%) of the respondents agreed that it's important that they attend regular antenatal check-ups to monitor their health. Furthermore, most, 69 (63.3%) of the respondents simply agreed that anemia can have serious consequences on their health and that of their baby's health. Most, 75 (68.8%) of the respondents simply agreed that they believe that vitamin C helps increase iron absorption. Finally, it was noted that majority, 72 (66.1%) of the respondents simply agreed that they think it is essential to seek advice from their healthcare provider about prevention of anemia during pregnancy. The findings of this study revealed that the attitude of pregnant women towards the prevention of anemia in pregnancy was positive (57.80%). This finding is not in agreement with a study carried out by Habib et al which revealed that less than half of the participants, 48.7% showed positive attitude regarding antenatal checkup and prevention of anemia but this finding is in agreement with a study carried out by Adediran and Olorunfemi which revealed that most pregnant women acknowledged the importance

of anemia prevention and had a positive attitude toward taking preventive actions.<sup>21,22</sup>

### *Factors influencing anemia prevention in pregnancy*

Majority 51 (46.8%) of the respondents simply agreed that they have a diet that provides adequate nutrition, including meat, fish, vegetables and egg, while some of the respondents, 30 (27.50%) of them strongly agreed. Majority 45 (41.3%) of the respondents simply agreed that their income and job allowed them to get the healthcare and food they needed.

Finally, A large proportion, 69 (63.3%) of the respondents agreed that they have been taking the medications prescribed to them by their healthcare provider.

The finding of this study is not in agreement with the study carried by Adebisi and Ugbojume which discovered that 57.3% of the respondents disagreed that their income allowed them get the food they needed.<sup>23</sup>

### *Practice taken towards prevention of anemia in pregnancy*

Majority, 66 (60.6%) of the respondents agreed that they attended ante-natal clinic only at their leisure time. Some, 39 (35.8%) agreed that they eat whatever comes their way because they do not have money. A greater proportion, 60 (55.0%) of the respondents disagreed that they avoided some foods like snail, okra and banana as it causes sluggishness in children.

The findings of this study revealed that less than half (45.87%) engage in the right preventive practice of anemia. This finding is not in agreement with a study carried out by Adediran et al which discovered that 55.8% of them took their routine antenatal care seriously but this finding is in agreement with a study carried out by Aboud et al who found that only 12.0% of respondents obtained good practices score as more than half of the pregnant women never take iron supplement.<sup>18,24</sup>

The limitation encountered during this study were lack of resources and funds as well as limited time frame.

## CONCLUSION

Conclusively, this study showed that the knowledge level of pregnant women regarding anemia prevention was high and they had positive attitude towards anemia prevention but they had poor practices towards the prevention of anemia.

Despite the fact that this study revealed the knowledge level of pregnant women regarding anemia prevention to be high, majority of the respondents still attended antenatal care at their leisure time and this indicates that the importance of antenatal care should be emphasized

and information on locally available food rich in iron, folic acid and fibers which is cost-effective should be provided.

The government should also make increasing efforts toward the educational interventions of women in reproductive age regarding the preconception counselling and adequate intake of iron-rich food sources, iron and folic acid supplementation.

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