



## Attitude of Pregnant Women Attending Ante-natal Clinic towards Adequate Diet in the Prevention of Anaemia in Selected Hospitals in Osogbo

E. O. Adesuyi<sup>1\*</sup>

<sup>1</sup>Cyrus-unik Research Team (CURT), 18 Komolafe Street, Sosanya road off Prince Bustop, Ijegan, Lagos State, Nigeria.

### Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

### Article Information

DOI: 10.9734/BJMMR/2016/23427

#### Editor(s):

(1) Edward J. Pavlik, University Kentucky Medical Center, Division of Gynecological Oncology, USA.

#### Reviewers:

(1) Ekene Kwabena Nwaefuna, Ghana Atomic Energy Commission, Ghana.

(2) Gregory Edie Halle Ekane, University of Buea, Cameroon.

(3) Catherine M Ngoma, University of Zambia, Zambia.

Complete Peer review History: <http://sciencedomain.org/review-history/14047>

Original Research Article

Received 30<sup>th</sup> November 2015

Accepted 2<sup>nd</sup> March 2016

Published 7<sup>th</sup> April 2016

### ABSTRACT

**Aims/Objectives:** To assess the attitudes of pregnant women based on their knowledge about anaemia and adequate diet in its prevention.

**Study Design:** Descriptive.

**Place and Duration of Study:** The ante-natal clinics: Ladoke Akintola University of Technology, Osogbo and Osun State Teaching Hospital, Asubiaro, Nigeria between January and August 2014.

**Methodology:** A sample size of 369 was gotten by using Fisher's rule of thumb. A multi stage sampling technique was utilized. Subjects were chosen from 2 different hospitals in Osogbo. Equal numbers of questionnaires were distributed to the respondents in each hospital. In all, 60 single pregnant women and 309 married pregnant women participated.

**Results:** Chi-square was used to test two null hypotheses, one was accepted thus the hypothesis restated as there exist a significant difference in knowledge among pregnant women that do believe that anaemia could be cured with drugs alone and those that do not while the other null hypothesis was rejected and confirmed there is no significant difference between perceived income and attitudes about an adequate diet and prevention of anaemia.

\*Corresponding author: E-mail: [cyrusunikmedicalgroup@gmail.com](mailto:cyrusunikmedicalgroup@gmail.com);

**Conclusion:** Most of the respondents displayed a moderate level of knowledge on anaemia in pregnancy and adequate diet in its prevention. However, this didn't affect their attitude and level of compliance towards adequate nutrition. Although antenatal care programs distribute iron supplements to pregnant women yet its effectiveness is not well felt. This means that there may be other socioeconomic factors responsible for this non-compliance; further work is therefore needed to validate this. It was suggested that In order to get better compliance, both gynaecologists and midwives should emphasize the importance of taking adequate diet before, during and after pregnancy. Anaemia prevention should be emphasized in the community in order to encourage dietary modifications and promote environmental control of infections contributing to anaemia. This needed to be carried out on a continuous basis and integrated with other on-going.

*Keywords: Anaemia in pregnancy; nutrition; diet; prevention of anaemia; antenatal; gynaecologist; midwives.*

## DEFINITIONS

*Operational definition of terms will be utilized.*

- *Attitude: Level of understanding or experience*
- *Pregnant women: Women with gestational age between 4-40weeks*
- *Adequate diet: Diet rich in all classes of food i.e. carbohydrate, protein, fat & oil, vitamins, minerals and water.*
- *Anaemia: Reduction in the number of circulating red blood cells and haemoglobin level.*

## 1. BACKGROUND TO THE STUDY

Anaemia is a global public health problem affecting both developing and developed countries with major consequences on human health as well as social and economic development. It occurs at all stages of life cycle, but is more prevalent in pregnant women and young children. It occurs when the concentration of haemoglobin falls below what is normal for a person's age, gender and environment, resulting in the oxygen carrying capacity of the blood being reduced. Almost half of the pregnant mothers globally present haematological values indicative of anaemia [1].

It is estimated that about 2 billion people, 30% of the world population are infected with the majority coming from the developing world [2]. Infants, preschool children, adolescents and women of childbearing age, particularly pregnant women are at greatest risk of developing anaemia [3]. It is reported that 56% of pregnant women in developing countries and 18% in developed countries are anaemic and in Africa, the estimated prevalence in pregnant women is 50-60% [4].

In South Africa, the maternal mortality rate was reported between 135 and 165/100 000 live births during 2002 to 2004. In sub-Saharan Africa it was estimated that 20% of maternal deaths were associated with anaemia [4].

Anaemia affects nearly half of all pregnant women in the world; 52% in developing countries compared with 23% in the developed world [5].

Pregnant women are particularly susceptible to malaria in endemic populations and often have higher prevalence as well as severity including anaemia. The changes in the immune system associated with pregnancy have been suggested as the reason for this. The World Health Organization (WHO) estimated that in developing countries, prevalence rates in pregnant women are commonly in the range of 40-60%. About half of those with anaemia are suffering from iron deficiency anaemia that is, having deficient body iron stores but without frank anaemia, the latter are therefore considered to be at risk of iron deficiency anaemia. Folate deficiencies and other causes account for the major proportion of the remaining anaemia. It is considerably more prevalent in the developing regions (59.0%) than in the industrialized countries 14.0% [2].

Previous studies on iron deficiency anaemia have revealed a prevalence of 39.7% in Kuwait [6], 78.0% in Liberia [7], 73.9% in Guyana [8], 56.1% in Nigeria [9], 60% in Tanzania [10]. Reduction of anaemia during pregnancy is therefore, a key component of safe motherhood.

## 2. PROBLEM STATEMENT

Anaemia, largely due to iron deficiency, affects over two billion people [5]. In many regions, more than 50% of preschool children and pregnant women are anemic. It was estimated that 20% of maternal deaths are caused by severe anemia.

While many antenatal care programs distribute iron supplements to pregnant women, the effectiveness of these interventions in reducing maternal anemia has been inadequate. More so, the prevalence of iron deficiency anaemia is so widespread and its effects are so serious, it is therefore important to investigate the attitude of pregnant women towards adequate diet in the prevention of anaemia [2].

### 3. PROPOSED SOLUTION

This research will answer the following questions:

- Do pregnant women have any knowledge about the effect of anaemia in pregnancy?
- Do pregnant women have knowledge on adequate diet in prevention of anaemia in pregnancy?
- What are the factors that influence the prevalence of anaemia in pregnancy?
- Do pregnant women comply with adequate diet in prevention of anaemia in pregnancy?
- What are the factors responsible for noncompliance?

### 4. LITERATURE REVIEW

#### 4.1 Definition of Anaemia

Iron deficiency anaemia is generally defined as a decrease in the oxygen carrying capacity of the blood and considered as the main cause of microcytic hypo-chronic anaemia. This significantly reduces the haemoglobin per decilitre of blood and number of erythrocytes [11].

#### 4.2 Signs and Symptoms of Anaemia

- Pallor of the mucous membranes
- Fatigue
- General weakness
- Decreased appetite
- Dizziness and fainting
- Headache
- Shortness of breath
- Increased heart rate (tachycardia)
- Palpitations
- Disturbance of renal function [12].

#### 4.3 Anaemic Women and Reproduction

According to WHO, women have additional needs of iron requirements from puberty to

menopause. These arise from the physiological requirements of menstruation, pregnancy and to some extent, lactation. For this reason, iron deficiency is common in women of reproductive age even in developed countries, throughout their reproductive years [13]. In pregnant women, there is increased demand due to physiological increase in maternal red blood cell mass, and the needs of the growing foetus and placenta. During adolescence, the growth spurt increases the need for iron and, for the girl; there is further increase due to their regular menstrual loss [14].

According to a research work, the iron demand in adolescence is not met mainly because of poor diet of low iron, bio-availability, and frequent parasitic infections thus leading to a high incidence of anaemia in women and girls. An adolescent who conceives soon after menarche is likely to start pregnancy with depleted stores [15].

#### 4.4 Causes of Anaemia

In Africa, anaemia in women is caused by multiple factors [16]. These include:

##### 4.4.1 Iron deficiency

In public health terms, iron deficiency is the most important cause of nutritional anaemia [25]. Iron deficiency may result from a combination of several factors, including:

1. Reduced intake or absorption of iron: this includes dietary deficiency and gastrointestinal disturbances such as diarrhoea or hyperemesis [16].
2. Excess demand such as frequent, numerous or multiple pregnancies and in the case, iron stores are low in women experiencing a short period (less than 2 years) between pregnancies or those from low socio-economic communities [17].
3. Chronic iron losses due to parasitic infections such as hook worm and schistosomiasis and impaired iron utilization in chronic and repeated infections particularly of the Urinary tract [18].
4. Acute or chronic blood loss, for example menorrhagia (heavy periods), bleeding haemorrhoids or antepartum or postpartum haemorrhage [2].
5. Women who were using an intrauterine device (IUCD) may be deficient in iron from excessive blood loss with menstrual flows while those who have been taking oral

contraceptives have lower risk for getting anaemia [12].

Since the main source of iron in the diet in these countries is non-haeme iron, its absorptions is affected by meal composition (commonly consumed foods containing phytates which are inhibitors of iron absorption) and therefore less bio-available [19].

A finding reported that even in developed countries where the diet quality is good, only 20% of women have normal iron stores at the end of pregnancy and postpartum in the absence of supplement [19].

#### **4.4.2 Malaria**

There is increased susceptibility to malaria in pregnancy which is greatest during the first half of pregnancy and in primigravida women. Most patients are relatively asymptomatic, and is associated with malaria, which can also increase folate requirements and where dietary intake of folate is poor as often the case, folate deficiency exacerbate the anaemic state [7].

#### **4.4.3 Folic acid deficiency**

Apart from deficiency associated with malaria, folate deficiency can also be caused by poor dietary intake alone, especially as folate-rich foods can be depleted of folate by prolonged cooking which is common practice in much of tropical Africa. Pregnant women are prone to folate deficiencies because of high physiological requirements, and deficiency is especially common in multigravida, twin pregnancies and also in the lost trimester and in lactation [16].

### **4.5 Prevention of Iron-deficiency Anaemia among Pregnant Women**

Iron supplementation begins at the first pre natal visit [20]. The centres for disease control and prevention recommends starting low-dose (30 mg/day) supplements of iron at the first pre natal visit, with twin pregnancy a larger dose is needed [21]. Most iron that is obtained from the average diet is 15 to 18 mg/day. The recommended intake for iron during pregnancy is 27 mg/day [22].

#### **4.5.1 Good nutrition**

The quality of food taken during pregnancy affects the baby's health and therefore makes nutritious food intake important irrespective of the woman stage of pregnancy. Eating adequate diet

is essential in the prevention of anaemia in pregnancy [23]. Research indicates that woman with pica (eating of substances such as ice, freezer frost, corn-starch, and other non-nutritive substances), regardless of substances, tend to have lower haemoglobin levels at birth [24].

Physical distance to the clinic, economic constraints (cost of travel or the supplements) and inconvenient clinic hours may all affect utilization of health services in many developing countries. Use of any antenatal cart service is often quite low (below 50%). Hence access to iron supplementation usually delivered through the health care system is equally low [25].

A research work on anaemia carried out in Sekyere, Ghana found out that characteristic such as occupation, level of education, religious affiliation, ethnicity and marital status of women or men did not significantly affect the degree of anaemia in the Sekyere West district [26]. Eighty-one per cent (81%) of respondents knew about anaemia either through a health worker or a neighbour and 51.2% knew the symptoms of anaemia and could identify some of the causes as well, only 29 (14.1%) of respondents slept under bed nets.

Quality does not necessarily imply that patients are more health educated. In fact patients who master factual information about their disease and the benefits of treatment are not more compliant. People who receive counselling through social support groups do not always comply better than people who attend formal lectures on their disease and treatment. Patient involvement, the clarity of the message and how it is delivered are important in improving patient-provider dynamics. If the patient and Health Care Provider work together and successfully negotiate a treatment plan; for example, the regimen is more likely to continue as planned [25].

Severe anaemia may cause cardiac failure and death, whereas chronic anaemia is considered to be contributory, especially in cases of haemorrhage and infection [26].

Furthermore, anaemic women are at poor anaesthetic and operative risks, as anaemia may lead to poor healing of wounds and increased susceptibility to infections [7].

## **5. METHODOLOGY**

A descriptive study design was adopted, since the researcher is interested in evaluating the

attitudes of pregnant women toward adequate diet in the prevention of anaemia in selected hospital in Osogbo Osun State. The target population for this study was pregnant women attending antenatal clinics in Lautech Teaching Hospital and Osun State Teaching Hospital Osogbo Osun State.

The sample size of 369 was derived using Fisher's rule of Thumb since the overall population of the subject is unknown.

The instrument used for this study was a self-designed questionnaire consisting of 30 questions subdivided into sections A, B, C, D. Section A comprised of the respondent's demographic data. Section B assessed respondent's knowledge about nutritional anaemia in pregnancy. It contained 8 questions. Section C assessed the respondent's perceived factors influencing adequate diet intake in prevention of anaemia. Section D assessed the respondent's attitude towards adequate diet in preventing anaemia in pregnancy. A pilot study

was performed to test the questionnaire and to explore more questions to be included in the actual questionnaire of the study. In order to ensure that the research maintain consistency in measuring what it intended to measure, a pilot study of 10% (37) of the sample size was carried out among pregnant women who were attending antenatal clinics at Atelewo Health Centre, Atelewo, Osogbo. The questionnaires were administered and the data analysed to test the reliability of instrument.

The questionnaire was pre-tested at Our Lady of Fatima hospital, Jaleyemi in Osogbo and items believed to be ambiguous were removed and revised several times, until no additional changes were necessary.

## 6. RESULTS

369 respondents attending antenatal clinics in the selected hospitals responded to the questionnaire.

**Table 1. Demographic data**

Variables	Level	Frequency	Percentage
<b>Age (years)</b>	Below 21	46	12.5
	21-25	202	54.7
	26-30	75	20.3
	31-35	22	6.0
	36 & Above	24	6.5
	<b>Total</b>		369
<b>Marital Status</b>	Single	60	16.4
	Married	309	83.6
	<b>Total</b>	369	100.0
<b>Religion</b>	Christianity	219	59.3
	Islam	150	40.7
	<b>Total</b>	369	100.0
<b>Ethnic group</b>	Yoruba	296	80.2
	Igbo	31	8.4
	Hausa	11	3.0
	Others	31	8.4
	<b>Total</b>	369	100.0
	<b>Level of Education</b>	Primary	99
Secondary		119	32.2
Tertiary		151	40.9
No formal education		-	-
<b>Total</b>		369	100.0
<b>Occupation</b>		Student	111
	Civil Servant	93	25.2
	Self employed	133	36.0
	Unemployed	32	8.7
	<b>Total</b>	369	100.0

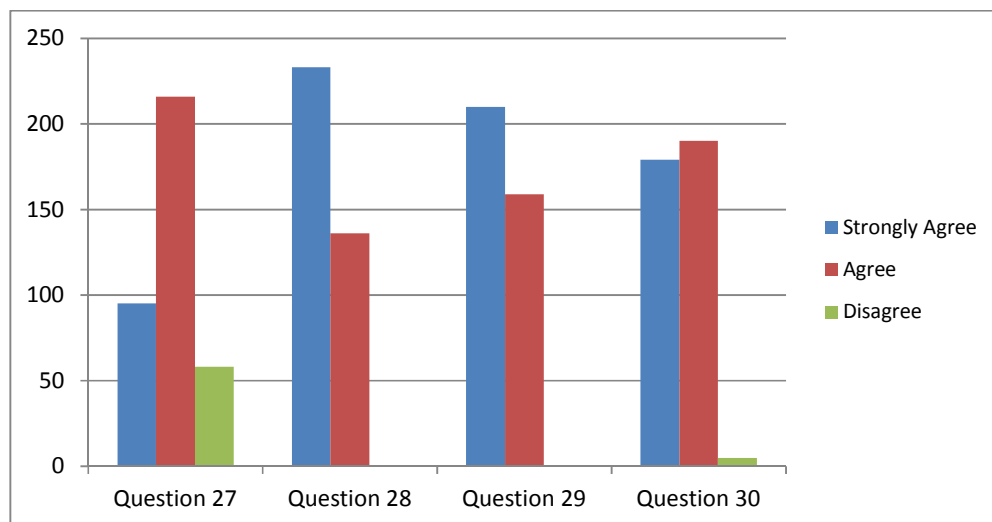
Subject demographics are shown in Table 1.

**Inference:** 12.5% respondents were aged below 21 yrs, 202 (54.7%) between 21-25 yrs, 20.3% between 26-30 yrs, 6.0% were aged between 31-35 yrs and 6.5% were either 35 yrs in age or older. 16% of the respondents were single pregnant women while 84% were married pregnant women. 30.1% of the respondents were students, 25.2% were civil servants, 36.0% self-employed and 8.7% were unemployed. 26.8% of the respondents were primary school certificate holders, 32.2% were secondary school certificate holders and 40.9% have tertiary education.

**Table 2. Attitude of pregnant women towards adequate diet**

S/N	Questions	Variables	Frequency	Percentage
22	I can prevent anaemia by eating adequate diet	SA	137	37.1
		A	232	62.9
		Total	369	100
23	One needs a huge sum of money to eat adequate diet	SA	59	16.0
		A	41	11.1
		D	212	57.5
		SD	57	15.4
		Total	369	100
24	Fruits like oranges and banana make one to run stool	SA	20	5.4
		A	118	32.0
		D	134	36.3
		SD	97	26.3
		Total	369	100
25	Eating banana will delay the closure of anterior fontanelle	SA	36	9.8
		A	41	11.1
		D	177	48.0
		SD	75	20.3
		U	40	10.8
		Total	369	100
26	I am trying to watch my weight, so I should eat less	SA	20	5.4
		A	76	20.6
		D	173	46.9
		SD	40	10.8
		U	60	16.3
		Total	369	100

SA- Strongly agree, A- Agree, D- Disagree, SD- Strongly disagree, U- Undecided



**Fig. 1. Attitude of pregnant women towards adequate diet**

**Question 27:** I will need more education as regards the effect of diet in the prevention of anaemia in pregnancy?

**Question 28:** Regular ante natal visits are necessary for pregnant women?

**Question 29:** Adherence to health education session is necessary during pregnancy?

**Question 30:** Anaemia can result in foetal death?

**Inference:** Fig. 1 shows that 58.5% agreed that they will need more education 25.7% strongly agreed and 15.7% disagreed. 63.1% strongly agreed that regular ante natal visits are necessary for pregnant women while 36.9% agreed. A majority of the respondents agreed and strongly agreed that adherence to health education session is necessary during pregnancy and also agreed that anaemia can result in foetal death.

Table 2 shows that 37.1% of the respondents strongly agreed that anaemia can be prevented by eating adequate diet. 57.5% disagreed that one needs a huge sum of money to eat adequate diet while 11.1% agreed. 5.4% strongly agreed that fruits like orange and banana makes one to run stool 32.0% agreed, 36.3% disagreed, 26.3% strongly disagreed.

48.0% disagreed that eating banana will delay closure of anterior fontanelle while 11.1% agreed.

5.4% of the respondents strongly agreed that they have to eat less to watch their weight, 20.6% agreed, 46.9% disagreed 10.8% strongly and 16.3% were left undecided. A greater percentage of the respondents disagreed to this.

**7. HYPOTHESIS TESTING**

1. The hypothesis states that “there is no significant difference in knowledge among pregnant women that do believe that anaemia could be cured with drugs alone and those that do not.

**Anaemia can be cured with drugs alone \* Foods rich in iron prevents anaemia. Cross tabulation**

Count	Foods rich in iron prevents anaemia			Total
	SA	A	D	
Anaemia can be cured with drugs alone Yes	18	18	0	36
No	160	148	25	333
Total	178	166	25	369

**Chi-square tests 1**

$\chi^2$ calculated	$\chi^2$ table	Df	p
2.951	5.991	2	0.05

**Inference:** Since the calculated value at 0.05 level of significance is less than the table value (2.951<5.991), the null hypothesis is hereby accepted and the hypothesis restated as “there exist a significant difference in knowledge among pregnant women that do believe that anaemia could be cured with drugs alone and those that do not.

2. The hypothesis states that there is no significant difference between perceived income and attitudes about an adequate diet and prevention of anaemia.

**One needs a huge sum of money to eat adequate diet \* I can prevent anaemia by eating adequate diet. Cross tabulation**

Count	I can prevent anaemia by eating adequate diet		Total
	SA	A	
One needs a huge sum of money to eat adequate diet	SA	0	59
	A	0	41
	D	99	113
	SD	38	19
Total		137	232

**Chi-square tests 2**

$\chi^2$ calculated	$\chi^2$ table	Df	p
88.678	7.815	3	0.05

**Inference:** Since the calculated Chi-square value at 0.05 level of significance is greater than table value ( $88.678 > 7.915$ ), the null hypothesis is hereby rejected. Hence there is no significant difference between perceived income and attitudes about an adequate diet and prevention of anaemia.

## 8. DISCUSSION

The results showed that majority of the respondents are educated. This implied that most females in Osogbo have a good level of education. A research work on anaemia carried out in Sekyere, Ghana found out that characteristic such as occupation, level of education, religious affiliation, ethnicity and marital status of women or men did not significantly affect the degree of anaemia in the Sekyere West district [26].

Questions were asked to test the respondent knowledge on anaemia in pregnancy. 70.7% of the pregnant women had knowledge regarding the meaning of anaemia and 29.3% do not have.

Past research indicated that woman with pica (eating of substances such as ice, freezer frost, corn-starch, and other non-nutritive substances), regardless of substances, tend to have lower haemoglobin levels at birth [26]. Thus a good nutritional behaviour is expected from this set of pregnant women. A good percentage of the respondents agreed and strongly agreed that anaemia can be prevented by eating adequate diet. This was supported by work findings eating adequate diet is essential in the prevention of anaemia in pregnancy [23].

69.4% of the respondent strongly agreed that anaemia can affect mother and baby negatively. A research finding pointed out severe anaemia occurring in developing countries as a major cause of maternal morbidity and mortality [26]. It shows that a greater percentage of the respondents have knowledge of the detrimental effects of anaemia on pregnancy.

63.1% strongly agreed that regular ante natal visits are necessary for pregnant women while 36.9% agreed to this. It may imply that some factors like health education, character of medical personnel might have helped the respondents to attach importance to keeping appointments with regular antenatal visits thereby helping them to comply with preventive measures. However, a research finding stated

that keeping appointments of regular antenatal clinics may prevent complications during pregnancy. Physical distance to the clinic, economic constraints (cost of travel or the supplements) and inconvenient clinic hours may all affect utilization of health services in many developing countries. Use of any antenatal care service is often quite low (below 50%). Hence access to iron supplementation usually delivered through the health care system is equally low [25].

### 8.1 Hypothesis I

Since the calculated value at 0.05 level of significance is less than the table value ( $2.951 < 5.991$ ), the null hypothesis is hereby accepted and the hypothesis restated as "there exist a significant difference in knowledge among pregnant women that do believe that anaemia could be cured with drugs alone and those that do not. This was supported by a work that stated that quality does not necessarily imply that patients are more health educated. In fact patients who master factual information about their disease and the benefits of treatment are not more compliant. People who receive counselling through social support groups do not always comply better than people who attend formal lectures on their disease and treatment [25].

Though another author pointed out that knowledge about causes, symptoms and prevention given to any ill person results in them having proper knowledge and awareness and thus responds properly and timely to treatment regimen. Although on the other side ignorance may be lethal [19]. The findings showed that despite the high level of knowledge and awareness of pregnant women on anaemia, its effect on their health behavior and attitude has been minimal.

### 8.2 Hypothesis II

Since the calculated Chi-square value at 0.05 level of significance is greater than table value ( $88.678 > 7.915$ ), the null hypothesis is hereby rejected. Hence there is no significant difference between perceived income and attitudes about an adequate diet and prevention of anaemia. Availability of money and adequate health education were observed to be a factor that can influence compliance to adequate diet. Poor socio-economic status is regarded as a situation that comprised a number of factors that includes: limited access to gainful resources, reduced



access to ample amount and quality food leading to malnutrition and under nutrition. Yet two authors discovered that 56% pregnant women in the developing countries comply with preventive measures [21,23]. The study therefore reveals a high level of non-compliance to dietary measures of preventing anaemia in pregnancy probably because of some intrinsic factors such as socioeconomic status, state of the family, occupation etc.

## 9. CONCLUSION

From the findings of this research work, it was discovered that the majority of the respondents had adequate knowledge on the signs and menace of anaemia in pregnancy as well as the roles adequate diet plays in its prevention. Despite all this knowledge, many of the respondents still do not practice a good health habits in terms of their nutritional intake as an active means of preventing anaemia in pregnancy.

Gynecologists, nurses and midwives are the first personnel that pregnant women come in contact with, they must therefore suspect or diagnose anaemia early enough making use of physiological and psychological changes as the first line of diagnosis. Pregnant women should also be supported when they are identified. Importance of regular antenatal visits should be emphasized, where pregnant women should be taught ways of preparing local foods that are highly rich in iron. Misconceptions about food taboos should be corrected.

## CONSENT

The author declares that a 'written informed consent was obtained from the patient and other approved parties in the process of data collection.

## ETHICAL CONSIDERATION

Approval and ethical clearance were obtained from the chairman of an ethical committee of the two hospitals in order to conduct study. In addition, permission was taken from the head of the maternal and child health ward. Both written and oral permission were obtained from each woman that participated in the study after explaining to the women the importance and objectives of the study. The right to refuse or withdraw from the survey was also explained to each woman separately before administering the questionnaire. The researcher also explained to

all women that their answers would be confidential and will only be used for scientific research purposes.

## COMPETING INTERESTS

Author has declared that no competing interests exist.

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