

## **A SURVEY OF ANAEMIA AMONG PREGNANT WOMEN IN ABEOKUTA, NIGERIA.**

<sup>1</sup>Idowu O.A., <sup>1</sup>Mafiana C.F., and <sup>2</sup>Sotiloye

<sup>1</sup>Department of Biological Sciences, University of Agriculture, Abeokuta, Nigeria

<sup>2</sup>Department of Obstetrics and Gynaecology, Federal Medical Centre, Abeokuta, Nigeria.

(\*Corresponding author)

### **ABSTRACT**

Four hundred and seventy-seven women were enrolled in the study at their first antenatal visit and were monitored through pregnancy for anaemia. Two hundred and sixty-two were monitored in two hospitals (Federal Medical Centre and Ogun state General Hospital) and two hundred and fifteen in a traditional birth home (TBH). 76.5% of these women were anaemic at one trimester of pregnancy or another. Anaemia were more prevalent among primigravidae (80.6%) than the multigravidae (74.5%) ( $P > 0.05$ ). 57.8% women had moderate anaemia while 40.3% had mild anaemia and 1.9% were severely anaemic (5 (71.4%) of which were primigravidae). All severely anaemic women were under 30 years old. Women attending TBH for antenatal care were found to be more anaemic (81.2%) (even at various trimesters of pregnancy) than those attending the hospitals (72.5%) ( $P < 0.05$ ). However, in all the antenatal centres more women were anaemic in the 2<sup>nd</sup> trimester of pregnancy. 9.8% of the enrolled women booked for antenatal care in the first trimester, while 63.5% booked in the second trimester and 26.6% in the 3<sup>rd</sup> trimester of their pregnancies. 62.5% of these women were already anaemic at the time of antenatal booking, with a higher prevalence among the primigravidae (69.7%) ( $P < 0.05$ ). Absence of symptoms of ill health was the major reason for late antenatal booking. Anaemia was higher among unemployed women and those with sickle cell traits. The need to educate women on early antenatal booking and include those in TBH in health interventions is recommended.

**KEYWORDS:** Pregnant women, anaemia, antenatal care, multigravidae, primigravidae

### **INTRODUCTION**

Anaemia in pregnancy is an important public health problem worldwide. WHO estimates that more than half of pregnant women in the World have a haemoglobin level indicative of anaemia ( $< 11.0\text{g/dl}$ ), the prevalence may however be as high as 56 or 61% in developing countries (W.H.O. 1994). Women often become anaemic during pregnancy because the demand for iron and other vitamins is increased due to physiological burden of pregnancy. The inability to meet the required level for these substances either as a result of dietary deficiencies or infection gives rise to anaemia (Van den Broek, 1996).

Anaemia ranges from mild, moderate to severe and the W.H.O. pegs the haemoglobin level for each of these types of anaemia in pregnancy at 10.0 – 10.9g/dl (mild anaemia) 7 – 9.9g/dl (moderate anaemia) and  $< 7\text{g/dl}$  (severe anaemia) (W.H.O. 1989). In pregnancy, anaemia has a significant impact on the health of the foetus as well as that of the mother. 20% of maternal deaths in Africa have been attributed to anaemia (Harrison, 1975). Foetuses are at risk of preterm deliveries, low birth weights, morbidity and perinatal mortality due to the impairment of oxygen delivery to placenta and foetus (Harrison 1973, De Mayer 1989 and Brabin, 1991). The management and control of anaemia in pregnancy is enhanced by the availability of local prevalence statistics, which is however not adequately provided in Nigeria. This study aims at providing prevalence statistics of anaemia in pregnancy and to assess the effectiveness of antenatal care in preventing anaemia among pregnant women in Abeokuta, Nigeria.

### **MATERIALS AND METHODS**

#### **Study area/centres**

The study was conducted in Abeokuta, Ogun State, Nigeria in three centers namely: Federal Medical Centre Idi-Aba, Ogun State General Hospital Ijaye and Araromi Traditional Birth Home Iberekodo; all in Abeokuta.

#### **Ethical clearance and consent:**

Ethical clearance was obtained from the ethical Committee of the hospitals used while approval was also obtained from the traditional birth healer for the use of the traditional birth home. The study was first introduced to the pregnant women on their first visit to the antenatal clinic in order to obtain their consent. As

many as consented were enrolled in the study. The study excluded Sickle celled, HIV positives, women with multiple pregnancies and bleeding disorder.

#### Sample collection:

Blood samples were collected from the pregnant women and haematological investigations were carried out to determine blood group genotype and packed cell volume. The subjects were subsequently examined monthly for PCV until delivery. Questionnaires were also administered to obtain demographic information, use of folate and birth interval. Typing of anaemia was carried out using WHO criteria (WHO, 1989). Gestation age was estimated from interview based on the date of last menstruation.

#### Data analysis

All quantitative data was entered in computer and analysed using SPSS version 10.1 for Windows. Descriptive statistics were computed for all relevant data. Association between anaemia and pregnancy was tested using chi-square. All significance are reported at  $P < 0.05$ . Women that were anaemic at one trimester or the other during pregnancy were considered anaemic in pregnancy.

### RESULT

Four hundred and seventy-seven (477) women were enrolled in the study, 262 from the Federal Medical Centre and Ogun State General hospital, 77 were primigravidae and 185 were multigravidae). 215 pregnant women were also enrolled from Araromi Traditional Birth Home (TBH); 78 primigravidae and 137 multigravidae). A total of 155 primigravidae and 322 multigravidae were enrolled. Anaemia was recorded in 365 (76.5%) of the enrolled women at one trimester of pregnancy or the other; Of which 125 were primigravidae and 240 multigravidae, constituting a prevalence of 80.6% and 74.5% anaemia among primigravidae and multigravidae respectively. Percentage anaemia was higher among women in the TBH (81.4%) than those in the hospitals (72.5%) Table 1, the difference is statistically significant  $P < 0.05$ .

Severe anaemia was recorded in 1.9% women, 71.4% of which were primigravidae. 211 (57.8%) of the anaemic women had moderate anaemia 64.9% were multigravidae and 35.1% primigravidae. Mild anaemia was recorded in 147(40.3%) women, 44(30%) primigravidae and 103(70%) were multigravidae. Moderate anaemia was predominant Table 2.

In the different trimesters of pregnancy, women in the TBH were observed to exhibit, a higher prevalence of anaemia than those receiving antenatal care in the hospitals. However, percentage anaemia was highest in the second and lowest in the first trimesters of pregnancy in the different antenatal centers ( $P > 0.05$ ). (Fig.1)

Tables 3 and 4 show the trend of anaemia among women that booked for antenatal care in different trimesters of pregnancy in the different antenatal centres. In the hospital, 10 women were anaemic at 1<sup>st</sup> trimester booking; only 5 of them were seen at delivery with 3(60%) still being anaemic, however, of the 102 anaemic cases recorded at 2<sup>nd</sup> trimester booking, 84 were seen at delivery with anaemia still recorded in 67(79.8%).

At the TBH, 4 of the anaemic women that booked in the 1<sup>st</sup> trimester were seen at delivery and all were still anaemic. Among the 2<sup>nd</sup> trimester booking, anaemia was still recorded in 40(81.6%) of the 49 women seen at delivery.

Table 1: Prevalence of anaemia in the different antenatal centers.

Ante-natal Centre	Parity	Number Examined	Number with anaemia	% Anaemia
TBH	Primigravidae	78	69	88.5
	Multigravidae	137	106	77.4
	Total	215	175	81.4
HOSPITALS	Primigravidae	77	56	72.7
	Multigravidae	185	134	72.4
	Total	262	190	72.5

Table 2: Distribution of Anemia types between gravid types.

Parity	Severe Anaemia	Moderate Anaemia	Mild Anaemia	Total
Primigravidae	5 (71.4)* (4)**	75(35.1)* (60)**	45(30)* (36)**	125
Multigravidae	2 (28.6)* (0.8)**	136 (64.9)* (56.7)**	102(70)* (42.5)**	240
Total	7(1.9)	211(57.8)	147(40.3)	365

\* % within anaemia type    \*\* % within gravid type

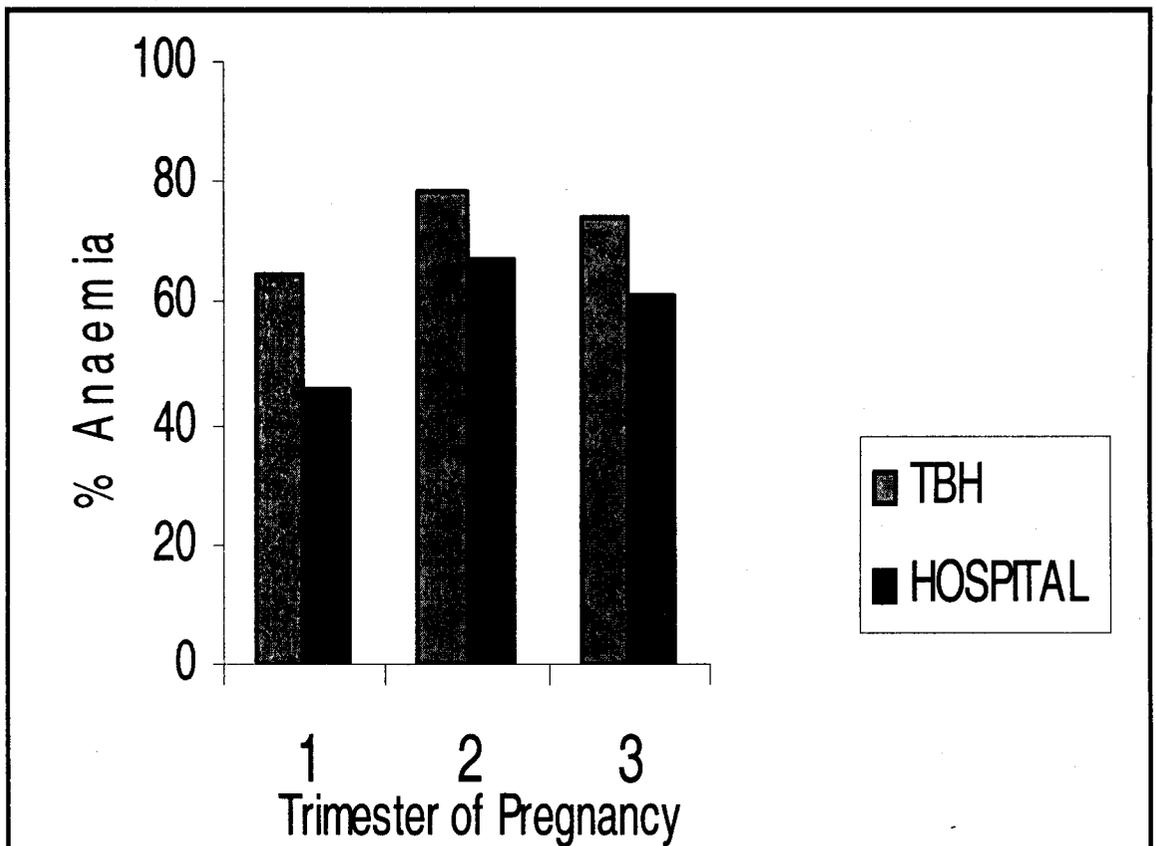


Fig.1: Distribution of Anaemia in different trimester of pregnancy in the different antenatal care centre

Table 3: Anaemia trend among women that booked for antenatal care in the 1<sup>st</sup> trimester of pregnancy.

ANTENATAL CENTRE	TRIMESTERS					
	1 <sup>ST</sup> TRIMESTER		2ND TRIMESTER		3RD TRIMESTER	
	1 <sup>ST</sup> Trimester Booking	% Anaemia at booking	Number present at ANC	% Anaemia	Number present at delivery	% Anaemia at delivery
TBH	17	11(64.7)	8(47.1)	5(62.5)	4(23.5)	4(100)
HOSPITAL	30	10(33.3)	18(60)	14(77.8)	14(46.6)	7(50)

ANC - Antenatal centre.

Table 4: Anaemia Prevalence trend among women that booked for antenatal care in the 2<sup>nd</sup> trimester of pregnancy

ANTENATAL CENTRE	TRIMESTERS			
	2ND TRIMESTER		3RD TRIMESTER	
	2nd Trimester Booking	% Anaemia at booking	Number present at delivery	% Anaemia At delivery
TBH	130	93(72.7)	66(50.8)	49(74.2)
HOSPITAL	173	102(60.6)	132(76.3)	71(53.8)

ANC- Antenatal centre.

Women in the 15 – 19 years age group constituted the highest percentage of anaemic cases (80%) followed by 25 –29 years age group (78.1%) compared to the other age groups, Table 5. All cases of severe anaemia were recorded in women less than 30 years of age. Anaemia were found to be more prevalent (78.4%) among carriers of sickle cell traits than those without such traits (75.4%) this difference is however not statistically significant, Table 5. Unemployed women were more anaemic (89%) while those in civil service were least anaemic (Table 5).

#### Antenatal care (ANC) bookings and anaemia.

A higher percentage of women registered for antenatal care in the 2<sup>nd</sup> trimester of pregnancy 303 (63.5%) as against 47(9.9%) and 127 (26.6%) registrations in the 1<sup>st</sup> and 3<sup>rd</sup> trimesters respectively. At ANC booking, 298 (62.5%) were already anaemic. 44.6% prevalence was recorded among those that registered in the 1<sup>st</sup> trimester, 64.4% and 64.6% in the 2<sup>nd</sup> and 3<sup>rd</sup> trimesters respectively  $P < 0.05$ . Anaemia at booking being highest among those that booked in the 3<sup>rd</sup> trimester; however prevalence of anaemia was generally higher among primigravidae (69.7%) than multigravidae (59.0%)  $P < 0.05$  except in the 1<sup>st</sup> trimester (Table 6).

Table 5: Prevalence of anaemia by age, occupation and genotype.

Characteristic	Anaemic n (%)	Non-Anaemic n(%)	Total
<b>AGE (in years)</b>			
15-19	24(80.0)	6(20.0)	30
20-24	95(76.6)	29(23.4)	124
25-29	6(20.0)	37(21.9)	169
30-34	72(74.2)	25(25.8)	97
35-39	37(74.0)	13(26.0)	50
40+	5(71.4)	2(28.6)	7
<b>OCCUPATION</b>			
Trading	191(78.0)	54(22.0)	245
Civil Service	67(63.8)	38(36.2)	105
Unemployed	41(89.1)	5(10.9)	46
Artisan	66(81.5)	15(18.5)	81
<b>GENOTYPE</b>			
Without sickle cell Trait	227(75.4)	74(24.6)	301
With sickle cell Trait	138(78.4)	38(21.6)	176

Table 6: Antenatal Bookings and Anaemia

	1st Trimester		2 <sup>nd</sup> Trimester		3 <sup>rd</sup> Trimester		Total	
	ANC Booking	% Anaemia	ANC Booking	% Anaemia	ANC Booking	% Anaemia	ANC Booking	% Anaemia
Primigravidae	23	10(43.5)	93	67(72.0)	39	31(79.5)	155	108(69.7)
Multigravidae	24	11(45.8)	210	128(61.0)	88	51(58.0)	322	190(59.0)
Total	47(9.8)	21(44.6)	303 (63.5)	195(64.4)	127(26.6)	82(64.6)	477	298(62.5)

Of the 7 cases of severe anaemia recorded in this study, 4 (all primigravidae) were already severely anaemic at booking, 3 of which booked in the 3<sup>rd</sup> trimester and 1 in the 2<sup>nd</sup> trimester of pregnancy. There was no record of severe anaemia at ANC booking among multigravidae. Generally there was a high level of absenteeism at the antenatal centers with women failing to keep ANC appointments especially at the TBH (Tables 3 & 4). Absence of symptoms of ill health and financial constrains were the major reasons given by these women for late booking and inconsistency in keeping ANC appointments.

## DISCUSSION

The 76.5% prevalence of anaemia recorded in this study is an indication that anaemia during pregnancy is a problem in Nigeria especially among primigravidae. The prevalence recorded in this study differs from 20.7% recorded by Ogbeide *et al* 1994. This variance may be attributable to the inclusion of women patronising the traditional birth home in this study who were found to have a higher prevalence of anaemia compared to those attending the hospital for antenatal care (Table 1). The reason for the difference recorded in prevalence between the hospital enrolled and TBH enrolled women may be attributed to the care given to the women in these centres which in the hospital included the use of folate and routine haematological examination to determine blood level and the immediate medical management of anaemic cases. This however differs from the care given at the TBH, which was mainly in the consumption of herbal preparation made from tree barks, leaves and roots

of unidentified plants. The severity of anaemia recorded in this study (1.9%) is lower than the 2.8% recorded by Ogbeide *et al* 1994.

This study confirms that severe anaemia is more common among primigravidae compared to multigravidae as also by Nagaraj, (2003). This is an indication that primigravidae are more at risk of maternal death as a result of severe anaemia. The peak of anaemia recorded in this study (2<sup>nd</sup> trimester) coincides with the period when haemodilution is at its peak. This may have contributed to the high prevalence recorded in the 2<sup>nd</sup> trimester, indicating that anaemia is further aggravated by haemodilution. However, this result is at variance with the report of WHO (1992) in which anaemia is said to be significantly higher in the 3<sup>rd</sup> trimester of pregnancy than the first two trimesters.

The prevalence of anaemia at delivery in both centers (Tables 3 & 4) show that there is no significant impact the antenatal care on the anaemia status among the pregnant women especially those at the TBH; this may be attributable to the low level of compliance to the use of prescribed medications especially among women in the hospital. This is an indication that these women do not necessarily overcome anaemia but only slip from one type of anaemia to another either as a result of haemodilution, infection, and dietary deficiencies or as a result of appropriate medical management of anaemic cases.

A higher prevalence (81.5%) of anaemia recorded among teenage mothers (15-19 years) conforms to the observation of Thangleela & Vijayalaskshmi (1994) and Ogbeide *et al* 1994. Antenatal booking were found to be late among these pregnant women as only 9.9% booked for ANC in the 1<sup>st</sup> trimester of pregnancy, this may have contributed to the high prevalence of anaemia recorded in this study since early antenatal care results in better monitoring and early detection of anaemia and its correction by appropriate supplementation (Mwenesi *et al* 1995). This may have also contributed to the high percentage of anaemia recorded at the time of antenatal booking.

The high level of anaemia recorded in this study among unemployed pregnant women may indicate that poverty borne out of unemployment may have contributed significantly to the high level of anaemia as the women cannot afford to book early for antenatal care, eat nourishing food and prevent possible infection. However, the patronage of TBH is not necessarily due to poverty but to cultural beliefs, which are being inculcated into these women by their mothers, and mothers-in-law who also patronized TBH for antenatal care in their own time.

In conclusion, this study has identified primigravidae as being more at risk of anaemia than multigravidae, so also are women patronizing TBHs, pregnant teenagers and women that book late for antenatal care. The control of anaemia in Nigeria will involve educating women on early ANC booking; the need to comply with the use of prescribed medications and the need to include women receiving antenatal care at TBHs in health interventions.

## REFERENCES

- Brabin, B. J. (1991): The Risks of Severity of Malaria in Pregnant Women. Applied field Research in malaria; Report No 1. World health Organization, Geneva
- De Mayer E. M. (1989): Preventing and Controlling Iron Deficiency Anaemia Through Primary Health Care. Geneva. WHO.
- Harrison. K.A. (1975). Maternal Mortality and Anaemia in Pregnancy. W. Afr. Med. J. 1975; 23: 27- 31
- Harrison K. A., Ibezlako P. A.(1973): Maternal Anaemia and Fetal Birth weight. J. Obst. Gynaecol. Br.Common wealth; 30: 798-804
- Mwenesi H, Harpham T. and Snow R. W.( 1995): Child malaria treatment practices

- among mothers in Kenya. *Social Sciences and Medicine*, 40, 1271-1277
- Ogbeide O, Wagbatsoma V, Orhue A (1994): Anaemia in Pregnancy East Africa Med. J. Oct; 71(110): 671-3
- Thangaleela, T. and Vijayalakshmi, P. (1994): Prevalence of Anaemia in Pregnancy. *The Indian Journal of Nutrition and Dietetic*; 31 (2) 26-29.
- Van den Broek. N. (1996): The Cytology of Anaemia in Pregnancy in West Africa *Tropical Doctor*, 26, 5-7.
- World Health Organization. (1994): Prevention and Management of Severe Anaemia in Pregnancy: report of a technical working group. Geneva, WHL/FHE/MSM/93.3
- World Health Organization (1989). Preventing and Controlling Iron Deficiency Anaemia through Primary Health Care. WHO Publications, 8, 1989.
- World Health Organization. (1992): The Prevalence of Anaemia in Women: A tabulation of available information, 2<sup>nd</sup> Ed; Geneva: WHO