Influence of Antenatal Care on the Haematocrit Value of Pregnant Nigerian Igbo Women

J.I. Brian-D Adinma[1], Joseph I Ikechebelu[1], U.N. Onyejimbe[1], G. Amilo[2] and Echendu Adinma[3].
Departments of [1]Obstetrics & Gynaecology, [2]Haematology and [3]Community Medicine, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State, Nigeria.

Abstract

Context: Antenatal care is generally believed to influence the outcome of any pregnancy. Haematocrit values are important in the assessment of anaemia in pregnancy. A good antenatal care is expected to be associated with good haematocrit values, prevent anaemia in pregnancy, and result in an overall good pregnancy outcome.
Objective: To determine the prevalence of anaemia in pregnancy and the effect of antenatal care, especially iron and folate supplementation on the blood build-up in pregnancy.
Study Design, Setting and Subjects: Single arm clinical study of 186 consecutive booked pregnant women with singleton fetuses attending antenatal clinic at Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi. The biosocial characteristics (age, parity and social class); gestational age at booking; and compliance with antenatal medication were obtained and analysed.
Results: At booking, 66(35.5%) of the women were anaemic, with haematocrit value being less than 30%. At the onset of labour, the number dropped to 32(17.2%) [$p < 0.05$] representing a 50% improvement in the proportion of anaemic women.
Conclusion: The results suggests that antenatal iron and folate supplementation and antenatal care in general promote blood build-up in the pregnant women, thereby reducing the incidence of anaemia before parturition.

Key Words: Antenatal Care, Haematinics, Iron, Folate, Anaemia. [Trop J Obstet Gynaecol, 2002, 19: 68-70]

Introduction

Anaemia is very common in many developing countries with a prevalence rate of 20-55% in pregnancy [1,2,3,4]. It is the commonest haematological complication of pregnancy and is associated with increased rates of maternal and perinatal mortality, premature birth and low birth weight [5,6,7]. In Nigeria, it is one of the five major causes of maternal deaths [8]. Predisposing factors to anaemia in pregnancy include young age, grandmultiparity, low socio-economic status, illiteracy and inter-pregnancy spacing of less than 1 year [2,3,4]. These factors are prevalent in Nigeria thereby making anaemia in pregnancy a persisting problem.

Antenatal care has been shown to improve the situation especially when nutritional education, social and behavioural services are provided along with medical care [2,9,10]. This study has therefore been undertaken among booked Nigerian antenatal women to determine the prevalence of anaemia in pregnancy and the effect of antenatal care, especially iron and folate supplementation, on blood build-up in pregnancy.

Subjects and Methods

This study was conducted among 186 consecutive booked singleton pregnant women attending antenatal care at the Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Nigeria between 1st January and 30th June 1998. Blood was taken for the estimation of the haematocrit at booking and once labour was diagnosed. Anti-malarial prophylaxis using 25mg pyrimethamine, iron (200mg ferrous sulphate given thrice daily) and folate (5mg folic acid given once a day) were all given to all the patients, in addition to nutritional education, during antenatal care.

Data on the social class, parity and age of the women, their gestational age at booking and compliance with antenatal medication were obtained and analysed. The social class of the women was determined using Olusanya's classification, which makes use of the educational status of the woman and her husband's occupation [11]. Analysis of the data was done using comparative percentages and the chi square test.

Results

The distribution by the biosocial characteristics of the women studied is shown in Table 1. The age/ parity distribution of the women was not remarkable

Correspondence: *Professor J. I .Brian-D. Adinma Department of Obstetrics & Gynaecology, N.A.U.T.H., P.M.B. 5025, Nnewi, Nigeria.*

Table 1

BioSocial Characteristics

	Number	*Percentage*
Age		
<20	2	1.1
20-24	45	35.5
30-34	49	26.3
35.39	20	10.8
40+	1	0.5
Unknown	3	1.6
Total	***186***	***100***
Parity		
0	72	38.7
1-4	103	55.4
5 and above	11	5.9
Total	***186***	***100***
Social Class		
1	1	0.5
2	13	7.0
3	32	17.2
4	103	55.4
5	37	19.9
Total	***186***	***100.0***

Majority of the women studied (75.3%) belonged to the 4th and 5th social classes.

Table 2 shows the distribution by the women's gestational age at booking. Majority of the women booked late – at the second trimester (100; 53.8%) and third trimester (68; 36.5%). Only 18 (9.7%) women booked at the first trimester. The mean gestational age at booking was 20 weeks. Compliance with antenatal drug therapy was total in 162 (87.1%) and partial in 24 (12.9%).

Table 2

Gestational Age at Booking

Gestational Age (weeks)	**Number**	**%**	**Trimester**
<13	18	9.7	9.7%-1st
14-17	21	11.3	
18-21	32	17.2	
22-26	47	25.3	53.8%-2nd
27-30	33	17.7	
31.34	15	8.1	
35-39	12	6.5	
40+	8	4.3	36.5%-3rd
Total	***186***	***100.0***	

The haematocrit values at booking and at the onset of labour are shown in Table 3. The prevalence of anaemia in pregnancy at booking was 35.5%, dropping to 17.2% at the onset of labour, a statistically significant reduction ($p<0.05$).

Table 3

Haematocrit Values at Booking and at the Onset of Labour

Haematocrit	**Booking N (%)**	**Labour N (%)**
Anaemic		
<19	0 (0.0)	0 (0.0)
19-26	19 (10.2)	10 (5.4)
27-30	47 (25.3)	22 (11.8)
Sub-Total	***66 (35.5)***	***32 (17.2)***
Non-Anaemic		
31-34	81 (43.5)	62 (33.3)
35 and above	39 (21.0)	92 (49.5)
Sub-Total	***120 (64.5)***	***154 (82.8)***
Grand Total	***186 (100.0)***	***186 (100.0)***

Discussion

This study was undertaken among women of relatively low social class, irrespective of their age and parity. Antenatal booking time was late with majority of the women booking in the 2nd and 3rd trimesters. Only 9.7% women booked in the 1st trimester and the mean gestational age at booking was 20 weeks. This late booking may perhaps account for the high incidence of anaemia found in the women at booking. The reference value used was an haematocrit value of 30% and below, which is the accepted cut-off for anaemia in the tropics[12,13]. Our result is similar to figures from most developing countries [1,2,3,4].

Normal physiological changes in pregnancy usually allow a slight fall in haematocrit value between the first and early third trimester of pregnancy, followed by a marginal rise later in the third trimester, although not usually getting to early pregnancy or pre-pregnancy level. Iron supplements are known to accentuate the rise in haematocrit value as pregnancy progresses [14,15].

Total compliance to antenatal drug therapy occurred in the overwhelming majority of the women and this may have contributed immensely towards the improvement in the haematocrit values of the pregnant women, which is shown by the significant reduction in the incidence of anaemia from 35.5% at booking to 17.2% at the onset of labour. This figure represents more than a 50% reduction.

Early booking will provide a time interval adequate enough to allow the full benefits of antenatal care to manifest and, together with full compliance with antenatal drug therapy, has been shown to offer immense benefit to the antenatal women [9,10]. Perhaps if more women had booked in the first trimester and all complied with antenatal clinic instructions and medication, a better haematocrit result is achievable. Antenatal care should therefore highlight early booking, regular attendance at antenatal clinic and total compliance with antenatal drug therapy to ensure an adequate blood cell build-up in the parturient before the onset of labour.

References

1. Iloabachie GC, Meniru GI. The increasing incidence of anaemia in pregnancy in Nigeria. *Orient J Med,* 1990; 2: 194-198.
2. Ogbeide O, Wagabtsoma V, Orhue A. Anaemia in pregnancy. *East Afr Med J,* 1994; 71: 671-673.
3. Diallo D, Tchernia G, Yvart J, Sidibe H, Kodio B, Diakite S. Role of iron deficiency in anaemia in pregnant women in Mali. *Rev Fr Gynecol Obstet,* 1995; 90(3): 142-147.
4. Mahfouz AA, El Said MM, Alakija W, Badawi IA, al Erian RA, Moneim MA. Anaemia among pregnant women in the Asir Region, Saudi Arabia; an epidemiologic study. *South East Asian J Trop Med Pub Health.* 1994; 25: 84-87.
5. Diallo MS, Diallo TS, Diallo FB, Diallo Y, Camara AY, Onivoguia Keita N, Diawo SA. Anaemia and pregnancy: epidemiologic, clinical and prognostic study. *Rev Fr Gynecol Obstet,* 1995; 90: 138-141.
6. Lops VR, Hunter LP, Dixon LR. Anaemia in pregnancy. *Am Fam Physician,* 1995; 51: 1189-1192.
7. Hirve SS, Canatra BR. Determinants of low birth weight: a community based prospective cohort study. *India Pediatr.* 1994; 31: 1221-1225.
8. Ogunniyi SO, Faleyimu BL. Trends in maternal deaths in Ilesha, Nigeria: 1977-1988. *W Afr J Med.* 1991; 10: 400-404.
9. Ekwempu CC. The influence of antenatal care on pregnancy outcome. *Trop J Obstet Gynaecol,* 1990; 9: 45-47.
10. Scholl TO, Hediger ML, Belsky DH. Prenatal care and maternal health during adolescent pregnancy a review and meta-analysis. *J Adolesc Health.* 1994; 15: 444-456.
11. Olusanya O. An original system of social classification for use in Nigeria and other developing countries. *Proceedings of the 24th Annual Conference of the West African College of Surgeons Freetown, Sierra Leone, January 1984.*
12. Chukwudebelu WO, Obi GO. Anaemia in pregnancy in Nigeria. *Nig Med J,* 1979; 12: 221-223.
13. Ogunbode O. Anaemia in pregnancy. *Trop J Obstet Gynaecol.* 1995, 12 (Suppl. 1): 19-25.
14. Taylor DJ, Lind T. Haematological changes during normal pregnancy: iron-induced macrocytosis. *Br J Obstet Gynaecol,* 1976; 83: 760-767.
15. Chanarin I, McFadyen IR, Kyle R. The physiological macrocytosis of pregnancy. *Br J Obstet Gynaecol,* 1977; 84: 504-508.