International Journal of Medicine and Biomedical Research
Volume 3 Issue 2 May – August 2014
www.ijmbr.com

Original Article

Anaemia among pregnant women at the booking clinic of a teaching hospital in south-western Nigeria

Okunade K.S*, Adegbesan-Omilabu M.A

Department of Obstetrics and Gynaecology, Lagos University Teaching Hospital, Lagos, Nigeria

*Corresponding author: kokokenny@yahoo.com, kehindeokunade@gmail.com

Received: 13.01.14; Accepted: 11.07.14; Published: 26.07.14

ABSTRACT

Background: Anaemia in pregnancy is a global public health challenge. It is the commonest medical disorder of pregnancy and a major cause of morbidity and mortality in most developing countries. **Aim:** This study aimed at assessing the prevalence of anaemia in pregnancy and to identify the confounding socio-demographic factors. **Methods:** This is a cross-sectional descriptive study designed to determine the socio-demographic characteristics and prevalence of anaemia among pregnant women at their booking antenatal visit in a teaching hospital in South-western Nigeria. Pregnant women were enrolled for the study by consecutive sampling method at their first antenatal visit and the packed cell volume (PCV) was used to assess level of anaemia. Socio-demographic information was obtained from the case records of the enrolled women. **Results:** One hundred and thirty-eight (27.6%) of the 500 enrolled women were found to be anaemic at the time of antenatal booking. Anaemia were more prevalent among primigravidae (33.9%) than the multigravidae (25.3%), although this difference was not statistically significant (P=0.079). Anaemia was higher among women with no formal education, those unemployed, single mothers and women with sickle cell traits. **Conclusion:** Anaemia in pregnancy remains a major health challenge in Nigeria with primigravidae identified as being those at most risk. So also are pregnant teenagers and women that book late for antenatal care (ANC). It is therefore important to educate women on early ANC booking and the need for compliance with prescribed medications in pregnancy.

Key Words: Anaemia, pregnancy, prevalence, antenatal care, primigravidae, multigravidae, PCV

INTRODUCTION

Anaemia in pregnancy is a global public health challenge.[1] It is a reduction in the haemoglobin concentration in the peripheral blood, below that adequate for age, sex and place of residence.[2] It is the commonest medical disorder of pregnancy, with significant implications for both mother and child.[1]

WHO defined anaemia in pregnancy as the presence of haemoglobin concentration of less than 11g/dl, and it estimates that more than half of pregnant women in the World are anaemic;[3] the prevalence may however be as high as 56 or 61% in developing countries.[4] In most parts of Africa, haemoglobin level of less than 10g/dl is used as indication of anaemia in pregnancy.[5, 6] This level has been justified on the basis of the work of Lawson, which showed that serious harm to the mother and fetus did not occur until the haemoglobin value was below 10g/dl or packed cell volume less than 30%.[7] It has however, been advised that the WHO definition should be applied for diagnosing anaemia in the developing countries.[8] Published rate of prevalence for anaemia in pregnancy in Africa is 35-36%[9] with higher incidence and severity occurring among primigravidae living in malaria endemic areas.[10]

In pregnancy, anaemia has a significant impact on the health of the foetus as well as that of the mother.[1] About 20% of maternal deaths in Africa have been attributed to anaemia[11] and babies whose mothers had anaemia in pregnancy during their first trimester in utero experienced higher rates of cardiovascular morbidities and mortalities in their adult life than babies whose mothers did not have anaemia.[12]

Women often become anaemic during pregnancy because the demand for iron and other vitamins is increased due to physiological burden of pregnancy.[13] The inability to meet the required level for these substances either as a result of dietary deficiencies or infection gives rise to anaemia.[14] The cause of anaemia in the developing country is usually multifactorial.[7] In Nigeria, the commonest causes are nutritional deficiency of iron and folate and haemolysis due to malaria infestation with the increase demands of pregnancy.[7] Women in their first pregnancies are also at higher risk of having anaemia in pregnancy due to their low immunity to malaria infestation.[15 16]

Anaemia is routinely screened for in pregnancy by estimating the haemoglobin concentration or packed cell volume at the beginning of pregnancy and again later in pregnancy, often at the start of the third trimester, and again at term.[13] The presence of low haemoglobin however does not reveal the cause of the anaemia.[4]

The knowledge of the prevalence of anaemia in pregnancy in Nigeria which is not adequately provided will enhance the control and management of anaemia in pregnancy. Therefore, this study will aim at providing the prevalence of anaemia in pregnancy and to identify the confounding socio-demographic factors among pregnant women at their booking clinic in the Lagos University Teaching Hospital, Lagos Nigeria.

METHODOLOGY

This is a cross-sectional descriptive study carried out among pregnant women at the antenatal booking clinic of a teaching hospital in south-western Nigeria over a period of 12 months.

The minimum sample size was calculated using the statistical formula by Fisher.[17] A total number of 500 non-smoking women with singleton gestation were selected by consecutive sampling method for the study. The case records of these women were retrieved from the medical records department of the hospital and relevant data extracted from them. This data include their booking haematological investigations results such as the haemoglobin genotype (using haemoglobin electrophoresis) and packed cell volume. Gestational age was estimated from the date of last menstruation and ultrasound scan.

Excluded from the study were women with multiple pregnancies, retroviral disease,

early pregnancy bleeding, history of diabetes or hypertension and coagulopathies.

The study was approved by the Ethical Committee of the institution. Ethical standards were strictly adhered to and informed consent was obtained from each patients.

Typing of anaemia in pregnancy was carried out using WHO criteria:[18] mild degree (27-33%), moderate (21-27%) and severe (< 21%).

Statistical analysis

Data were analysed using SPSS version 17.[19] Descriptive statistics were computed for all relevant data. Chi-square was used to test for the association between anaemia and pregnancy. P<0.05 was used as the significannce level.

RESULTS

Five hundred (500) women were enrolled in the study with the age range of 16 to 43 years and a mean age of 26.45±3.0 years. The majority of the enrolled women (36.2%) were within the age bracket of 25-29 years (table 1).

Table 2 showed that, a total of 133 primigravidae and 367 multigravidae were enrolled. The largest proportion of the women (49.6%) booked for antenatal care in the 2nd trimester while the smallest (18.6%) booked in the 3rd trimester. Antenatal bookings were found to be late among pregnant primigravidae as only 10.7% booked for antenatal care in the 1st trimester compared to 39.6% of multigravidae (*P*=0.033).

In table 3, women between 15 and 19 years had highest cases of anaemia (42.9%) while the lowest proportion (21.1%) were in those in the 20-24 years age group (*P*=0.001). Among the anaemic pregnant women, 45 were primigravidae and 93 multigravidae, constituting a prevalence of anaemia of 33.9% and 25.3% among primigravidae and multigravidae respectively. Although this difference was not statistically significant (*P*=0.079). Prevalence of anaemia among the single mothers was 42.9% and that of the married mothers 27.1% (*P*=0.041). Women without formal education had the highest prevalence of anaemia (42.9%) while the lowest prevalence was found among those with tertiary education (16.7%) (*P*=0.046). Unemployed women were more anaemic (37.0%) while those in civil service were the least anaemic (12.1%) (*P*=0.015). Anaemia was more prevalent (58.9%) in women with sickle cell traits than those without such traits (10.9%) (*P*=0.028). Anaemia was also recorded in 138 (27.6%) of the enrolled women at one trimester of pregnancy or the other with the highest prevalence seen among women who registered for antenatal care in the 2nd trimester of pregnancy (35.6%) as against 16.4% and 25.6% in the 1st and 3rd trimesters respectively. Moderate anaemia was predominant among the enrolled women as shown in table 4. Severe anaemia was recorded in 5 (3.5%) women, all (100.0%) of whom were primigravidae. Findings from the study revealed that all the cases of severe anaemia were in women less than 30 years.

Table 1: Age distribution of enrolled women

Age (in years)	Number	Percentage
15-19	33	6.7
20-24	136	27.2
25-29	181	36.2
30-34	98	19.5
35-39	45	9.0
≥40	7	1.4
Total	500	100.0

Mean = 26.45±3.0 years, range= 16-43 years

Table 2: Parity and period of antenatal booking

	1st trimester	2nd trimester	3rd trimester	Total	P-value
	N (%)	N (%)	N (%)		
PARITY					
Primigravidae	14 (10.7)	81 (60.7)	38 (28.6)	133	0.033
Multigravidae	145 (39.6)	167 (45.5)	55 (14.9)	367	
TOTAL	159 (31.8)	248 (49.6)	93 (18.6)	500	

Table 3: Distribution of anaemia by patients' characteristics

Characteristics	Anaemic	Non-anaemic	P-value
	N (%)	N (%)	
Age			
15-19	15 (42.9)	19 (57.1)	0.001
20-24	29 (21.1)	107 (78.9)	
25-29	54 (29.8)	127 (70.2)	
30-34	21 (22.0)	76 (78.0)	
35-39	17 (36.8)	28 (63.2)	
≥ 40	2 (33.3)	5 (66.7)	
Parity			
Primigravidae	45 (33.9)	88 (66.1)	0.079
Multigravidae	93 (25.3)	274 (74.7)	
Marital status			
Single	59 (42.9)	79 (57.1)	0.041
Married	79 (27.1)	283 (72.9)	
Educational status			
Uneducated	7 (42.9)	10 (57.1)	
Primary	69 (40.8)	100 (59.2)	0.046
Secondary	50 (20.6)	193 (79.4)	
Tertiary	12 (16.7)	59 (83.3)	
Occupation			
Unemployed	24 (37.0)	40 (63.0)	0.015
Trading	90 (34.8)	169 (65.2)	
Civil servant	19 (12.1)	138 (87.9)	
Artisan	5 (25.0)	15 (75.0)	
Genotype			
With sickle cell	102 (58.9)	72 (41.1)	
Without sickle cell	36 (10.9)	290 (89.1)	0.028
Trimester			
1st trimester	26 (16.4)	133 (83.6)	0.132
2nd trimester	88 (35.6)	160 (64.4)	
3rd trimester	24 (25.6)	69 (74.4)	
TOTAL	138 (27.6)	362 (72.4)	

Table 4: Distribution of anaemia based on severity

	Mild	Moderate	Severe
	N (%)	N (%)	N (%)
Age			
15-19	0 (0.0)	12 (83.3)	3 (16.7)
20-24	10 (33.3)	19 (66.7)	0 (0.0)
25-29	16 (29.6)	36 (66.7)	2 (4.7)
30-34	14 (66.7)	7 (33.3)	0 (0.0)
35-39	10 (57.1)	7 (42.9)	0 (0.0)
≥ 40	0 (0.0)	2 (100.0)	0 (0.0)
Parity			
Primigravidae	17 (33.3)	24 (28.6)	5 (100.0)
Multigravidae	33 (76.7)	59 (71.4)	0 (0.0)
TOTAL	50 (36.2)	83 (60.3)	5 (3.5)

DISCUSSION

The prevalence of anaemia reported in our study (27.6%) corresponded to finding reported by Ogbeide.[20] It is an indication that anaemia during pregnancy is reducing by the day when compared to other previous studies.[9, 13 and 21] This may be attributed to the early attendance to the antenatal booking clinic noticed among majority of the enrolled women.

This study confirmed that anaemia is more common among primigravidae compared to multigravidae as recorded by Anorlu[21] and Nagaraj.[22] This is likely due to the prevailing endemicity of malaria, a major cause of anaemia in pregnancy in this environment.[23] It is known to be more prevalent and severe among primigravidae.[13, 24] These high rates and severity are commonly found to be associated with adolescence and smoking[25] which is fast becoming a common and acceptable social habit in our environment just like the developed countries.

In this study, anaemia was found to be more prevalent in the 2nd trimester, which is at variance with previous reports in which anaemia is said to be significantly higher in the 3rd trimester of pregnancy compared to the first two trimesters[21,26] especially in pregnant women who just booked for antenatal care. Our findings therefore confirmed further that anaemia is aggravated by the physiological haemodilution of pregnancy which is more pronounced in the last two trimesters of pregnancy especially in multigravidae[27] who predominate in this study.

A higher prevalence (42.9%) of anaemia recorded among teenage mothers (15-19 years) confirms the observation by Idowu,[13] Ogbeide[20] and Thangaleela.[28] This may be due to the high proportion of these women who were found to book ANC much later on in pregnancy compared to only 10.7% who booked in the 1st trimester of pregnancy. Early antenatal care results in better monitoring and early detection of anaemia and its correction by appropriate supplementation.[29]

In our study, a high level of anaemia was reported among unemployed pregnant women (37.0%) in concordance with findings from other similar studies.[13, 21] This indicates that poverty as a result of unemployment significantly contributes to the prevalence of anaemia since these women may not afford early antenatal services, take appropriate supplementations, eat nourishing meals and prevent possible infection that can precipitate or worsen anaemia. This can also explain the higher prevalence recorded among single mothers and women without any formal education.

It was also revealed in our study as previously established that the older and

parous women are generally more enlightened and tend to utilise antenatal care and its benefits more often since we found no single case of severe anaemia among the multigravidae and those women above 30 years of age.[30]

Limitations to the study

The study is hospital based and the findings may not be representative of the general population. The findings and interpretations of the study were made mainly with the assumptions that all cases of anaemia occur during the pregnancy without taking into cognisance those women that had been anaemic prior to the onset of pregnancy.

CONCLUSION

Findings from the result shows that anaemia in pregnancy remains a major health problem in Nigeria particularly in primigravidae, pregnant teenagers and women who book late for antenatal care. Educating women on early antenatal care booking and compliance with the use of necessary medications such as iron and folate supplements cannot be overemphasized. It is also important to adopt strategies that allow women build up iron store before marriage and pregnancy. This can be achieved by routine screening for anaemia in adolescent girls from school age, encouraging iron rich foods, fortification of widely consumed food with iron, providing iron supplementation and annual screening of high risk individuals.

ACKNOWLEDGEMENTS

We appreciate the assistance given to us by all the medical record staff of the Antenatal clinic of Lagos University Teaching Hospital, LUTH, and to Professor S.A Omilabu for taking time to go through the drafted manuscript.

REFERENCES

1. Milman N, Anaemia still a major health problem in many parts of the world. Ann Hematol 2011;90:369–377.
2. Ekem I, Obed SA. Anaemia in pregnacy. In: Kwawukume, EY, Emuveyan EE (Ed). Comprehensive Obstetrics for the Tropics. Accra: Ashante and Hittscher Printing Press Limited 2002:297-302.
3. WHO Global Database on Anemia, 2008
4. World Health Organization: Prevention and Management of Severe Anaemia in Pregnancy: report of a technical working group. Geneva, 1994, WHL/FHE/MSM/93.3
5. Abudu OO. Anaemia in pregnancy. In: Agboola A (Ed). Textbook of Obstetrics and Gynaecology for medical students. University Services Education Publ 1988; Vol. II: 72-78.
6. Harrison KA. Anaemia in pregnancy. In: Lawson J, Harrison KA, Bergstrom S (Ed). Maternity care in developing countries. RCOG PRESS 2001:113-128.
7. Lawson RJ. Anaemia in pregnancy. In: Lawson JB, Steward (Ed). Obstetrics and Gynaecology in Tropics and developing countries. Edward Arnold Publ. 1983:73-79.
8. Ogunbode O. Anaemia in pregnacy. In: Okonofua F, Odunsi K (Ed). Contemporary Obstetrics and Gynaecology for Developing countries. Women's Health and Action Research Centre 2003:515-529.
9. Graham W. Scandal of the century commentary. Practical Journal of Obstetrics 1998;105:376-376.
10. Matteli A, Donato F, Shein A. Malaria and anaemia in pregnant women in Urban Zanzbar Tanzania. Ann Trop Med Parasitol 1994;88:475-83.
11. Harrison KA. Maternal mortality and anaemia in pregnancy. W Afr Med J 1975;23:27-31.
12. Brabin BJ. The risks of severity of malaria in pregnant women. Applied field research in malaria; Report No 1 World Health Organization, Geneva 1991.
13. Idowu OA, Mafiana CF, Sotiloye D. Anaemia in pregnancy: A survey of pregnant women in Abeokuta, Nigeria. Afr Health Sci 2005;5:295–299.
14. Van den Broek N. The cytology of anaemia in pregnancy in West Africa Tropical Doctor 1996;26:5-7.
15. Guidalti RJ. Anaemia in Pregnancy in Developing countries. Br J Obst Gynaecol 2000;207:437-438.
16. Van den Broek NR, Rogerson SJ, Mbanugo CG, Kambala B, White SA, Molyneux ME. Anaemia in pregnancy in southern Malawi: Prevalence and risk factors. Br J Obst Gynaecol 2000;107:445-451.
17. Bernard and Rouser (Harvard University). Fundamentals of Biostatistics, International Students Edition (3rd edition). Boston, PWS-KENT 1990;348-352.
18. World Health Organization: Preventing and controlling iron deficiency anaemia through Primary Health Care. WHO Publications, 8, 1989.
19. The SPSS System for Windows [computer program]. Version 17. Cary, NC: SPSS Institute Inc;2008.

20. Ogbeide O, Wagbatsoma V, Orhue A. Anaemia in pregnancy. East Africa Med J 1994;71:671-3.
21. Anorlu RI, Oluwole AA, Abudu OO. Sociodemographic factors in anaemia in pregnancy at booking in Lagos, Nigeria. Journal of Obstet Gynaecol 2006;26:773-776.
22. Nagaraj K. Risk factors of severe anaemia among, pregnant women attending a government maternity hospital in Tirupato, India – A multivariate analysis. J Hum Ecol 2003;14:237-240.
23. Fleming AF. Tropical Obstetrics and Gynaecology/ Anaemia in pregnancy in Tropical Africa. Trans R Soc Trop Med Hyg 1989;83:441-448.
24. Miaffo C, Florent S, Bocar K, Albrecht J, Olaf M. Malaria and anaemia prevention in pregnant women of rural Burkina Faso. BMC Pregnancy and Child Birth 2004;4:18.
25. Delpisheh A, Attia E, Drammond S, Brabin BJ. Adolescent smoking in pregnancy and birth outcomes. Eur J Public Health 2006;16:168-72.
26. World Health Organization: The prevalence of anaemia in women: A tabulation of available information, 2nd Ed; Geneva: WHO 1992.
27. Hacker N, Moore J. Essentials of Obstetrics and Gynecology. 2nd edition. W.B. Saunders Company, Pennsylvania; 1992.
28. Thangaleela T, Vijayalakshmi P. Prevalence of anaemia in pregnancy. Indian Journal of Nutrition and Dietetic 1994;31:26–29.
29. Mwenesi H, Harpham T. and Snow RW. Child malaria treatment practices among mothers in Kenya. Social Sciences and Medicine 1995;40:1271-1277.
30. Harrison K. Maternal Mortality in Nigeria: the real issues. African Journal of Reproductive Health 1997;1:7-13.

doi: http://dx.doi.org/10.14194/ijmbr.3.2.7
How to cite this article: Okunade K.S and Adegbesan-Omilabu M.A. Anaemia among pregnant women at the booking clinic of a teaching hospital in south-western Nigeria. Int J Med Biomed Res 2014;3(2):114-120

Conflict of Interest: None declared