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Prevalence And Pattern of Anaemia Amongst Pregnant Females Attending To Anc Clinics In A Tertiary Care Hospital In Lucknow.

KEYWORDS: Anaemia, Pregnant woman, Antenatal care

Dr Mandira Sharma
MD (Pathology) Associate Professor, Department of Pathology, Career Institute of Medical Sciences and Hospital, Lucknow.

Dr Meeta Pathak
MD (Pathology) Associate Professor, Department of Pathology, Career Institute of Medical Sciences and Hospital, Lucknow.

ABSTRACT *Background: Anaemia is arguably the biggest female health problems in developing countries. The world is still to fully fathom the extent and gravity of the problem. This problem aggravates particularly during and after pregnancies due to increased nutritional demands and inadequate iron supply and is therefore more widespread in parous segments of female population. Objectives: To determine the prevalence of anaemia, associated socio demographic factors and red cell morphological pattern among pregnant women during booking at Career Institute of Medical Sciences and Hospital, Lucknow. Material and Methods: A cross-sectional analytical study of 200 women at the booking clinic over a 16-week period. The packed cell volume and red cell morphology of each pregnant woman were determined. Their bio data, obstetric and medical histories, and results of other routine investigations were obtained with questionnaires and analyzed with SPSS Package version 17.0. Results: The mean packed cell volume was 31.8% ±3.2 and 54.5% of the women were anaemic. The commonest blood picture was microcytic hypochromia and normocytic hypochromia suggesting iron deficiency anaemia. Anaemia was significantly and independently related to a history of fever in the index pregnancy, HIV positive status, and low social class. Conclusion: Women need to be economically empowered and every pregnant woman should be encouraged to obtain antenatal care, where haematinics supplementation can be given and appropriate investigations and treatment of causes of fever and management of HIV can be instituted.*

Introduction:
The importance of good haemoglobin concentration during pregnancy for both the woman and the growing foetus cannot be overemphasized. Being a driving force for oxygen for the mother and foetus, a reduction below acceptable levels can be detrimental to both [1]. Traditionally, anaemia is defined as a decrease in the ability of blood to carry oxygen due to a decrease in the total number of erythrocytes (each having a normal quantity of haemoglobin), a diminished concentration of haemoglobin per erythrocyte, or a combination of both [2]. A haemoglobin concentration below 11.0gldl or packed cell volume (PCV) of less than 33.0% is regarded as anaemia during pregnancy by theWorld Health Organization (WHO) [3].

The WHO estimates that anaemia affects over half of the pregnant women in developing countries [4]. Recent estimates in the developing countries including Nigeria put the prevalence at 60.0% in pregnancy and about 7.0% of the women are said to be severely anaemic [1, 4, 5]. The high prevalence and the aetiological factors responsible for anaemia in pregnancy are multiple and their relative contributions are said to vary by geographical area and by season [6]. Anaemia in pregnancy may be relative or absolute [7]. Relative anaemia is a normal physiological phenomenon that occurs in pregnancy due to larger increase in plasma volume (approximately 45.0% in singleton and 50.0–60.0% in twin gestation) than in red cell mass, resulting in the well-known physiological anaemia of pregnancy. Absolute anaemia involves a true decrease in red cell mass, involving increased red cell destruction as in haemoglobinopathy, malaria, and bacterial infection like urinary tract infection; increased red cell loss as in bleeding; or decreased red cell production as in nutritional deficiency or chronic disease [8, 9]. Predisposing factors include young age, grand multiparity, low socioeconomic status, illiteracy, ignorance, and short interpregnancy intervals [10]. Infection with hookworm and intestinal helminthes causes gastrointestinal blood loss resulting in depletion of the iron stores and consequently impaired erythropoiesis. They also lead to mal-absorption and inhibition of appetite, thereby worsening micronutrients deficiency and maternal anaemia.

Many of the predisposing factors to anaemia in pregnancy are controllable and may lead to women becoming pregnant with anaemia; thus there is need for basic prevalence statistics to create awareness on the magnitude of anaemia in pregnancy in our environment and also to formulate strategies to reduce its adverse health consequences in order to improve maternal health and reduce poor perinatal outcome. Information on the prevalence would also be useful for the managers of health institutions and for district, provincial, and national maternal, child, and women's health programme development [11].

Aims and objectives:
This study aims to determine the prevalence of anaemia and the red cell morphological pattern among pregnant women attending ANC clinic.

Material and methods:
This cross-sectional study was carried out in the antenatal clinic of Career Institute of Medical Sciences and Hospital, Lucknow. Data were collected over a period of sixteen weeks (July–October, 2015); during that time 200 pregnant women were recruited at their first antenatal visit. The women were interviewed with copies of a structured questionnaire by trained registrars in the Department of Obstetrics and Gynaecology to ensure as much as possible that the necessary information was obtained. The following information was recorded: maternal age, parity, gestational age, last child birth, last menstrual period, level of education and occupation of the women and their husband, history of fever in the index pregnancy, presence of any

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chronic illnesses, and history of vaginal bleeding in present pregnancy.

Packed cell volume and red cell morphology were done for the women at the time of recruitment. From each of the recruited woman, 5 mls of venous blood was collected from the antecubital vein using plastic disposable syringes into sample bottles containing ethylene diamine-tetra acetic acid (EDTA).

Women that were diagnosed to be anaemic (packed cell volume of less than 33%) were counselled on the need for further investigations and were referred to their obstetricians for further management. All the women were given a prescription of haematinics.

Data were analysed using the statistical package for social sciences (SPSS package) version 17.0. Descriptive statistics were computed for all relevant variables. Comparative analysis was done with the chi-square test and level of significance was set at □ < 0.05. Association between anaemia and some risk factors in pregnancy was tested using chi-square and multivariate analysis of risk factors was done.

Results:
One hundred and eighteen women (59%) were anaemic, majority (65.0%) of the anaemic women had mild anaemia, and 34.5% had moderate anaemia, while 0.5% had severe anaemia. One hundred and seventy-nine women (44.8%) had normocytosis, 33.0% had microcytosis, and 80.5% had hypochromic red cells.

Characteristics	Anaemic (n)	Non anaemic (n)	χ^2	p-value
Age in years				
<20	02	01	2.78	0.67
20-24	20	15		
25-29	58	35		
30-34	30	25		
35-39	07	05		
≥40	01	01		
Marital status				
Single	01	01	2.9	0.23
Married	115	80		
Separated	02	01		
Parity				
0	48	40	10.5	0.05
1	32	22		
2	20	18		
3	10	01		
4	08	01		
Educational levels				
Primary	10	05	16.5	<0.001
Secondary	30	22		
Tertiary	78	55		
Social class				
1	15	07	18.5	<0.001
2	20	15		
3	32	30		
4	48	26		
5	03	04		

Table 1: : Association between sociodemographic characteristics of pregnant women at booking and anaemia in the study population.

Characteristics	Anaemic (n)	Non anaemic (n)	χ^2	p-value
GA (trimester)				
First	20	15	2.1	0.65
Second	60	35		
Third	30	25		
Unknown	08	07		
Inter pregnancy interval				
<2years	78	60	23.5	0.17
≥2years	40	22		
Fever				
Yes	90	70	18.1	<0.001
No	28	22		
Bleeding index pregnancy				
Yes	105	59	6.6	0.001
No	13	23		
Genotype				
AA	100	70	4.2	0.23
AS	18	12		
HIV				
Yes	08	07	13.5	<0.001
No	110	75		

Table 2: Association between some clinical characteristics of the women and anaemia.

There was an inverse relationship between the prevalence of anaemia and the level of education of the women (□2 = 16.5, □ <0.001). The proportion of anaemic women increased with decrease in the level of education. Anaemia was significantly more common in women of lower social class (□2 = 18.5, □<0.001) (Table 1). On univariate analysis, there was significant association between history of fever in the index pregnancy, vaginal bleeding in the index pregnancy, and HIV status of the women with anaemia. However, there was no significant association between the gestational age (trimester) at booking and anaemia (□2 = 2.1, □ = 0.65) (Table 2).

Discussion:
The diagnosis of anaemia during booking among pregnant women is essential as it affords one the opportunity to institute interventions to prevent the complication of anaemia especially considering the prevalent high maternal and perinatal morbidity and mortality associated with anaemia in pregnancy in the tropics [1]. Data from the literature in developing countries have reported prevalence of anaemia in pregnancy that ranged from 35.0 to 75.0% [5]. The prevalence of anaemia in this study was 59.0%.

The high prevalence of anaemia in this study is probably related to the low socioeconomic status of the women, which may have impact on their nutritional status and health seeking behavior [3, 8]. Most of the women in this study had anaemia of mild to moderate severity with only 0.3% being severely anaemic. The mean PCV in this study was 31.8%. By WHO standard, this is anaemia. The number of pregnant women with anaemia decreased with increase in maternal age.

It is generally believed that anaemia in pregnancy increases with rising parity, due to repeated drain on iron stores [10]. However, this study like those of other researchers [4, 8] has revealed an inverse relationship between parity and anaemia as the percentage of anaemic pregnant women decreased as parity increased. The possible reasons for this finding include increased awareness of the value of drugs and good diet with increasing parity as well as increased interaction with other pregnant women at the clinic [4, 8]. The effect of these would to some extent neutralize those of rising parity. Another possible reason is that women of higher parity booked for ANC earlier in gestation, when iron requirements are still low compared to women of lower parity who booked later in pregnancy when iron requirements are much higher, thus predisposing them to anaemia.

Normocytic hypochromia and microcytic hypochromia

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blood picture, the most common morphological types of anaemia found in this study, are characteristic of iron deficiency anaemia. In developing countries like ours, anaemia in pregnancy is commonly believed to result from nutritional deficiencies especially iron. The gold standard for making a diagnosis of iron deficiency anaemia examination of stained bone marrow aspirate for haemosiderin is invasive. Serum ferritin measurement on the other hand is costly and largely not available in most centers in the country and is elevated in the presence of inflammation which is not uncommon in our environment.

Limitations of study:
As it is a single centre study with a relatively small study population, results cannot be generalised to the entire population.

Conclusion:
This study has revealed that anaemia in pregnancy is still highly prevalent in our environment. The study has also revealed that the most important risk factors for anaemia in pregnancy in this center are socioeconomic status of women, fever, and HIV seropositive status. The commonest red cell blood pictures among the anaemic clients were microcytic hypochromia and normocytic hypochromia, which are indicative of iron deficiency anaemia. Hence, public health campaigns to create awareness about the importance of early booking for antenatal care are recommended. This will provide opportunity for early detection and treatment of anaemia, as well as the timely institution of preventive measures like haematinics and antimalarials.

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