STUDY OF SPECTRUM OF ANAEMIA IN PREGNANT INDIAN WOMEN

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Abstract
*Anaemia in pregnancy is most common clinical problem contributing to increased maternal and foetal morbidity. This study was carried out to determine haemoglobin concentration, blood indices, folate and cobalamine deficiency and associated risk factors in the anaemic pregnant females WHO reported first time, second and third trimester for antenatal check-up in the department of gynecology and obstetrics outpatient department of tertiary care hospital at Karamsad.**Method:**51 cases of pregnant women with hemoglobin less than 11gm% were included. All the hematological parameters including RDW were obtained through analyzer. Peripheral smear stained with field stain was evaluated for morphology. Reticulocyte count done by supra-vital stain. Serum ferritin was done for confirmation of Iron deficiency anemia. Vitamin B12 was done for confirmation of Megaloblastic anaemia.**Result:** Out of 51 anaemic pregnant women, the majority 30(58.8%) demonstrated moderate anaemia. While mild, severe and very severe anaemia was seen 9(17.6), 09(17.6%), and 03(5.8%) respectively according to ICMR classification of anemia Here abnormality in Vitamin B12 and S.Ferritin were recorded 36(70.5%) and 31(60.7%).**Conclusion:** In conclusion, with increasing severity, MCV and serum ferritin decreases and it is sensitive enough todiagnose Iron Deficiency Anemia.Anaemia can be easily diagnosed and responds quickly to intervention and treatment that is both inexpensive and readily available.*

Keywords: Anaemia In Pregnancy, Hemoglobin Levels, Serum Ferritin, Vitamin B12,

Introduction
Anaemia is not a specific subsistence but an indication of an underlying pathologic process or disease. Where anaemia is defined as extreme lower of haemoglobin level or circulating red blood cells is most common hematological disorder during pregnancy. Inadequate intake or absorption of iron is associated with risk of maternal mortality and morbidity, premature delivery, and low birth weight. Thus, routine screening tests for anaemia are recommended in pregnant women.[1, 2]

Anaemia refers as most common nutritional deficiency disorder globally. WHO estimated that about one third of the global population (over 2 billion) are anaemic where 65-75% are there in India.[3,4] A haemoglobin concentration of < 11.0 g/dl is commonly taken as indicator of anaemia in pregnancy. The normal physiological change of an increase in plasma volume causes haemodilution in a pregnant woman.[5]

The National Institute for Health and Clinical Excellence (NICE) advices that women should offered screening for anaemia at booking and at 28 weeks gestation. Here that define anaemia at booking as an Hb level < 11.0 g/dl at booking; haemodilution will result in further drops during pregnancy and subsequent reduction in oxygen- carrying capacity. At 28 weeks the diagnostic level for anaemia where Hb level of<10.5 g/dl.[6]

Anaemia may be categorized by the underlying causative mechanism, red blood Cell morphology, or by whether they are inherited or acquired. A mechanistic approach Categorizes anaemia caused by decreased red blood cell production, increased red blood Cell destruction, and blood loss. Decreased production may result from a lack of Nutrients, such as iron, vitamin B12, or folate.[7]

Iron deficiency anaemia accounts for 85% of all cases of anaemia that areidentified and is characterized by low mean cell volume. It is usually caused by nutritional deficiency or low iron stores resulting from previous pregnancy or previous heavy menstrual blood loss.[8]

Measurement of ferritin levels has the highest sensitivity and specificity for diagnosing iron deficiency in anemic patients.[9]levels of less than 10-15 micrograms/L confirm iron-deficiency anaemia. [10]

Megaloblastic anaemia, the most common cause of macrocytic anaemia, is due to a deficiency of vitamin B12, folic acid (or both). Deficiency in folate and/or vitamin B12 can be due either to inadequate intake or insufficient absorption. Folate deficiency normally does not produce neurological symptoms, while B12 deficiency does. [11]

Material &Methodology
The study comprised the pregnant women attending the obstetrics and gynecology department including OPD of Shree Krishna Hospital, Karamsad.A Total study subjects was 51 anemic pregnant women, attending to gynecology and obstetrics outpatient department of Shree Krishna Hoapital, Karamsad, were studied. Anaemic pregnant women was selected, whose haemoglobin level below 11g/dl. This study was approved by Institutional Ethics Committee (IEC) of H.M.Patel Centre for Medical Care and Education. Both oral and written consent was obtained from each participant.

After obtaining consent a detailed history including patient age, weight, clinical history and other laboratory investigations was noted. 4 ml of blood is collected from the patient using sterile aseptic methods in an EDTA and plain vacutainer. From EDTA sample hematological tests performed likeHemoglobin concentration (Hb), total leucocyte count (TLC), differencial count (DLC) platelet count, blood indices, hematocrit (HCT) which was carried out on automated hematology analyser SYSMEX KX-21. Differential leukocyte count done by manual peripheral blood smear Preparation which were subjected to field staining were examining at least 100 cells as morphology of red blood cells observed.And reticulocyte count done by supra-vital stain. From plain sample serum was separated by centrifugation at 1000 G for 5 min. Biochemical investigation like Vitamin B12 and serum Ferritin was estimated by abbott AXSYM system. The data was presented in tabular form and expressed in percentages.

Result
This study was carried out on a total (n=51) cases of anaemic pregnant women attending to gynecology and obstetrics outpatient department of Shree Krishna hospital, Karamsad. A rural based tertiary care hospital in Anand district.

Table 1 shows that distribution of anemic cases in pregnancy in the age group >20 years (n=2, 3.9%)were anemic. In the age group 20-25 years (n=26, 50.9%) were anemic. In the age group 26-30 years (n=17, 33.3%) were anemic. In age group 31-35 years (n=5,9.8%) were anaemic. Where in age of 36-40 years only (n=1, 1.9%) found. Maximum numbers of cases were found in the age group of 20-30 years 45 (88%).

Table: 1 Distribution according to the age

Age in years	Number of patients	Percentages
>20	02	3.9
20-25	26	50.9
26-30	17	33.3
31-35	05	9.8
36-40	01	1.9
Total	51	100

Table-2 shows that severity of anaemia (n=51) were as follow.(n=9, 17.6%) are mild anaemic, (n=30,58.8 %) are moderate anaemic, (n=9, 17.6 %) are severe anaemic, and (n=3, 5.8%) are very severe anaemic. The degrees of severity are classified on the basis of WHO classification.

Table: 2 Severity of anaemia

Grade of anaemia	Number of patients	Percentages
Severe anaemia	09	17.6
Moderate anaemia	30	58.8
Mild anaemia	09	17.6
Very severe	03	5.8
Total	100	100%

The result indicated that 10 cases belongs to the category of 1st trimester, 20 cases belongs to the category of 2nd trimester, whereas 21 belongs to the category of 3rd trimester.

It was found that out of 51 cases, 4 has weight between 35-40 kg, 7 has between 41-45 kg, 12 has between 46-50 kg, 13 has between 51-55kg, 9 has between 56-60 kg, 2 has between 61-65 kg, 4 has between 66-70kg. Overall maximum numbers of cases had weight between 40-60 kg.While the ration ofRed blood cells count seen normal within 15 women, While 29 has below normal range and higher count seen in only in 1 pregnant anaemic woman.

Table-3 depicts that out of 51 cases, MCV are normal in 14 pregnant women, while(n=37,72.5%) are below normal range. MCH are normal in 15 pregnant women, while (n=36,70.5) are below normal range, MCHC are normal in 21 pregnant women while (n=30,58.8%) has below normal range.

Table: 3 Distribution according to the level of blood indices, Vitamin B12 & Serum Ferritin

Total cases=51	Normal	Below normal range	% of abnormality
MCV	14	37	72.5
MCH	15	36	70.5
MCHC	21	30	58.8
Vitamin B12	15	36	70.5
Serum Ferritin	20	31	60.7

Here, Vitamin B12 is normal in 15 women while (n=36, 70.5%) has below normal range, and Serum ferritin are normal in 20 women while (n=31,60.7%) has below normal range.

Discussion
The prevalence of anemia in pregnancy in developing countries is still high. Nearly half the pregnant women in the world are estimated to be anemic, 52% compared to 23% in industrialized countries. [12]

This study provides information on the value of several simple and cheap laboratory tests used singly or in combination.
In the present study age wise distribution of anaemic pregnant women, Maximum numbers of cases were found in the age group of 20-30 years accounting for 45 (88%). 2 were at age >20, the age between 20-25 were of 26 women, age between 26-30 were of 17 women, age between 31-35 were of 5 women, and age between 36-40 are of 1 women. The present study correlate closely to observations by DrShardaPatraetal[13],The mean age of the women with severe anaemia was 27.5 ± 4.5 years. The majority were of age between 20 and 24. Half of the study population had been younger than 18 when they married. Dr. Swati Singh et al[14], has similar study was reported, Out of 80 cases of anaemic pregnant women, 03 (3.75%) were < 19 years of age, 50 (62.5%) of 20-25 years, 19 (23.75%) 26-30 years and 8 (10%) belonged to 31-35 years of age.

The present study correlate closely to observations by Ahmad N[15],(76.7%), Pai PM[16](73%), Haniff J et al[12](57.8%) shown in table 4.

Table: 4 Age Distribution ofAnemic Cases in Comparison with OtherStudies

Authors	20-25yrs	26-30yrs	31-35yrs	36-40yrs
PaiPM,1975	48%	14%	13%	25%
HaniffJ,2007	53.6%	37.9%	4.2%	4.3%
AhmadN,2011	30.9%	20.9%	2.36%	45.84%
PresentStudy	50.9%	33.3%	9.8%	1.9%

In the present study it was observed that, 10 cases belongs to the category of 1st trimester, 20 cases belongs to the category of 2nd trimester, whereas 21 belongs to the category of 3rd trimester. Which is correlate with study of by Kapilet al[17],10 (19.7%) cases belonging to the 1st trimester, 20 (39.2%) cases were in 2 trimester, whereas 21 (41.1%) in the category of 3 trimester.

In this study, the severity of anaemia (n=51) were as follow. (n=9, 17.6%) are mild anaemic, (n=30, 58.8 %) are moderate anaemic, (n=9, 17.6 %) are severe anaemic, and (n=3, 5.8%) are very severe anaemic. The degrees of severity are classified on the basis of WHO classification.Kapilet al[17]found that 78.8% pregnant women were suffering from anaemia. The percentages of mild, moderate and severe anaemia in pregnant women were 29%, 48%, and 2% respectively in their study.

In present study, Vitamin B12 is normal in 15 women while (n=36, 70.5%) has below normal range, and Serum ferritin are normal in 20 women while (n=31, 60.7%) has below normal range.Pai PM[16] reported that vitamin B12 is lower 60.24%, while Casal MNG[18] (61.34%) and Metz J [19]had (80%). For Serum Ferritin, this study correlateswithZebenVD[20](90%),ThoradeniyaT [21](74.2%),MastAE[15] (73%),AlperBS[22](54%).

Conclusion
The haematological profile of the pregnant woman has an impact on the outcome of the pregnancy. Automated hematology analyzer was simple, economical, cheap, reliable instrument used during this study period.To conclude, it can be said that the haematological parameters are easily performed and when properly interpreted along with their cut off values, as suggested in this study, it can be aid in early recognition of type of anaemia during pregnancy.

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