# Is Anemia in Pregnant Women an Emerging Crisis? A Study Carried at a Southern Coast Public Teaching Hospital


## ABSTRACT

**Background:** Our study mainly focused on prevalence rate of Anemia in pregnant women in southern coastal region population of India.

**Objectives:** 1]]To know the prevalence of Anemia, 2]type of hernia, 3]patient's clinical presentation for the hernia,4]Prophylactic antibiotics treatment, 5]Post operative complications.

**Material and methods:** Our study was conducted in Government Medical College and Hospital, Nagapattinam, Tamil Nadu.

Study duration: 6Months(December 2023- May 2024).

**Result :**In our study age group of 24-28 were predominantly affected and majority of study population had moderate anemia. The literacy rate was very low. Hypothyroidism (23.6%), Pregnancy induced hypertension (20.8%) were the most common comorbidities. In our study, 100% patients were conducted with CBC test and 75.4% were conducted peripheral smear test. In our study, Oligohydraminos (23.6%), Previous Lscs (13.1%) were the most common risk factors. Vitamin B complex, Ferrous sulphate, vitamin C, Calcium carbonate are the most prescribed nutrinal supplement Cefotaxime was the highly prescribed antibiotic.

**Conclusion :** High prevalence rate in this rural area indicates that there is a major health crisis among pregnant women, good health education, good nutritional diet should be implemented to decrease the prevalence rate among the population, preventing anemia during pregnancy is definitely a challenge but effort should be made to reduce maternal and feral risk


## INTRODUCTION :

### IRON DEFICIENCY

Worldwide, the contribution of anemia to maternal and fetal morbidity and mortality is well recognized; in some parts of Africa, more than 75 percent of pregnant women are anemic, and there is a significant cor- relation between maternal mortality and anemia. It has been suggested that iron deficiency may protect against placental malaria, but epidemio- logic studies have not been conducted to verify this supposition. In preg- nant women, anemia is defined as a hemoglobin concentration of less than 11 g/dL in the first and third trimesters, and less than 10.5 g/dL in the sec- ond trimester. In both the industrialized and the developing world, iron-deficiency anemia (Chap. 43) is the commonest cause of anemia. On average approximately 1 g of iron is required during a normal pregnancy; 300 mg of iron are required by the fetus and the placenta, whereas expansion of the maternal red cell mass requires 500 mg, and 200 mg are lost via excretion. These requirements exceed the iron stor- age of most young women and in general cannot be met by the diet. Even in cases of maternal iron deficiency, the fetal requirements for iron are always met; thus there is no correlation between the hemoglobin of the fetus and that of the mother.

Iron-deficiency anemia during the first two trimesters of preg- nancy is associated with a twofold increased risk for preterm delivery and a threefold increased risk for delivery of a low-birth-weight infant. However, a large randomized trial comparing routine iron prophy- laxis in pregnancy versus iron supplementation given only as needed demonstrated no significant differences in adverse maternal or fetal outcomes. As in nonpregnant individuals, iron-deficiency anemia can generally be diagnosed using laboratory values such as serum ferritin, and transferrin saturation levels. Pica, the ingestion of non- nutritive substances, is said to be more common among iron-deficient pregnant women than among other populations with iron deficiency. Ice, clay or dirt, and starch are the most frequent substances ingested; to some extent, however, the choice appears to be cultural and much more widespread than most practitioners realize.

## FOLATE AND VITAMIN B12 DEFICIENCY

Apart from iron deficiency, folate deficiency is the next most frequent nutritional deficiency leading to anemia in pregnant women. In the United States, where foodstuffs are supplemented with folate and the level of awareness of the association between folate deficiency and neural tube defects in the embryo is high, folate deficiency is relatively unusual. Folate requirements in pregnancy are roughly twice those in the non-pregnant state (800 mcg/day vs. 400 mcg/day), and if diet is insufficient may exceed the body‘s stores of folate (5–10 mg) relatively quickly. Anemia related to folate deficiency most often presents in the third trimester and responds to folate supplementation with reticulocy-tosis within 24 to 72 hours. Reports of severe pancytopenia and even states resembling the HELLP (Hemolysis, elevated liver enzymes, and low platelet count) syndrome as a result of folate deficiency in preg- nancy have appeared in the literature. Despite these case reports, a review of 21 trials measuring the effect of folate supplementation on biochemical and hematologic parameters and pregnancy outcome

(excluding neural tube defects) revealed improvement in low hemoglo- bin level in late pregnancy, but had no measurable effect on any substan- tive measures of pregnancy outcome.

Vitamin B12 (cobalamin) deficiency during pregnancy is rare, in part because deficiency of this vitamin leads to infertility. Serum cobal- amin levels are known to fall during pregnancy. A shift from the serum to tissue stores is proposed to account for the drop in serum B12 lev- els. However, values less than 180 pmol/L usually are not observed in healthy women, and these low-normal levels are not accompanied by increased levels of methylmalonic acid, an indicator of cellular defi- ciency of cobalamin.

## RED CELL APLASIA

A rare cause of anemia in pregnancy is pure red cell aplasia. In pure red cell aplasia, anemia tends to occur early in pregnancy and often resolves within weeks of delivery. The pathogenic mechanism leading to red cell aplasia does not appear to be transferred to the fetus, but does tend to recur in subsequent pregnancies.Conservative treatment, if feasible, is probably best until delivery; successful prenatal treatments with glucocorticoids and with intravenous immunoglobulin have been reported.

**MATERIAL AND METHODOLOGY:**

A Retrospective study was conducted among the patient who were diagnosed for anaemia and admitted in the government medical college and hospital, Nagapattinam for over a period of 6 months, from December 2023 - May 2024

**SAMPLE SIZE :**

The study population of 110 patient data were collected and analysed for the study

**INCLUSION CRITERIA :**

The patients who were 18-40 years of age with complete medical history and medication responding



**RESULT :**

**Table-1 incidence of anaemic pregnant woman by age group**

| Age Group | No. Of Patients | Percentage |
|---|---|---|
| BELOW > 18 | 05 | 4.54 |
| 19-23 | 26 | 23.63 |
| 24-28 | 47 | 42.72 |
| 29-34 | 26 | 23.63 |
| 35< ABOVE | 06 | 5.45 |

In the total anaemic study population the patients demographics were classified according to their age group which shows a result, age group of 24-28 were majorly pretentious with the rate of 47 which is 42.72% of total study population followed by 19-23 and 29-34 both the study population consist 26 patients which is 23.63% and followed by 35-40 consist 6 patients which is 5.45% of study population and patients with the age group of 18 was 5 patients which is 4.54% of study population (Table-1)

**Table-2 severity of anaemia-1**

| Category | No. Of Patients | Percentage |
|---|---|---|
| Mild ( 10.0 – 11.0 g/dL) | 32 | 29.0 |
| Moderate ( 7.0 – 9.9 g/dL) | 71 | 64.54 |
| Severe ( 4.0 – 6.9 g/dL) | 7 | 6.36 |

In our study populationtotal of 71 patients suffered moderate anaemia(7.0-9.9g/dl) which is 64.54% of patients followed by mild anaemia which is 32 (29.0%) patients and rearmost 7 (6.36%) suffered severe anaemia (Table-2).

**Table-3 Obstetrics variables**

| Gravida | | No. Of Patients | Percentage |
|---|---|---|---|
| PRIMI ( 01 ) | | 61 | 55.45 |
| MULTI | 02 | 32 | 29 |
| | < 02 | 17 | 15.45 |

In our study, 82.72 % of pregnant womens carried with first pregnancy. Where 55.45% of pregnancy were primigravida, (29%) with second pregnancy and (15.45%) with third and above (Table-3).

**Table-4 Obstetrics variables**

| Abortion | No. Of Patients | Percentage |
|---|---|---|
| A 0 | 91 | 82.72 |

**Table-4 Obstetrics variables**

| | | |
|---|---|---|
| A 1 | 19 | 17.28 |

Among (n=110), Abortion of first baby is found to be (17.28%) whereas remaining (82.72%) carried with first pregnancy (Table-4).

**Table-5 Literacy status**

| Literacy Status | No. Of Patients | Percentage |
|---|---|---|
| Literate | 31 | 28.2 |
| Illiterate | 79 | 71.8 |

The literacy rate in our study population is very low with the rate 31(28.2%) as literate and 79(71.8%) are illiterate.(Table-5)

**Table-6 various comorbidities**

| Comorbidities | No. Of Patients | Percentage |
|---|---|---|
| Hypothyroidsm | 17 | 23.6 |
| Pregnancy Induced Hypertension | 15 | 20.8 |
| Gestational DM | 13 | 18.0 |
| Lower respiratory tract infection | 07 | 9.7 |
| Urinary Tract Infection | 06 | 8.3 |

**Table-6 various comorbidities**

| | | |
|---|---|---|
| Hyperthyroidsm | 06 | 8.3 |
| Upper Respiratory Infection | 05 | 6.9 |
| Pulmonary Tuberculosis | 01 | 1.3 |
| Bronchial Asthma | 01 | 1.3 |
| Acute Gastritis | 01 | 1.3 |

In our stydy, hypothyroidism (23.6%), and Pregnancy induced hypertension (20.8%) were the most prevalent comorbidities followed by Gestational Diabetes mellitus (18%) and pulmonary tuberculosis, bronchial asthma, acute gastritis are the least with each 1 patient 1.3% (Table-6)



**Table-7 Diagnostic Test**

| Test Conducted | No. Of Patients | Percentage |
|---|---|---|
| CBC | 110 | 100 |
| **Peripheral Smear Test** | | |
| MicrolyticHypochronic Anemia | 45 | 40.9 |
| Dimorphic Anemia | 38 | 34.5 |

In our study, 100% patients were conducted with CBC test and 75.4% were conducted peripheral smear test (Table-7)

**Table-8 Risk factors**

| Risk Factors | No. Of Patients | Percentage |
|---|---|---|
| Oligohydraminos | 18 | 23.6 |
| Previous Lscs | 10 | 13.1 |
| Preterm Labour | 08 | 10.5 |
| Pedal Edema | 08 | 10.5 |
| Elderly Primigravida | 05 | 6.5 |
| Elderly Pregnancy | 04 | 5.2 |
| Teenage Pregnancy | 04 | 5.2 |
| Thrombotic Micro Angiopathy | 03 | 3.9 |

**Table-8 Risk factors**

| | | |
|---|---|---|
| Rh – Ve | 03 | 3.9 |
| Under Weight | 03 | 3.9 |
| Polyhydraminos | 02 | 2.6 |
| Refractory Anemia | 01 | 1.3 |

The patients in our study population had Oligohydraminos 18(23.6%), Previous Lscs 10(13.1%), Preterm labour 08(10.5%), and Pedal edema 08(10.5%) are the most common risk factors during pregnancy followed by Under weight 03(3.9%), polyhydraminos 02(2.6%), refractory anemia 01(1.3%) are the risk factor faced by least number of patients.(Table-8)

**Table-9 Pharmacological Approach**

| Drugs | No. Of Patients | Percentage |
|---|---|---|
| Vitamin B Complex | 110 | 100 |
| Ferrous Sulphate | 110 | 100 |
| Vitamin C | 110 | 100 |
| Calcium Carbonate | 110 | 100 |
| PRBC Transfusion | 76 | 69.1 |
| Vitamin B12 | 53 | 48.1 |
| Dexamethasone | 33 | 30.0 |
| Folic Acid | 29 | 26.3 |
| Iron Sucrose | 28 | 25.4 |

**Table-9 Pharmacological Approach**

| | | |
|---|---|---|
| L-arginine | 15 | 13.6 |
| Amino Acid | 12 | 10.9 |

Our study population(110) were all prescribed with vitamin B complex, ferrous sulphate, vitamin C, calcium carbonate with different course of interval for administration followed by 76(69.1%) patient had PRBC blood transfusion at the end Folic acid 29(26.3%), Iron sucrose 28(25.4%), L-arginine 15(13.6%), Amino acid 12(10.9%) the least prescribed treatment treating anaemia (Table-9).



**Table-10 Antibiotic prescribed**

| Drug Name | No. Of Patients | Percentage |
|---|---|---|
| Cefotaxime | 18 | 16.3 |
| Azithromycin | 12 | 10.9 |
| Amoxycillin | 05 | 4.5 |
| Ceftriaxone | 08 | 7.2 |
| Cefperoxazone + Sulbactam | 03 | 2.7 |
| Piperacillin +Tazobactum | 03 | 2.7 |
| Ciprofloxacin | 03 | 2.7 |

Our study results that cefotaxime was the top most prescribed antibiotics to the patients with the rate of 18(16.3%), followed by Azithromycin 12(10.9%) and Amoxicillin 05(4.5%). The

combinational antibiotics which are cefaparaxazone + Sulbactum and Piperacillin + Tazobactum and at last ciprofloxacin which were all with the rate of 03(2.7%).

## DISCUSSION

Anemia is becoming a serious burden during pregnancy. Our study found that pregnant women between the ages of 24-28 were the most affected, with 97 (82.72%) patients carrying their first pregnancy. Severity of anemia is found to be higher in moderate conditions 71[64.54%], mild conditions 32[29%], and minimum in severe conditions 7[6.36%]. Very severe is found to be NIL. The most common co-morbidities were hypothyroidism (23.6%), pregnancy-induced hypertension (20.8%), and gestational diabetes mellitus (18.0%), while the least common co-morbidities were asthma (1.3%), extra PTB (1.3%), and acute gastritis (1.3%). CBC is regarded as a critical diagnostic test for anemia, and it is performed in 100% of (n=110) cases. Peripheral smear, a confirmatory test to determine the type of anemia, is performed on (n=83) patients, with results of Microlytichypochronic anemia (40.9%) and Dimorphic anemia (34.5%). Oligohydramnios (23.6%), Prev. LSCS (13.1%), Preterm labor (10.5%), and pedal edema (10.5%) are the most observed risk factors during anemia in pregnant women and The least frequently seen risk factors are oliguria (1.3%), placenta previa (1.3%), fetal bradycardia (1.3%), and psychiatric disease.The total subject population was treated with vitamin B complex, ferrous sulphate, vitamin C (ascorbic acid), and calcium supplements, followed by PRBC transfusion 76 (69.1%), vitamin B12 (cyanocobalamin) 53 (48.1%), Dexamethasone 33 (30%), Folic acid 29(26.3%), Iron Sucrose 28(25.4%), L-arginine 15(13.6), and Amino acid 12(10.9%). When prescribing dexamethasone during pregnancy, especially in the first trimester or with long-term use, consider the risk of orofacial cleft based on conflicting human data; the risk of low birth weight and premature birth based on limited human data; the risk of fetal adrenal suppression based on the drug's mechanism of action; and the possibility of gestational diabetes mellitus.Antibiotics prescribed for co-morbidities can potentially induce complications or risks; for example, azithromycin may cause spontaneous abortion, and amoxicillin may cause teratogenicity. Ceftriaxone has a major adverse response of haemolytic anemia and is used for anemic pregnant individuals where risk should be weighed against alternative antibiotics. Use of ceftriaxone during pregnancy may increase the risk of spontaneous abortion. So, while prescribing antibiotics, the potential detrimental effects during pregnancy should be considered and prescribed.

## CONCLUSION

High prevalence rate in this rural area indicates that there is a major health crisis among pregnant women, good health education, good nutritional diet should be implemented to decrease the prevalence rate among the population, preventing anemia during pregnancy is definitely a challenge but effort should be made to reduce maternal and feral risk. Public health program should be conducted in rural region to educate the people.

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