## Original Research Paper

## INCIDENCE AND OUTCOME OF ANEMIA IN PREGNANT WOMEN-A STUDY CONDUCTED IN A TERTIARY CARE HOSPITAL

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**ABSTRACT**

Anaemia is a decrease in the total amount of red blood cells (RBCs) or hemoglobin in the blood, or a lowered ability of the blood to carry oxygen[1]. When anaemia comes on slowly, the symptoms are often vague and may include feeling tired, weakness, shortness of breath or a poor ability to exercise. Our aim was to evaluate the correlation between maternal anemia and perinatal outcome and assess the maternal, fetal outcomes in pregnancy complicated anaemia. This prospective study was conducted in the Department of Obstetrics & Gynaecology  at a tertiary care hospital , Om Sai hospital and Research Institute, Hyderabad, India., from December 2017 to March 2018 (4 months study). Out of the total 86 deliveries during this period, only 40 patients met the inclusion criteria. The patients were interviewed when admitted for delivery and data recorded on pre designed questionnaire. Hemoglobin estimation was done at the time of hospital admission for delivery by photometric method. Patients background information included education, husband's occupation, monthly family income, urban/rural dwelling were taken into account. Out of the total 40 patients examined, 20 were non anaemic and 20 were anaemic. 2 patients went absconding before postnatal counselling could be given. Table 1 shows socioeconomic and demographic details of 2 groups. Diarrheal diseases of new born can be prevented to a large extent by exclusive breast feeding. Both these in turn help in preventing infection, by improving immunity during early childhood. Hence knowledge regarding breast feeding is critical to be assessed in imparting correct knowledge, moreover  patient counselling plays an important role in reducing adverse pregnancy outcomes associated with anaemia.

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## 1. INTRODUCTION

**Anemia** is a condition that develops when your blood lacks enough healthy red blood cells or hemoglobin. Anemia that comes on quickly often has greater symptoms, which may include confusion, feeling like one is going to pass out, loss of consciousness, or increased thirst. Anemia must be significant before a person becomes noticeably pale. Additional symptoms may occur depending on the underlying cause[1-2].

The three main types of anemia are due to blood loss, decreased red blood cell production, and increased red blood cell breakdown. Causes of blood loss include trauma and gastrointestinal bleeding, including iron deficiency, a lack of vitamin B12, thalassemia, and a number of neoplasms of the bone marrow. Causes of increased breakdown include a number of genetic conditions such as sickle cell anemia, infections like malaria, and certain autoimmune diseases. It can also be classified based on the size of red blood cells and amount of hemoglobin in each cell. If the cells are small, it is microcytic anemia. If they are large, it is macrocytic anaemia while if they are normal sized, it is normocytic anemia.Diagnosis in men is based on a hemoglobin of less than 130 to 140 g/L (13 to 14 g/dL), while in women, it must be less than 120 to 130 g/L (12 to 13 g/dL).Further testing is then required to determine the cause[1-2].

Certain groups of individuals, such as pregnant women, benefit from the use of  iron pills for prevention of Anaemia. Dietary supplementation, without determining the specific cause, is not recommended. The use

of blood transfusions is typically based on a person's signs and symptoms. In those without symptoms, they are not recommended unless hemoglobin levels are less than 60 to 80 g/L (6 to 8 g/dL). These recommendations may also apply to some people with acute bleeding.[1] Erythropoiesis-stimulating medications are only recommended in those with severe anemia.[3-4]

Anemia is the most common blood disorder, affecting about a third of the global population. Iron-deficiency anemia affects nearly 1 billion people[5]. In 2013, anemia due to iron deficiency resulted in about 183,000 deaths – down from 213,000 deaths in 1990. It is more common in women than men,[9] during pregnancy, and in children and the elderly. Anemia increases costs of medical care and lowers a person's productivity through a decreased ability to work[6].

## 2.    MATERIAL AND METHODS

This prospective study was conducted in the Department of OBG at Om Sai hospital and Research Institute, Hyderabad, India from December 2017 to March 2018 (9  months study) and out of  86 deliveries only 40 patients met the inclusion criteria.

The inclusion criteria were pregnancy with no surgical or medical co morbidities, no obstetric complications like placenta previa, or vasa previa, no h/o preterm delivery or cervical incompetance. Total number of patients were divided according to Hb%. Hb% < 11gm% were considered to be anaemic and with Hb% >11gm% were non anaemic.

The patients were interviewed when admitted for delivery and data recorded on pre designed questionnaire. Haemoglobin estimation was done at the time of hospital admission for delivery by photometric method. Patients background information included education, husband's occupation, monthly family income, urban/rural dwelling. Patients' BMI, obstetric score, number of antenatal visits she has had, if iron tablets taken regularly were all noted. Perinatal parameters recorded were birth weight, gestational age at delivery, perinatal outcome (live birth, intrauterine foetal demise (IUD) and intrauterine growth restriction (IUGR).

Gestational age was calculated from the first day of the last menstrual period. IUGR was defined as the fetal growth (measured by ultrasound) less than the 10th centile for that gestational age. Preterm delivery was defined as delivery after 24 and before 37 completed weeks of gestation. IUD was defined as fetus without cardiac activity, confirmed on ultrasound, at any time after 24 weeks of pregnancy. APGAR score of the neonate at 1 and 5 min were recorded. Mother was reviewed after 1 month regarding the health status of the neonate, perinatal mortality and its cause. PNM was defined as the death of a fetus after 24 weeks of pregnancy until 1 week after delivery.

The patient is asked about her knowledge regarding indigenous iron rich food, any special nutritionally enriched post-partum diet plan, also regarding her knowledge of breastfeeding in the questionnaire. On postnatal day 1, both groups of patients have counseled bedside regarding healthy diet plan, need for regular intake of iron and calcium tablets till breastfeeding continues. Patients are also told about the benefits of exclusive breastfeeding for six months, different techniques and methods to improve lactation.

**Statistical analysis**

Descriptive and inferential statistical analysis was carried out in the present study. Student-t-test (two-tailed, independent) has been used to find the significance of study parameters on a continuous scale between two groups (intergroup analysis) on metric parameters. Chi-square/ Fisher exact test has been used to find the significance of study parameters on a categorical scale between two or more groups.

## 3.    RESULTS & DISCUSSION

Out of the total 40 patients examined, 20 were non anemic and 20 were anemic. 2 patients went absconding before postnatal counselling could be given. Table 1 shows socioeconomic and demographic details of 2 groups.

Mean age and BMI for anemic and non-anemic women were comparable. Mean age was 24.16±4.61 years and 25.05±5.16 years respectively for each group and BMI 20.89±1.79 and 20.98±1.85 respectively for each group. Most women in both groups were urban dwellers. The majority of the women (70.1% in the anemic group and 73.5% in the non-anemic group) had attended school up to grade 10. Most of the patients in both the groups were housewives (35.9%) followed by women of agricultural background (26.9%). Majority of patients in both groups were multigravidas. There was a significant difference in household monthly income and husband's employment in both groups. 51.5% of anemic pts income range was between 5000-10000 rupees and 64.9% nonanemic patients income range was more than 10000 rupees. 42.8% of nonanemic patient's husbands[7-10].

Though the majority of patients in both groups had taken >3 antenatal checkups, there was a significant number of were in category 5/6 according to the occupation, and in case of anemic group 39.7% were category 3/4. Anemic women (15.7%) who had no ANC checkups at all. Around 50% of women in both groups had taken iron tablets irregularly during pregnancy; around 15.7% and 7.2% of anemic and non-anemic patients respectively did not take iron tablets at all during pregnancy, though this difference was significant. 52% of anemic women and 62% of non-anemic women responded positively regarding knowledge of a specific diet plan for ante and post-partum period and the difference was statistically significant. Only 16.2% in anemic and 22.6 %. in other group[11-13].
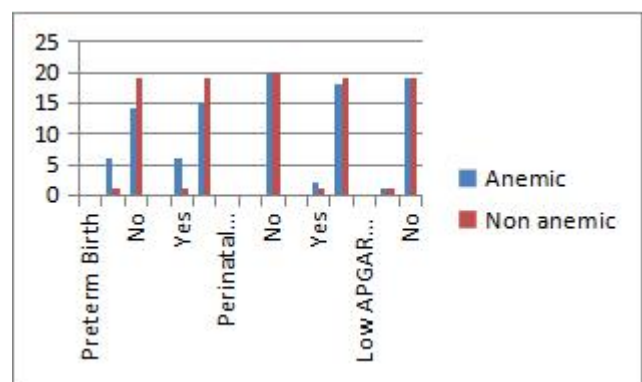
There were two observations in terms of birth weight, low birth weights was significantly associated with anemic group, also few babies with increased birth weight >3.5 kg was seen in anemic group as depicted in Table 3.

**Table-1  Comparison of socioeconomic & demographic**

| Meternal information | Anaemic group(20) | Non anemic group(20) | p value |
|---|---|---|---|
| Age (Mean ±SD) | 20.86±1.63 | 19.3±1.78 | 0.010 |
| BMI(Mean ± SD) | 21.63±1.36 | 21.36±1.65 | 0.599 |
| **Educational status** | | | |
| Uupto 10th | 14(68.1) | 14(71.5) | |
| More than 10th | 6(31.9) | 6(28.5) | 0.31 |
| **Employment status** | | | |
| House wife | 7(35.3) | 7(36.5) | |
| Labour worker | 3(17.2) | 5(22.6) | |
| Agriculture back ground | 6(27.5) | 5(26.4) | |
| Shop worker | 4(20.1) | 3(14.4) | 0.123 |
| **Husbands employment** | | | |
| Unemployment | 1(2.5) | (0)0.5 | |
| Unskilled | 2(10.3) | 2(8.2) | |
| Semiskilled | 5(26) | 3(14.4) | |
| Shop owner | 8(39.7) | 7(34.1) | <0.001 |
| Professional | 4(21.6) | 8(37.5) | |
| **Monthly income** | | | |
| less than Rs 5000 | 3(13.2) | 2(7.7) | |
| Rs 5000-10000 | 10(51.5) | 5(27.4) | <0.001 |
| More than 10000 | 7(35.3) | 13(64.9) | |
| **Region of residence** | | | |
| Rural | 9(43.6) | 8(38) | |
| Urban | 11(56.45) | 12(62) | 0.214 |
| **Obstetric Score** | | | |
| Primis | 7(37.3) | 10(47.6) | 0.034 |
| Multigravida | 13(62.7) | 10(52.4) | |
| **Antenatal Check up** | | | |
| None | 0 | 1(5.8) | 0.004 |
| less than 3 | 6(32.4) | 7( 32.7) | |
| more than 3 | 10(52) | 12(60.6) | |
| **Iron tablets consumed during pregnancy** | | | |
| No | 3(15.7) | 1(7.2) | 0.012 |
| Irregular | 10(50) | 10(51.9) | |
| Regular | 6(31.9) | 8(40.9) | |
| **Diet Plan** | | | |
| Yes | 10( 52) | 12(62) | |
| No | 10(48) | 8(38) | 0.039 |
| **Brest feeding awa** | | | |
| Yes | 3(16.2) | 5(22.6) | |
| No | 17(83.8) | 15(77.4) | 0.100 |

**Table 2: Perinatal outcome of 2 groups.**

| Variable | Anemic (20) | Non anemic(20) | P value |
|---|---|---|---|
| Preterm Birth Yes No | 6(27.9) 14(72.1) | 1(7.2) 19(92.8) | <0.001 |
| Low Birth Weight Yes No | 6(27.5) 15(72.6) | 1(5.8) 19(94.2) | 0.002 |
| Perinatal Mortality Yes No | 0(2) 20(98) | 0(0.5) 20(95.5) | 0.170 |
| Low APGAR at 1 Min Yes No | 2(10.3) 18(89.7) | 1(5.3) 19(94.7) | 0.05 |
| Low APGAR at 5 min Yes No | 1(6.4) 19(93.6) | 1(4.8) 19(95.2) | 0.48 |

**FIG 1 Perinatal outcome of 2 groups.**



**Table 3: Birth weight distribution in both groups.**

| Birth Weight(kg) | Anemic | Non Anemic |
|---|---|---|
| <2.5 | 5(27.5) | 2(10.2) |
| 2.5-3.5 | 14(72.6) | 18(86.3) |
| >3.5 | 1(1) | 0 |
| Total | 20 | 20 |
| Mean ± SD | 2.72±0.61 | 2.71±0.24 |

**FIG 2 Birth weight distribution in both groups.**
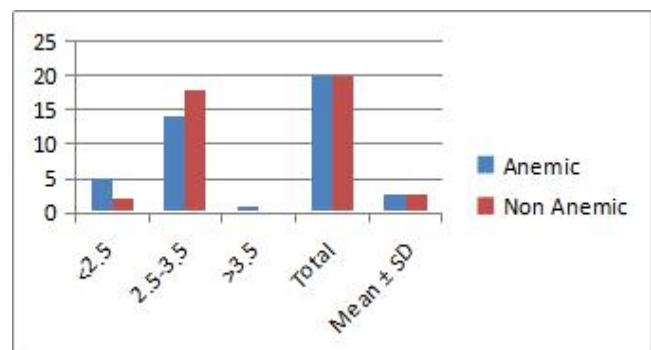
There were 25 IUGR babies (12.3%) in anemic and 12 IUGR babies (5.8%) in the non-anemic group and difference in non-anemic patients knew the correct technique and duration of breastfeeding. Table 2 outlines the analysis of perinatal outcomes in the two groups. There is a statistically significant increased risk of preterm delivery among anemic women, 27.9% preterm birth in the anemic group and 7.2% in the non-anemic group was significant. There 5 perinatal mortality cases, 4 occurred in the anemic group and 1 in the non-anemic group and the difference was not significant. Low APGAR score at 1 min were seen in 21 and 11 babies of the anemic and non-anemic group respectively. At 5 min 13 and 10 babies of the anemic and non-anemic group had low APGAR score respectively. It was not a significant difference. Post-partum counseling was given to all patients on the 1st post-partum day except one in each group who left the hospital immediately after delivery[14].

## 4.CONCLUSION

A positive correlation between maternal anemia and prematurity, LBW babies, Low APGAR score and PNM was found. A most common cause of PNM was prematurity. The knowledge regarding nutritious diet and breastfeeding was slightly low among anemic mothers. This compounds the problem and starts the vicious cycle of anemic malnourished babies and mothers. The improvements achieved in the developed world are due largely to more effective diagnosis and treatment. Postnatal counseling was given to all the patients regarding regular iron intake and iron-rich food to prevent further deterioration of body iron status. Women have to be made aware of the iron content in a balanced diet, especially in green leafy vegetables and regular iron supplementation during the antepartum and post-partum period. Iron stores of the infant are built up during third trimester and lactation[15]. Diarrheal diseases of a newborn can be prevented to a large extent by exclusive breastfeeding. Both these in turn help in preventing infection, by improving immunity during early childhood. Hence knowledge regarding breastfeeding is critical to be assessed and correct knowledge imparted. Counseling plays an important role in reducing adverse pregnancy outcomes associated with anemia[16].

## 5.CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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