

MATERNAL AND FETAL OUTCOME IN ANEMIA COMPLICATING PREGNANCY – A PROSPECTIVE STUDY

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Received : 05/12/2023
Received in revised form : 09/01/2024
Accepted : 25/01/2024

Keywords:
Anemia, fetal morbidity, maternal morbidity, gravida, prevalence.

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DOI: 10.47009/jamp.2024.6.1.121

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (1); 607-610



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Abstract

Background: Anaemia during pregnancy is a major problem in developing nations like India, where the prevalence of the condition is 87%. The objective is to find association between maternal anaemia and neonatal complications and to find long term morbidity and mortality of babies born to anaemic mothers. **Materials and Methods:** This study was performed at the NRI Medical College, Chinnakakani. This is a prospective study which included 100 cases, studied over a period of six months from February 2023 to August 2023. Anemia was identified based on Indian Council of Medical Research (ICMR). The data regarding demographic details, gestational age, obstetric history, Haemoglobin monitoring, medications maternal and fetal outcome were collected in a pre-structured closed ended questionnaire. Data collection was done after ethical permission from institutional ethical committee and informed consent of clients. All subjects were analyzed in full details and hemoglobin estimation done during 1st visit, at 30th week and 36th week of gestation. Blood cultures were done in all the babies admitted to NICU for various reasons. Epi-info7 was used for analysis. **Result:** A total of 100 Pregnant women were enrolled for the study and were followed. Some women encountered maternal and fetal morbidity. The most common age group was found to be 21-25 years comprising 40% of study participants, followed by <20 years. Eighty-two percent has period of gestation of <37 weeks. Mostly parity was 1 in 50% of study participants. the most common maternal outcome was preterm labour in 18% of study participants followed by puerperial sepsis in 10% of cases but it was not statistically significant ($p>0.05$). Among the fetal outcome 20% were having low birth weight who belonged to moderate anemia mothers with 18% showed fetal growth restriction. Eleven percent showed admittance in NICU after birth but it was not significant ($p>0.05$). **Conclusion:** Proper antenatal care is the basic requirement for prevention, early detection and treatment of anaemia.

INTRODUCTION

Among all nutritional disorders worldwide, anemia is critical.^[1] More than half of all pregnant women worldwide suffer from anemia.^[2] Anaemia during pregnancy is a major problem in developing nations like India, where the prevalence of the condition is 87%.^[3]

Anemia is the most major public health problem. The global prevalence of anemia during pregnancy is estimated by world health organization (WHO) to be 47.4%.^[1] India is one of the high prevalence of anemia in pregnant women every second women is anemic.^[2] Anemia is the second most common cause

of maternal death in India and contributing to about 80% of the maternal deaths caused by anemia in south east Asia.^[3-5]

Anemia is also a risk factor for intra-uterine growth retardation leading on to poor neonatal health and perinatal death.^[6] Primary aim of antenatal care is to prevent and treat anemia during pregnancy since the safety of the labour and the puerperal state.^[7]

Preterm birth, low birth weight, small-for-gestational-age newborns, and an increased risk of postpartum hemorrhage (PPH) are all consequences of iron deficiency anemia during pregnancy. This is also the reason why the incidence of PPH is higher in India than it is worldwide.^[7] Iron deficiency anemia is more common in groups including teenage girls,

pregnant women, older infants and toddlers, preterm and low birth weight babies, and women of childbearing age.

The world health organization defines anaemia in pregnant women as haemoglobin level below 11g/dl. The centre for disease control (CDC) recommends that haemoglobin in pregnant women should not be allowed to fall below 10.5g /dl in the second trimester, taking into account the physiological changes of pregnancy.^[5]

According to Indian council of Medical research (ICMR), anemia is classified as

Mild : 8.0 – 10.9g/dl
 Moderate : 5.0 – 7.9g/dl
 Severe : less than 5g/dl.

MATERIALS AND METHODS

This study was performed at the NRI Medical College, Chinnakakani. This is a prospective study which included 100 cases, studied over a period of six months from February 2023 to August 2023. Anemia was identified based on Indian Council of Medical Research (ICMR). The data regarding demographic details, gestational age, obstetric history, Haemoglobin monitoring, medications maternal and fetal outcome were collected in a pre-structured closed ended questionnaire.

Data collection was done after ethical permission from institutional ethical committee and informed consent of clients. All subjects were analyzed in full details and hemoglobin estimation done during 1st visit, at 30th week and 36th week of gestation. Blood cultures were done in all the babies admitted to NICU for various reasons.

Inclusion Criteria

Antenatal women with anemia are included.

Exclusion Criteria

Antenatal women with thalassemia, haemoglobinopathies and sickle cell anemia are excluded.

The investigations that done on these subjects were:

- Hemoglobin percentage: Quantitative estimation of hemoglobin was done by Sahli's method
- Peripheral smear: The type of anemia was studied by peripheral smear examination.

All the subjects were classified according to WHO criteria and according to degree of anemia all the subjects were treated with either oral iron or intravenous iron or blood transfusion and carefully followed in the antepartum, intrapartum and postpartum periods.

Statistical Analysis: Epi-info 7 was used for analysis. The means were used to express all descriptive data and (SD) as well as frequency (%). Fischer's exact test and the chi-square test were used to evaluate how the two groups' primary and secondary outcome measures differed from one another. In terms of statistics, a "p" value less than 0.05 was deemed significant.

RESULTS

As per [Table 1] a total of 100 Pregnant women were enrolled for the study and were followed. Some women encountered maternal and fetal morbidity. The most common age group was found to be 21-25 years comprising 40% of study participants, followed by <20 years. Eighty-two percent has period of gestation of <37 weeks. Mostly parity was 1 in 50% of study participants.

As per [Table 2] the prevalence of anemia was classified as per WHO. Most of the cases belonged to moderate anemia (62%), followed by mild anemia (28%), severe anaemia was found in 10% cases which require better medical and nutrition management.

As per [Table 3] the most common maternal outcome was preterm labour in 18% of study participants followed by puerperial sepsis in 10% of cases but it was not statistically significant (p>0.05). Among the fetal outcome 20% were having low birth weight who belonged to moderate anemia mothers with 18% showed fetal growth restriction. Eleven percent showed admittance in NICU after birth but it was not significant (p>0.05).

Table 1: Demographic Characteristics of population (N=100)

Variables	Number (%)
Age < 20	10 (30%)
Age 21-25	40 (40%)
Age 26-30	25(25%)
Age 31-35	5(5%)
Age >35	0
Parity	
0	30 (30%)
1	50 (50%)
2	12 (12%)
3	5 (5%)
>4	3 (3%)
Period of Gestation	
< 37	82 (82%)
>37	18 (18%)

Table 2: Prevalence of severity of anemia in study population

Mild	28 (28%)
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Moderate	62 (62%)
Severe	10 (10%)

Table 3: Maternal and fetal outcomes and its association with Anemia

Maternal and Fetal Outcomes	Frequency (%)
Pre-Eclampsia	4 (4%)
Antepartum Haemorrhage	3 (3%)
Preterm	18 (18%)
Thrombo embolic Disorders	0
Puerperal sepsis	10 (10%)
Wound Healing	8 (8%)
Uterine Inertia	0
Failure of lactation	04 (4%)
Fetal Growth Restriction	18 (18%)
low-Birth Weight	20 (20%)
NICU	11 (11%)
Apgar	4 (4%)
Intra uterine Fetal Demise	0

Table 4: Mode of Delivery

Normal Vaginal Delivery	30 (30%)
Instrumental	06 (6%)
LSCS	64 (64%)

The most common mode of delivery was LSCS in 64% of study participants and 30% had normal vaginal delivery. Few participants had instrumental delivery (6%).

DISCUSSION

Indian council of Medical Research surveys showed that over 70% of pregnant women in the country were anemic.³ Similarly more than 62% of women were moderately anemic in the present study. Several anemia among the participants was low (10%) which was similar to Agarwal et. al,^[8] (9.2%) Allen et. al,^[9] (7 %). In a study by Bhargavi Vemulapalli et. al,^[10] 7% had a moderate degree of anemia and 6.28% of the population had a severe degree of anemia.

Majority of the anemic study subjects in the present study belonged to the age group of 20-24 years (46.5%). This was comparable with the results of Alli R et al.^[11] The percentage of anemic women in his study was 40% in the same age group. Findings of the present study were also comparable with Rangnekar et al, in whose study 67% of anemic women belonged to low socio-economic group suggesting a close relationship between low socioeconomic conditions and pregnancy anemia.^[12]

Anemia in pregnancy is more common in women of high parity due to frequent pregnancy and inadequate spacing. Mean spacing between births has an impact on the hemoglobin status of women. In present study spacing between pregnancy <2 years was 61.2% and >2 years in 38.8%. It was comparable with Khandait DW et al,^[13] 55.9% and 44.1% in <2 years and >2 years respectively. Severity of anemia is positively associated with <2 years of spacing between two pregnancies with p=0.370.

High prevalence of anemia can be attributed to low dietary intake of iron deprived bio availability of iron (or) chronic blood loss due to infections. Substantial evidence showing that maternal iron deficiency

anemia early in pregnancy can result in LBW and preterm delivery. Present study statistical association between anemia and complication during pregnancy is similar to Nair et al.^[14]

Preterm deliveries (18%), IUGR (18%) and IUD (3%) were the important maternal outcome in present study, which was comparable with the study of Sarin AR who observed that 31.2% women had preterm deliveries. High incidence of preterm deliveries, IUGR and IUD were seen in spacing between pregnancy <2 years.^[15]

High incidence of adverse fetal outcome in the form of preterm (18%), IUGR (18%), NICU admission (5%) and IUD (3%) seen in present study. These were comparable with the observation of Awasthi A et al PT (9.5%), IUGR (37.5%) and IUD (8%).^[16]

One of the recent study done in Muscat by Angelitta J and all suggests that maternal age, parity and late prenatal visit were independently associated with maternal anemia, low birth weight and preterm birth.^[17]

In 2010 one study done in India through a retrospective approach, 4,456 women's hospital record were reviewed and the result shows that 17.9% (798) of them were anemic, out of this 2.15% (96) of them were found to be severely anemic and six out of 96 women died due to severe anemia.^[18]

CONCLUSION

Anemia is the most prevalent medical condition worldwide that affects pregnant women, and it is a major issue in the majority of poor nations. It is a serious public health issue in addition to a medical one. It is often severe in a country like India and greatly increases morbidity and maternal mortality related to reproductive health.

High prevalence of anemia in pregnant women (62%) indicates that increase risk of maternal and fetal complications. To improve maternal and fetal

outcome early diagnosis and treatment of anemia in pregnancy. Health education on reproductive health to be taken at community level.

40% of maternal mortality in the third world are connected to anemia, while 60–80% of pregnant women in poor nations suffer from anemia. Ninety percent of the causes of anemia are related to nutrition.

The most prevalent nutritional anemia is iron deficiency, which is followed by folic acid deficiency. When iron deficient mothers take iron supplements during their pregnancies, their iron status improves both during and after childbirth, which may offer some protection against iron deficiency in the second pregnancy. Preventing perinatal iron deficit and associated morbidities is most effectively achieved by ensuring maternal iron adequacy throughout gestation.

Together, social and medical measures are needed to improve women's living conditions generally. The cornerstone for the prevention, early detection, and treatment of anemia is appropriate prenatal care. The prevention of anemia should be prioritized, with the active involvement of local communities, FOGSI, governmental and voluntary organizations, etc.

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