

Evaluation of the Impact of Maternal Anaemia on Pregnancy and its Outcomes

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Abstract

Aim: To investigate the effects of maternal anemia on pregnant women and the outcomes of pregnancy.

Material and Methods: This retrospective record-based study included 675 pregnant women admitted in labor room in Department of Obstetrics & Gynaecology Jawaharlal Nehru medical college & Hospital, Bhagalpur, Bihar, India. Data collection was done from the records maintained by hospital. All the subjects were classified according to WHO criteria were hemoglobin estimation done by Sahli's method and treatment details i.e oral iron or intravenous iron or blood transfusion, the modes of delivery, maternal and perinatal outcome were collected from records.

Results: Out of total 1503 delivery during study period 675 patients were found to be anaemic which gives incidence of 44.5%. Most the pregnant women were moderately anaemic i.e. 51.96% followed by mild (44.1%) and severe (4%) respectively. Among the pregnant women most common type of anaemia is Iron deficiency anaemia (69.65%) followed by Sickle cell anaemia (15.4%) and other cause (11.9%). In the present study, 90.4% of subject received oral iron, 26.9% received parenteral iron and 19.4% received blood transfusion. The anaemia was found to be more common between 21 to 30 years of age group i.e. 69.5%, followed by women less than 20 years of age (18.1%) and most of them were second gravid i.e. 45%. Most common found to be low birth weight (25.2%) followed by premature delivery (22.96%).

Conclusion: Anemia is usually ignored in pregnant females in our rural population and poor communities of our cities, but this is a serious alarm for both mother and the baby and needs to be dealt on priority basis.

Keywords: Anemia, Fetal outcome, LSCS

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Introduction

Anemia in pregnancy is a global health concern with significant implications for maternal and fetal outcomes. Defined by the World Health Organization (WHO) as a hemoglobin concentration of less than 11 g/dL, anemia affects an estimated 41.8% of pregnant women worldwide, with higher prevalence in low- and middle-income countries. The etiology of anemia in pregnancy is multifactorial, including iron deficiency, folate deficiency, vitamin B12 deficiency, and other chronic diseases. This introduction explores the incidence of anemia in pregnancy and its impact on both maternal and fetal health, drawing on recent studies and emerging trends in the field. The prevalence of anemia in pregnancy varies widely across different regions and populations, influenced

by factors such as socioeconomic status, dietary habits, access to healthcare, and the prevalence of infectious diseases. [1,2] In high-income countries, the prevalence of anemia in pregnancy is relatively lower but still presents a public health challenge. For instance, a study conducted in the United States by the Centers for Disease Control and Prevention (CDC) reported that 18.6% of pregnant women were anemic in 2020. This disparity highlights the need for targeted interventions and policies to address anemia based on regional and contextual needs. [3] Iron deficiency is the most common cause of anemia in pregnancy, accounting for approximately 75% of cases. During pregnancy, a woman's iron requirements increase significantly to support fetal growth and development, as well as to compensate

for blood loss during delivery. Iron deficiency anemia (IDA) occurs when dietary intake or absorption of iron is insufficient to meet these increased demands. Other nutritional deficiencies, such as folate and vitamin B12, also contribute to anemia in pregnancy. Folate deficiency, often due to inadequate dietary intake or malabsorption, can lead to megaloblastic anemia. Similarly, vitamin B12 deficiency, though less common, can result in pernicious anemia and has been associated with adverse pregnancy outcomes. [4] Chronic diseases and infections, such as malaria and HIV, further exacerbate the incidence of anemia in pregnancy. In malaria-endemic regions, Plasmodium falciparum infection can cause hemolysis and sequestration of red blood cells, leading to severe anemia. HIV infection, by affecting the bone marrow and immune system, also increases the risk of anemia in pregnant women. Addressing anemia in pregnancy requires a multifaceted approach, including nutritional interventions, supplementation, and improved access to healthcare. Iron and folic acid supplementation is widely recommended for all pregnant women to prevent and treat IDA. The WHO advises daily iron (30-60 mg) and folic acid (400 µg) supplementation during pregnancy, particularly in areas with high prevalence of anemia. Dietary diversification and fortification of staple foods with iron, folate, and other essential nutrients are effective strategies to combat nutritional deficiencies. Additionally, controlling infectious diseases through malaria prophylaxis and antiretroviral therapy for HIV-infected pregnant

women is crucial in reducing the burden of anemia. [5]

Material and Methods

This retrospective record-based study included 675 pregnant women admitted in labor room in Department of Obstetrics & Gynaecology Jawaharlal Nehru medical college & Hospital, Bhagalpur, Bihar, India for one year. Data collection was done from the records maintained by hospital. All the subjects were classified according to WHO criteria were hemoglobin estimation done by Sahli’s method and treatment details i.e oral iron or intravenous iron or blood transfusion, the modes of delivery, maternal and perinatal outcome were collected from records.

Data Analysis

The data were recorded in an excel sheet and descriptive analysis was performed and results were expressed in numbers and percentage.

Results

Out of total 1503 delivery during study period 675 patients were found to be anaemic which gives incidence of 44.5%. Most the pregnant women were moderately anaemic i.e. 51.96% followed by mild (44.1%) and severe (4%) respectively. Among the pregnant women most common type of anaemia is Iron deficiency anaemia (69.65%) followed by Sickle cell anaemia (15.4%) and other cause (11.9%). (Table 1).

Table 1: Type of Anemia wise distribution of cases.

Type of Anemia	No. of cases	Percentage
Iron Deficiency Anemia	470	69.6
Sickle cell anemia	104	15.4
Thalassemia	6	0.88
Dimorphic anemia	10	1.5
Megaloblastic anemia	5	0.74
Others	80	11.9

In the present study, 90.4% of subject received oral iron, 26.9% received parenteral iron and 19.4% received blood transfusion. The anaemia was found to be more common between 21 to 30 years of age

group i.e. 69.5%, followed by women less than 20 years of age (18.1%) and most of them were second gravid i.e. 45%. As shown in Table 2.

Table 2: Parity wise Distribution of cases.

Parity status	No. of cases	Percentage (%)
Primi gravida	196	29.1
Second gravida	304	45
Multigravida	175	25.9

Tables 3 shows distribution of various maternal outcome related to anemia, in which most common found to be low birth weight (25.2%) followed by premature delivery (22.96%). Table 4 shows distribution of various fetal outcome in anemic mother in the form of preterm (22.9%) followed by NICU admission (14.37%) and FGR (8.6%).

Table 3: Maternal outcome.

Complication during pregnancy	No. of cases	Percentage (%)
Low birth wt.	170	25.2
Obstructed labor	10	1.48
Prolonged labor	14	2.1
Premature delivery	155	22.96
Preeclampsia	20	2.96
PPH	12	1.78
LSCS	195	28.89

Table 4: Fetal outcome.

Fetal outcome	No. of cases	Percentage (%)
Full term delivery	520	77.0
Preterm delivery	155	22.9
IUD	06	0.89
FGR	58	8.6
NICU admission	97	14.37

Discussion

In present study, 45.04% were mild, 50.96% were moderate and 4% were severely anemic. Majority of the anemic study subjects in the present study belonged to the age group of 21-25 years (47.7%). This was comparable with the results of Alli R et al. the percentage of anemic women in his study was 40% in the same age group and Upadhyay C et al which was 46.7%. [6,7] Maternal anemia is considered as risk factor for poor pregnancy outcomes, and it threatens the life of fetus. Available data from India indicate that maternal morbidity rates are higher in anemic women. [2,8] In India, anaemia is one of the most common causes of maternal death, accounting for 20% of total maternal deaths [9]. In our study maternal outcome like obstructed labor was 1.48%, prolonged labor was 2.1%, PIH was 2.96%. PPH was 1.78%. Frequency of LSCS in anaemic patients was 28.89%. There is a substantial amount of evidence showing that maternal iron deficiency anemia early in pregnancy can result in LBW subsequent to preterm delivery. [10] In our study 25.2% have low birth weight babies, which is similar Suryanarayana, et al. (25%). [11] High incidence of adverse fetal outcome in the form of preterm (22.9%), IUGR (8.6%), NICU admission (14.37%) and IUD (0.89%) seen in present study. These were comparable with the observation of Upadhyay C et al were Preterm deliveries was 20%, IUGR 11.5% and IUD 3% and Awasthi A et al PT (9.5%), IUGR (37.5%) and IUD (8%) and also comparable with Rangnekar et al PT (73%), IUGR (4%) and IUD (16%). [7,12,13] In this study most common cause of anemia is iron deficiency anemia (69.6%) followed by sickle cell anemia (15.4%) as incidence of sickle cell anemia is very high in Chhattisgarh as shown in study of Lagoo J et al. (17%). Similarly, Cochrane review 2009 shows that microcytic hypochromic anemia resulting from iron deficiency is the most frequent form of anemia (76%), followed by folate deficiency

(20%) and combined iron and folate deficiency (20%). [14,15] In the present study 90.4% of subject received oral iron. 26.9% and 19.4% received parenteral iron and blood transfusion respectively. Which is similar to Upadhyay C et al where 91.5% of subject received oral iron. 51.5% and 13.5% received parenteral (IV) iron and blood transfusion respectively.⁷ There was a statistical association between anemia and complications during pregnancy. In the present study, maternal outcome related to anemia, most common found to be low birth weight (25.2%) followed by premature delivery (22.96%), and other fetal outcome in anaemic mother are in form of preterm (22.9%), NICU admission (14.37%) and FGR (8.6%). Which is similar to the study by Nair et al. [16]

Conclusion

Anemia is usually ignored in pregnant females in our rural population and poor communities of our cities, but this is a serious alarm for both mother and the baby and needs to be dealt on priority basis. To improve maternal and fetal outcome it is recommended that primary health care has to be strengthened, emphasizing the importance of consumption of iron and folic acid in pregnancy. So, the only way to reduce these complications is early screening for anemia and giving proper, effective treatment and counseling about the same.

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