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Original Research Article

Evaluation of Feto-Maternal Outcome of Maternal Anaemia during Pregnancy: an Observational Study

Priya Ranjan[1], Rashmi Rani[2], Lata Shukla Dwivedy[3]

[1]Senior Resident, Department of Obstetrics and Gynaecology, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India

[2]Senior Resident, Department of Obstetrics and Gynaecology, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India

[3]Professor and HOD, Department of Obstetrics and Gynaecology, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India

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Corresponding Author: Dr. Rashmi Rani
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Abstract

Aim: To determine the effects of maternal anaemia on pregnant women and pregnancy outcomes.

Material and Methods: Among the 350 deliveries conducted in Department of Obstetrics and Gynecology department, Anugrah Narayan Magadh Medical College and Hospital, Gaya Bihar, India for 6 months, seen throughout the research period, 120 individuals were diagnosed with anemia. The individuals were categorized based on the WHO criteria, with hemoglobin levels determined using Sahli's technique. Information on therapy, such as oral iron, intravenous iron, or blood transfusion, as well as delivery methods, maternal outcomes, and perinatal outcomes, were obtained from records. The research also examined the age of the mothers and the degree of anemia in the patients.

Results: Out of the 350 deliveries during the study period, 120 pregnant women were found to be anaemic. The prevalence of anaemia in this population was thus 34.3%. Maternal complications among anaemic pregnant women showed a variety of outcomes. Low birth weight was observed in 25% of the cases, while premature delivery was reported in 21.67%. A significant number of women (29.17%) underwent lower segment caesarean section (LSCS). Other notable complications included obstructed labour (1.67%), prolonged labour (2.5%), preeclampsia (2.5%), and postpartum haemorrhaged (1.67%). A variety of other complications were recorded in 15.83% of the cases. This data highlights a broad range of maternal health issues associated with anaemia in pregnancy. Perinatal outcomes revealed that 20.83% of the pregnancies resulted in preterm births, and 25% of the newborns had low birth weight. Neonatal intensive care unit (NICU) admissions were necessary for 12.5% of the infants, and there was a stillbirth rate of 4.67%. However, 37.5% of the pregnancies resulted in full-term deliveries, suggesting that despite the high incidence of complications, a notable proportion of the pregnancies had favourable outcomes.

Conclusion: This research emphasizes the substantial occurrence of anaemia during pregnancy and its correlation with unfavourable maternal and neonatal consequences. In order to enhance the health outcomes for both mothers and foetuses, it is advisable to enhance primary health care services, with a particular focus on promoting the intake of iron and folic acid throughout pregnancy. In order to minimize these problems, it is essential to do early screening for anaemia and provide appropriate and efficacious treatment, along with counselling on the matter.

Keywords: Anemia, Fetal outcome, LSCS

Introduction

Anaemia during pregnancy is a substantial global public health issue that has an impact on the health outcomes of both the mother and the foetus. According to the World Health Organization (WHO), over 38% of pregnant women worldwide suffer from anemia. [1] The incidence of anaemia varies significantly across various areas and socioeconomic categories. The primary cause of anaemia during pregnancy is mostly due to a lack of iron, however other factors such as dietary inadequacies, infections, and chronic disorders also play a role in its occurrence. Anaemia during pregnancy has significant repercussions, impacting both the mother and the baby. [2] Maternal anaemia is linked to higher chances of giving birth prematurely, having a baby

with low birth weight, and experiencing perinatal death. In addition, pregnant women with anaemia are at a higher risk of experiencing issues such as excessive bleeding after childbirth, infections, and reduced physical capacity, which may have a negative impact on their quality of life and their ability to care for their babies. Multiple studies have emphasized the correlation between the intensity of anaemia and negative pregnancy outcomes. Research indicates that moderate to severe anaemia poses a considerably higher risk of maternal and foetal problems compared to mild anaemia. Anaemia severity is often evaluated by measuring haemoglobin levels. [3-5] The World Health Organization categorizes anaemia as mild (10.0-10.9 g/dL), moderate (7.0-9.9 g/dL), or severe (<7.0 g/dL). [1] The primary approach to treating and managing anaemia during pregnancy is via the use of iron supplements. The method of administration, whether oral or intravenous, depends on the severity of the illness and the first response to therapy. Blood transfusions are only administered in extreme circumstances when there is an urgent need to rectify anaemia in order to avoid harm or death to both the mother and the foetus.

Material and Methods

Among the 350 deliveries seen throughout the research period, 120 individuals were diagnosed with anemia. This research was a retrospective record-based analysis that included 120 pregnant women who were admitted to the labor room at the Department of Obstetrics and Gynecology, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India for 6 months, throughout the study period. Data collection was conducted by obtaining records from the hospital. The individuals were categorized based on the WHO criteria, with hemoglobin levels determined using Sahli's technique. Information on therapy, such as oral iron, intravenous iron, or blood transfusion, as well as delivery methods, maternal outcomes, and perinatal outcomes, were obtained from records. The research also examined the age of the mothers and the degree of anemia in the patients.

Data Analysis

The data were documented in an Excel spreadsheet and subjected to descriptive analysis, with the findings presented in numerical values and percentages.

Results

Out of the 350 deliveries during the study period, 120 pregnant women were found to be anaemic. The prevalence of anaemia in this population was thus 34.3%.

The age distribution of anaemic pregnant women indicated that the largest proportion (41.67%) were between 21-25 years old. Women aged 26-30 years comprised 25% of the cases, while those aged 20 years or younger and those older than 30 each accounted for 16.67% of the cases. This distribution highlights that anaemia during pregnancy was most common among women in their early twenties.

When classified according to the World Health Organization (WHO) criteria, the majority of the anemic pregnant women (50%) had moderate anaemia, with haemoglobin levels between 7.0 and 9.9 g/dL. Both mild anaemia (haemoglobin levels between 10.0 and 10.9 g/dL) and severe anaemia (haemoglobin levels below 7.0 g/dL) were present in 25% of the women each. This shows that half of the anaemic women had a moderate severity of anaemia.

The mode of delivery among anaemic pregnant women was split between normal vaginal delivery and caesarean section, with each accounting for 41.67% of the deliveries. Assisted vaginal deliveries were less common, comprising 16.67% of the cases. This distribution indicates that caesarean sections were as frequent as normal vaginal deliveries among anaemic women.

Maternal complications among anaemic pregnant women showed a variety of outcomes. Low birth weight was observed in 25% of the cases, while premature delivery was reported in 21.67%. A significant number of women (29.17%) underwent lower segment cesarean section (LSCS). Other notable complications included obstructed labor (1.67%), prolonged labor (2.5%), preeclampsia (2.5%), and postpartum hemorrhage (1.67%). A variety of other complications were recorded in 15.83% of the cases. This data highlights a broad range of maternal health issues associated with anemia in pregnancy.

Regarding treatment, the majority of anemic pregnant women (58.3%) were treated with oral iron supplements. Intravenous iron therapy was administered to 25% of the patients, and blood transfusions were required for 16.7%. This indicates that oral iron was the most common treatment, but a substantial proportion of women needed more intensive interventions.

Perinatal outcomes revealed that 20.83% of the pregnancies resulted in preterm births, and 25% of the newborns had low birth weight. Neonatal intensive care unit (NICU) admissions were necessary for 12.5% of the infants, and there was a stillbirth rate of 4.67%. However, 37.5% of the pregnancies resulted in full-term deliveries, suggesting that despite the high incidence of complications, a notable proportion of the pregnancies had favorable outcomes.

Table 1: Age Distribution of Anaemic Pregnant Women

Age Group (Years)	Number of Patients	Percentage (%)
≤20	20	16.67
21-25	50	41.67
26-30	30	25.0
>30	20	16.67
Total	120	**100**

Table 2: Degree of Anaemia According to WHO Criteria

Degree of Anaemia	Haemoglobin Level (g/dL)	Number of Patients	Percentage (%)
Mild Anaemia	10.0 - 10.9	30	25.0
Moderate Anaemia	7.0 - 9.9	60	50.0
Severe Anaemia	<7.0	30	25.0
Total		120	**100**

Table 3: Modes of Delivery in Anaemic Pregnant Women

Mode of Delivery	Number of Patients	Percentage (%)
Normal Vaginal Delivery	50	41.67
Assisted Vaginal Delivery	20	16.67
Caesarean Section	50	41.67
Total	120	**100**

Table 4: Maternal outcome.

Complication during pregnancy	No. of cases	Percentage (%)
Low birth wt.	30	25
Obstructed labor	2	1.67
Prolonged labor	3	2.5
Premature delivery	26	21.67
Preeclampsia	3	2.5
PPH	2	1.67
LSCS	35	29.17
Others	19	15.83

Table 5: Treatment Modalities for Anaemic Pregnant Women

Treatment Type	Number of Patients	Percentage (%)
Oral Iron	70	58.3
Intravenous Iron	30	25.0
Blood Transfusion	20	16.7
Total	120	**100**

Table 6: Perinatal Outcomes in Anaemic Pregnant Women

Perinatal Outcome	Number of Patients	Percentage (%)
Preterm Birth	25	20.83
Low Birth Weight	30	25.0
NICU Admission	15	12.5
Stillbirth	5	4.67
Full term delivery	45	37.5
Total	120	100

Discussion

The prevalence of anaemia among pregnant women in this study was 34.3%, aligning with global trends reported by the World Health Organization (WHO), which estimates that approximately 38% of pregnant women worldwide are anemic. [1] This finding is consistent with similar studies conducted in various regions, which also report high prevalence rates of anaemia in pregnancy. For instance, a study conducted in India found a prevalence of 36.6%.

The age distribution in our study showed that anaemia was most common among women aged 21-

25 years (41.67%), followed by those aged 26-30 years (25%). This is similar to the findings of a study by Rajaratnam et al., which reported that the highest prevalence of anaemia was in women aged 20-30 years. [6] Another study by Suryanarayana et al. also observed a similar trend in a rural tertiary care centre in India, with the highest prevalence in women aged 21-25 years. [7]

The severity of anaemia, classified according to WHO criteria, showed that 50% of the women had moderate anaemia, while 25% had mild anaemia, and another 25% had severe anaemia. This distribution is in line with the findings of Kumar et al., who also reported a significant proportion of pregnant women with moderate anaemia in their study. [8] Another study by Toteja et al. observed that moderate anaemia was the most prevalent among anaemic pregnant women in their cohort. [9]

The mode of delivery among anaemic women was equally split between normal vaginal deliveries and caesarean sections, each accounting for 41.67% of the cases. Assisted vaginal deliveries constituted 16.67%. These findings contrast slightly with the study by Kumar et al., which reported a higher prevalence of caesarean sections among anaemic women (50%) compared to vaginal deliveries (30%). [10] However, our results are similar to those of Singh et al., who found a nearly equal distribution of caesarean sections and normal deliveries among anaemic pregnant women. [11]

Maternal complications were diverse, with low birth weight being the most common (25%), followed by premature delivery (21.67%). These findings are consistent with the study by Lone et al., which also reported a high incidence of low birth weight and preterm births among anaemic pregnant women. [12] Other complications such as obstructed labour, prolonged labour, preeclampsia, and postpartum haemorrhage were less common but significant. These outcomes highlight the increased risk of adverse maternal outcomes associated with anaemia in pregnancy, as also noted by Agarwal et al. [13]

Oral iron supplements were the most common treatment (58.3%), followed by intravenous iron (25%) and blood transfusions (16.7%). This treatment distribution is in line with global recommendations and practices, as reported by Bhatia et al., who emphasized the importance of oral iron supplements as the first line of treatment for anaemia in pregnancy. [14] The use of intravenous iron and blood transfusions in our study reflects the need for more intensive interventions in severe cases, similar to the findings of Kalaivani et al. [15]

Perinatal outcomes revealed significant risks associated with anaemia in pregnancy, including preterm births (20.83%), low birth weight (25%), and NICU admissions (12.5%). These findings are consistent with those reported by Rasmussen et al., who observed similar rates of preterm births and low birth weight among anaemic pregnant women. [16] The stillbirth rate in our study (4.67%) is comparable to that found in other studies, emphasizing the critical need for managing anaemia in pregnancy to improve perinatal outcomes.

Conclusion

This research emphasizes the substantial occurrence of anaemia during pregnancy and its correlation with unfavourable maternal and neonatal consequences. In order to enhance the health outcomes for both mothers and foetuses, it is advisable to enhance primary health care services, with a particular focus on promoting the intake of iron and folic acid throughout pregnancy. In order to minimize these problems, it is essential to do early screening for anaemia and provide appropriate and efficacious treatment, along with counselling on the matter.

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