

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20211112>

Original Research Article

## Incidence of anemia in pregnancy and its maternal-fetal outcome in admitted ANC patients in tertiary care center, Bhilai, Chhattisgarh, India

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**Received:** 13 February 2021

**Accepted:** 11 March 2021

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### ABSTRACT

**Background:** Anemia in pregnancy is an important public health problem in developing countries like India. Anemia results in poor pregnancy outcome and also affects fetal outcome. The present study was conducted to assess maternal and fetal outcome in relation to anemia. Aim and objectives of the study were to determine incidence, risk factors and maternal-fetal outcome of anemia in the admitted pregnant women attending obstetrics and gynecology department, shankaracharya institute of medical sciences, Bhilai.

**Methods:** This is a retrospective observational study conducted among pregnant women admitted in labor room over a period of one year after getting approval from the institutional ethical committee.

**Results:** Out of total 1503 deliveries during the study period 675 patients were found to be anaemic which gives an incidence of 44.5%. Most of the pregnant women were moderately anaemic i.e. 50.96% followed by mild (45.04%) and severe (4%) respectively. Among the pregnant women the most common type of anaemia is Iron deficiency anaemia (69.65%) followed by sickle cell anaemia (15.4%). In the present study, 90.4% of subjects received oral iron, 26.9% received parenteral iron and 19.4% received blood transfusion. Common maternal outcomes related to anemia found to be low birth weight (25.2%) followed by premature delivery (22.96%) and fetal outcome in anemic mother in the form of preterm (22.9%) followed by NICU admission (14.37%) and FGR (8.6%).

**Conclusions:** Anemia being one of the most important causes of poor fetal/maternal outcomes should be treated preconceptionally. There is a need for health education programmes and adequate intake of iron-rich diet during pregnancy, to be strengthened for safe maternal and fetal outcomes.

**Keywords:** Anemia, Fetal outcome, LSCS

### INTRODUCTION

Anemia is one of the most common nutritional deficiency disorders affecting pregnant women. The prevalence in developed countries is 14%, in developing countries 51%, and in India, it varies from 65% to 75%.<sup>1,2</sup> Most of the reported anaemic mothers are in the third trimester of pregnancy, since the iron demand reaches 6.6 mg/day in this period as there is a disproportionate increase in plasma

volume and red cell mass causes hemodilution and it lowers the haemoglobin level.

Anemia during pregnancy is commonly associated with poor pregnancy outcomes and may lead to complications of mother like prolonged labour and increased incidence of postpartum haemorrhage and also lead to preterm birth, low birth weight and small-for-gestational age babies and prematurity.<sup>3-5</sup>

Anemia was classified based on the WHO criteria; HB concentration of <11 g/dl was considered as anemia. HB concentration of 10–10.9 g/dl, 7–9.9 g/dl, and <7 g/dl was considered as mild, moderate, and severe anemia, respectively.

**METHODS**

Type of study: Retrospective record based study

Place of study: Shri Shankaracharya Institute of Medical sciences, Bhilai Chhattisgarh, India

Duration of study: one year

**Procedure**

This retrospective record-based study included 675 pregnant women admitted in labor room in Department of Obstetrics and Gynecology between January 2020 to December 2020. Data collection was done from the records maintained by hospital after ethical permission from institutional ethical committee.

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.

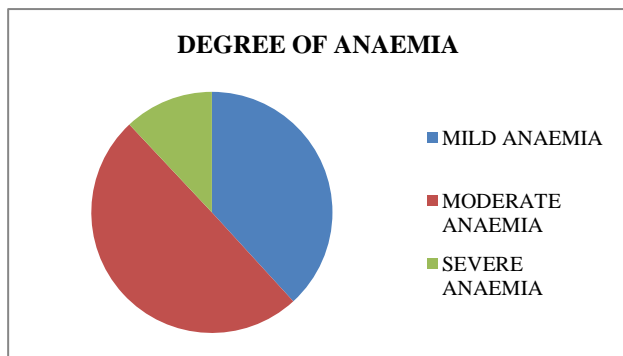
**Data analysis**

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. As shown in Figure 1.



**Figure 1: Degree of anemia wise distribution of cases.**

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.**

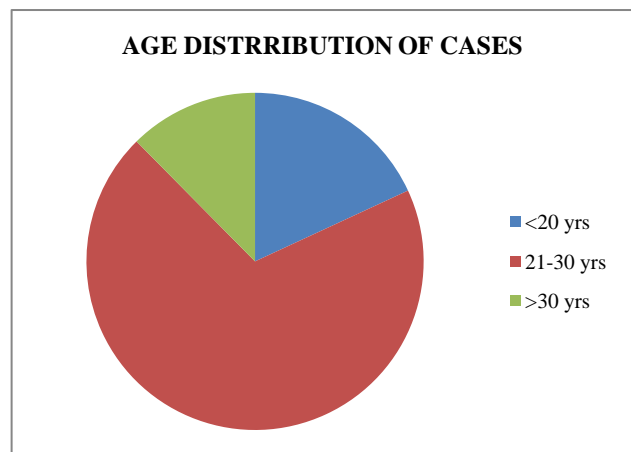
Type of Anemia	No. of cases	Percentage
Iron Deficiency Anemia	470	69.6
Sickle cell anemia	104	15.4
Thalassemia	6	0.88
Dimorphic anemia	10	1.5
Magaloblastic anemia	5	0.74
Others	80	11.9

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 and Figure 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



**Figure 2: Age distribution of cases.**

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%.<sup>6,7</sup>

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.<sup>2,8</sup> 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.<sup>10</sup> In our study 25.2% have low birth weight babies, which is similar to Marahatta (16.6%).<sup>1</sup> and Suryanarayana, et al. (25%).<sup>11</sup>

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%).<sup>7,12,13</sup>

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%).<sup>14,15</sup>

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.<sup>7</sup>

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.<sup>16</sup>

## 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.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Kanwar G, Prasad SR, Ratnani R. Incidence of anemia in pregnancy and its maternal-fetal outcome in admitted ANC patients in tertiary care center, Bhilai, Chhattisgarh, India. *Int J Reprod Contracept Obstet Gynecol* 2021;10:1411-4.