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Original Research Article

Incidence and outcome of anemia in pregnant women: a study in a tertiary care centre

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ABSTRACT

Background: Anemia is one of the most common nutritional deficiency diseases observed globally affecting both developed and developing countries with major consequences for human health as well as social and economic development. Prevention and management of maternal anemia is crucial to prevent morbidity and mortality of the fetus.

Methods: The patient history was taken in detail, including age weight and height. BMI was calculated for all the 296 patients who were booked for delivery in our hospital. On enrolment, blood was drawn from the patient for regular check including blood grouping, biochemical parameters including iron estimation, total iron binding capacity, complete blood picture including hemoglobin. Any cause for bleeding was evaluated.

Results: 143 patients (48.3%) had a haemoglobin count of less than 10gm%. Most of the anemic patients had moderate anemia followed by women with mild anemia. The most common age group affected was 20-30 years, which was the predominant age group of pregnant patients who had come to our hospital. Most of the women had multi gravida, with 3 being the most common followed by 1 earlier pregnancy. In most of the cases, the interval between 2 consecutive pregnancies was 1 year or less.

Conclusions: Anemia is directly proportional to parity, less spacing between pregnancies and related to lower educational status.

Keywords: Anemia, Incidence, Multigravida, Pregnancy

INTRODUCTION

Anemia is one of the most common nutritional deficiency diseases observed globally affecting both developed and developing countries with major consequences for human health as well as social and economic development. It occurs at all stages of the life cycle.^{1,2} Although nutritional anemia affects members of both sexes and all age groups, the problem is more prevalent among women and contributes to maternal morbidity and mortality, as well as to low birthweight.³

Anemia is a condition in which the number of red blood cells or their oxygen carrying capacity is insufficient to meet physiologic needs, which may vary by age, sex, altitude, smoking and pregnancy status.

Normal levels of hemoglobin ranges from 13.5-17.2g/dl in men and 12.0-15.0g/dl in women. Anemia in pregnancy is as a hemoglobin concentration below 11 g/dl defined by the World Health Organization (WHO).⁴ Amongst several causes of anemia in pregnancy, Iron Deficiency Anemia (IDA) is the most prevalent.

It is estimated by WHO that around 14% of the developed countries and 51% of the developing countries are affected with this condition. In India, around 65-75% are said to be affected.⁵⁻⁷

One of the common causes of anemia in pregnancy is Iron Deficiency Anemia (IDA). Other risk factors which are associated with maternal anemia are Malnutrition, unhealthy lifestyle, hemoglobinopathies, age (<20 years or >35 years old), twin or multiple pregnancies, smoking or alcohol use, history of menstrual disorders or past infections.^{8,9}

Maternal anemia leads to many adverse effects on the fetuses fetal complications such as low birth weight, preterm deliveries, developmental anomalies and even neonatal death are some of them.

Prevention and management of maternal anemia is crucial to prevent morbidity and mortality of the fetus. There are four approaches towards prevention of anemia in pregnancy. These include dietary changes to increase the iron levels, iron supplementation, food fortification and other general public health measures. These measures include education in child spacing, improving the nutritional status of women, sanitation, immunization, control of diarrheal diseases, etc^{10,11}.

Thus, the detection of anemia in expecting mothers will enable timely intervention as well as improve the general health of the mother and child. This study was therefore conducted to assess the prevalence of anemia in our area as well as its effect on the fetus.

METHODS

This study was conducted by the Department of Obstetrics and Gynecology, VRK Women's Medical college and Hospital from July-2016 to October-2017. 296 expecting mothers who were booked for delivery in our hospital were included into the study. The patient history was taken in detail, including age weight and height. BMI was calculated for all the patients.

The obstetric history of the present as well as the previous deliveries was noted. Other general details such as gravid, parity, time interval between the deliveries were also taken into account.

Details which can lead to anemia in women like the nutritional status, any ongoing bleeding, or quantum of menstrual bleed, any other infections, worm infestation, etc were also noted.

On enrolment, blood was drawn from the patient for regular check including blood grouping, biochemical parameters including iron estimation, total iron binding capacity, complete blood picture including hemoglobin. Urine examination for culture and sensitivity was also done to rule out urinary tract infection.

Stool examination to rule out worm infestation and the presence of occult blood were done. Ultrasonography was performed in selected cases. Patients with haemoglobin concentration of 10gm or less were considered to be anemic.

Anemic patients were further divided in three categories according to haemoglobin level, mild (8.1 to 10gm%), moderate (6.5 to 8.0gm%), severe (< 6.5gm%). All study group patients with mild and moderate anaemia were given oral iron and folate, B12 tablets.

Severely anaemic patients were admitted for blood transfusion. After stabilization of general conditions, they also received parental haematinics and oral haematinics later on. These patients were followed till they delivered, and outcome of mother and baby was noted whenever possible. Antenatal complications such as infections, toxemia, intrauterine growth retardation, antepartum haemorrhage, cardiac failure, pre-eclampsia, etc were noted.

Labour record for duration of gestation of delivery, duration of labour, nature of labour, and any maternal complication-if any were also noted.

RESULTS

Out of the total 296 patients included into the study, 143 patients (48.3%) had a haemoglobin count of less than 10gm% (Figure 1).

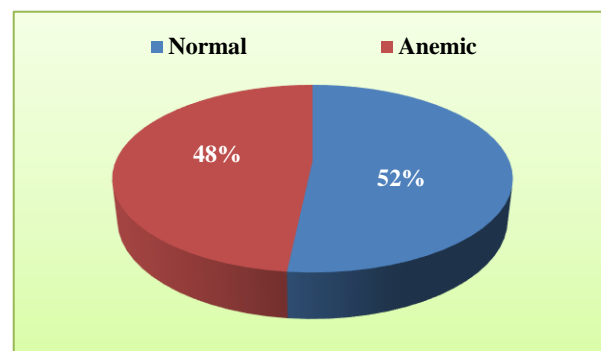


Figure 1: Prevalence of anemia among pregnant women.

Most of the anemic patients had moderate anemia followed by women with mild anemia. The most common age group affected was 20-30 years, which was the predominant age group of pregnant patients who had come to our hospital (Table 1).

Most of the women had multi gravida, with 3 being the most common followed by 1 earlier pregnancy. Around 31 of the patients had more than 3 previous pregnancies. In case of non anemic –patients, very few patients had more than 3 pregnancies with 1 earlier pregnancy being the most common.

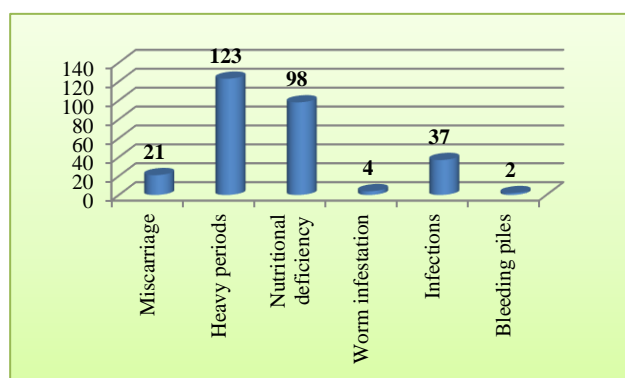
Table 1: Age wise distribution of anemic patients.

Age	Normal	Mild	Moderate	Severe	Total
< 20 years	24 (15.7%)	9 (18.4%)	19 (22.9%)	4 (36.4%)	56 (18.9%)
20-30 years	84 (54.9%)	27 (55.1%)	42 (50.6%)	5 (45.5%)	158 (53.4%)
>30 years	45 (29.4%)	13 (26.5%)	22 (26.5%)	2 (18.1%)	82 (27.7%)
Total	153 (100%)	49 (100%)	83 (100%)	11 (100%)	296

Table 2: Demographic factors and Hb levels among the anemic patients.

Factors	Anemic	Normal
Age		
< 20 years	32 (22.4%)	24
20-30 years	74 (51.7%)	84
>30 years	38 (26.6%)	45
Gravida		
0	13 (9.1%)	7
1	34 (23.8%)	78
2	27 (18.9%)	22
3	38 (26.8%)	29
>3	31 (21.7%)	17
Occupation		
House wife	75	82
Daily labour	43	46
Vendors	16	22
Farmer	9	3
Birth interval (in years)		
1	102 (71.3%)	111
2	27	19
3	4	7
>3	10	16
Food habits		
Veg	28 (19.6%)	17 (11.1%)
Non veg	115 (80.4%)	136 (88.9%)

Most of the women were housewives in both the categories, with daily laourers being the next common profession. These were either maidservants or working in construction areas. In most of the cases, the interval between 2 consecutive pregnancies was 1 year (Table 2).

**Figure 2: Risk factors for anemia.**

In most of the cases, the causes for anemia was dysmenorrhagia, followed by nutritional deficiencies. 21 patients (14.7%) were anemic due to earlier miscarriages or abortions (Figure 2).

The most common fetal complication was low birth weight in the fetus, 46.9% in mild, 56.6% in moderate and 18.2% in the severe cases. The other complications observed were birth asphyxia, still birth and neonatal deaths (Table 3).

Table 3: Association of fetal complication with anemia.

Fetal factors	Mild 49	Moderate 83	Severe 11
Low birth weight/IUGR	26	47	2
Preterm delivery	19	44	2
Birth asphyxia/sepsis	19	31	4
IUD/ Stillbirth	2	4	2
Neonatal death	2	1	3

DISCUSSION

Anemia is one of the most common nutritional deficiencies in the world. Inadequate intake or absorption of iron in addition to blood loss may contribute to anemia. This prevalence of anemia assessed at a global scale demonstrates that it is highly prevalent among pregnant women. Anemia may be due to many contributing factors such as increased iron demand of body, increased appetite and other social factors like high parity, frequent pregnancies, education and type of family.

The prevalence of anemia in our study was 48.3%. In a study by Koura et al, around 40% of the expectant mothers presented with anemia.¹² In another study by Cheema et al, the incidence was higher with 65.6%, as was the case in a study by Singh et al where 65.5% was reported.^{13,14} A low prevalence of 27.9% was observed in a study by Kefiyalew et al in Ethiopia.¹⁵

Among the anemic patients, moderate type was the most common seen in 83 (58%) followed by mild (34.3%). Severe anemia was seen among 11 (7.8%) of the anemic patients. In a study by Kefiyalew et al, most of the patients had moderate anemia, while 12.9% had severe anemia.¹⁵

In present study, the number of patients with anemia was far more than other studies such as those from Gondar (21.6%), Nigeria (23.2%) and Turkey (27.1%).¹⁶⁻¹⁸ This has been attributed to the difference in the socio-demographic factors and lack of awareness about the consequences of anemia among the participants.

Most of the patients in this study were between 20-30 years of age, which shows that this is the most common reproductive age in this area who were more anemic. However, in a study by Cheema et al, the age group between 35-49 years were more affected by this condition.¹³

The dietary pattern of the patients did not show a significant effect on the status of anemia in our study. Among the anemic women in our study, more than 80% were nonvegetarians while nutritional deficiency was found in 98 (68.5%) of the patients. However, a significant association was observed in a study by Cheema et al, where vegetarians were found to be predominantly affected. Similar results were observed by Rammohan et al and Singh et al.^{19,20}

Most of the patients who were anemic were multiparous, with more than 3 gravida. This was in concurrence with a study in Nigeria, by Zama et al, who found that more of multiparous women were anemic.²¹ However, this was in contrast with a study by Ahmed et al, who reported that unipara women were more susceptible to anemia.

In the present study, the predominant outcome of the fetuses was low birth weight. This was in accordance to a study by Ahmed et al, where the neonates, born to anemic mothers had predominantly low birth weight.¹⁸ However, no association of low birth weight between LBW and anemia in a study by Koura et al.¹²

Other socio-demographic factors impacting maternal anaemia are parity, spacing between two pregnancies and consumption of iron folic acid tablets. Around 50% anaemic women had parity >2 and 71.3% women with spacing between current pregnancy and outcome of last delivery <1 year suffered more from maternal anaemia as compared to women with birth interval more than 3 years. Similar results were observed in another study by Cheema et al.¹³

CONCLUSION

Anaemia is a serious health problem in India where the life of pregnant women and her child are endangered. It is directly proportional to parity, less spacing between pregnancies and related to lower educational status. It is therefore highly recommended that more effective guidelines regarding educating girl child, spreading effective awareness regarding balanced diet, regular antenatal checkups, regular intake of iron-folic acid tab, should start at grass-root levels to get safe motherhood.

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