Anaemia Among Antenatal Women: Prevalence, Severity And Associated Risk Factors

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ABSTRACT:

Introduction: Anaemia is defined as a haemoglobin concentration below 11 gm/dl for pregnant women and 12 gm/dl for nonpregnant women. Haemoglobin levels of more than half of the pregnant women of the world were indicative of anemia. Anaemia is associated with increased rates outcomes. It is still a major health problem in many developing countries. **Materials and Methods**: 498 anaemic women out of 1027 pregnant women in labor were studied. 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. Complete blood count, blood indices, blood pressure, biochemical investigations, urine examination for culture and sensitivity, stool examination for worms and occult blood were done. Ultrsonography was performed in selected cases**. Results:** Out of 1027 pregnant women in labour, 498 (48.49%) cases were anaemic. Most of these patients were in the age group of 21-30 years and had mild anaemia. Most of the severe anaemic age group was also 21-30. The most common cause of anemia was found to be a nutritional deficiency followed by worm infestation and other infections. Preterm delivery was the commonest morbidity in mothers and low birth weight in the neonate. **Conclusion:** As the main reason for anemia, which further lead to high rates of morbidity and mortality was malnutrition, good and nutritious food can solve the problem. Thereby increasing the chances of the birth of a normal and healthy baby.

Keywords: Antenatal women, Anemia, preterm delivery, low birth weight, foetal outcome.

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INTRODUCTION:

Women go through a variety of physiological changes during pregnancy. Changes in the blood circulatory system are particularly notable, permitting normal fetal growth. Even in normal pregnant women, the hemoglobin concentration decreases with dilution according to increase in the volume of circulating blood[1].

A high proportion of women in both industrialized and developing countries become anemic during pregnancy. Estimates from the World Health Organization report that from 35% to 75% (56% on an average) of pregnant women in developing countries, and 18% of women from industrialized countries are anemic. However, many of these women have been already anemic at the time of conception, with an estimated prevalence of anemia of 43% in nonpregnant women in developing countries and of 12% in women in wealthier regions. In developed countries, the incidence of anaemia is less than 10% as compared to 40-70% in developing countries like India as indicated by the surveys in different parts of country[2].

The diet of an Indian female of average class is inadequate in iron, which gives very little opportunity to store iron & enable them to meet the demands of foetus when pregnancy supervenes. Anemia is the most severe manifestation of iron deficiency. In locations where iron deficiency is the major cause of anemia, more people are iron-

deficient than anemic. Additionally, where anemia is caused by factors other than iron deficiency, such as is the case in many developing countries, iron deficiency still is a significant cause of anemia.[3]

Inconsistent results exist in the literature regarding the relationship between maternal anemia and adverse birth outcomes: In several studies, anemia in pregnancy has been associated with increased risks for Low Birth Weight (LBW) and premature labor,[4,5] whereas in other studies,[6] there was no association found. Both LBW and preterm delivery are common in developing countries and contribute to perinatal mortality.[7] The prevalence of LBW lies within the range of 18% to 30% reported in South Asian countries such as Bangladesh[8] and India.[9,10] In a study in Kathmandu, Nepal[11], 17% and 6% of pregnant women attending a local hospital had LBW infants and preterm deliveries, respectively.

Commonly anaemia occurs with malnutrition. It is observed that certain food habits, customs, beliefs, religions, traditions and attitudes have a role to play in the causation of malnutrition and anaemia. In some countries, men eat first and women eat last and poorly. Consequently the health of women in these societies may be adversely affected. Considering the socioeconomic factors, malnutrition and anaemia is largely the byproduct of poverty, ignorance, insufficient education, lack of knowledge regarding the nutritive value of foods, inadequate sanitary environment, large family size, etc. A trial of oral iron should be considered as a diagnostic test for all pregnant women with suspected iron deficiency anaemia (IDA). The haemoglobin should increase within 2 weeks, otherwise further tests are required.[12] Oral iron supplementation is the primary treatment option. A high iron diet should be recommended, including red meats (if possible), fortified cereals and drinks. Intravenous iron should only be used in severe cases of iron deficiency, if the woman is unresponsive to oral iron treatment, or when rapid repletion of iron is required.

In severe anaemia the mother develops complications like cardiac failure, pre-eclampsia, accidental haemorrhage, puerperal sepsis, post-partum haemorrhage, pre-maturity, stillbirths, neonatal deaths, low birth weight and congenital malformations are the complications in the baby.

The National Family Health Survey (NFHS-2) states that 52 per cent of women in India are suffering from anaemia, which is mainly nutritional. Incidence of anaemia among women is as high as 60 per cent in Assam, Bihar, Orissa and West Bengal. Whereas the prevalence of anaemia is around 54 per cent in Karnataka and only 23 per cent in Kerala.[9] According to Rapid Household Survey- Reproductive Child Health (RHS-RCH) project, the prevalence of anaemia in Kodagu district of Karnataka during 2002 was 61.5 per cent. Among these anaemic pregnant women, 38.5 per cent were mild and 23.1 per cent were moderate.[15]

MATERIAL AND METHODS:

This study, conducted in the Department of Obstetrics and Gynaecology, Mallareddy Institute of Medical Sciences, from July 2012 to September 2014 to find out the foetal maternal outcome in pregnancies with anaemia. Out of the One thousand twenty seven (1027) pregnant women in labour 498 with a haemoglobin concentration of 10gm or less were included in this study. Anaemic patients were further divided into three categories according to haemoglobin level, Mild (8.1 to 10gm%), Moderate (6.5 to 8.0gm%), Severe (< 6.5gm%).

Patient history including all main causes of anaemia that might lead a pregnant lady to anaemic conditions including her nutrition (number of meals and type of food taken), any sort of ongoing or chronic bleeding disorder or chronic haematuria, haematecazia, haematemasis, history of prolonged NSAIDS use or anti-malarial medications taken, chronic pathology of the gastrointestinal tract, liver or kidney, blood diseases needing transfusion, anaemia before pregnancy, menstrual disorder before pregnancy, history of recent surgery, and addiction for smoking were noted.

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, toxaemia, intrauterine growth retardation, antepartum haemorrhage, cardiac failure, pre-eclampsia, etc. were noted. Complete blood count and Sickling test by Peripheral blood smear (Leishman's Stain), Blood Indices (MCHC, MCH, MCV), blood pressure, biochemical investigations like serum iron estimation, total iron binding capacity were done. 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. Ultrsonography was performed in selected cases. Labour records for the duration of gestation of delivery, duration of labour, nature of labour, and any maternal complication if any were also noted.

The most common symptom presented was swelling on the foot in over 95% of the cases, followed by fatigue like weakness, giddiness, anorexia, and irritability were the most prominent symptoms in this study (75.3%). Other symptoms were palpitation, breathlessness, swelling over the abdominal wall swelling over the vulva and per vaiginal bleeding. (Fig:2)

The most common cause of anaemia was found to be a nutritional deficiency (77.1%) followed by worm infestation (9.64%) (Table-1). Although there were many severe cases of anaemia, many of them were normochromic (28.71%), though the predominant type was Hypochromic, microcytic (49.39%) (Table-2).

DISCUSSION:

Out of the 498 anaemic patients, 79(15.8%) had severe anaemia, 90(18.1%) had moderate and 329 (66.1%) had mild anaemia. The overall prevalence of anaemia among the women attending the hospital for delivery were 48.49% This overall prevalence is much higher than that of other studies performed in other countries like Turkey (27.1%), Nigeria (23.2%) and Gondar (21.6%).[17-19] The reasons are probably due to the difference in socioeconomic conditions, and lack of awareness about the consequences of anaemia.

Table No.1 : Causes of anaemia

Cause of Anaemia	No. of cases	%
Nutritional deficiency	384	77.10
Worm infestation	48	9.64
Infections	26	5.22
PIV bleeding	25	5.02
Menorrhegia	13	2.61
Bleeding piles	2	0.41
Total	498	100

Table No.2: Types of anaemia

Type of Anaemia	Mild	Moderate	Server	Total (%)
Hypochromic, microcytic	130	70	46	246 (49.3)
Normocytic	132	11	-	143 (28.7)
Dimorphic	28	19	19	66 (13.2)
Megaloblastic	33	4	9	43 (8.6)
Total	323	104	71	498 (10)

Fig: 2: Symptom wise distribution of anaemic patients

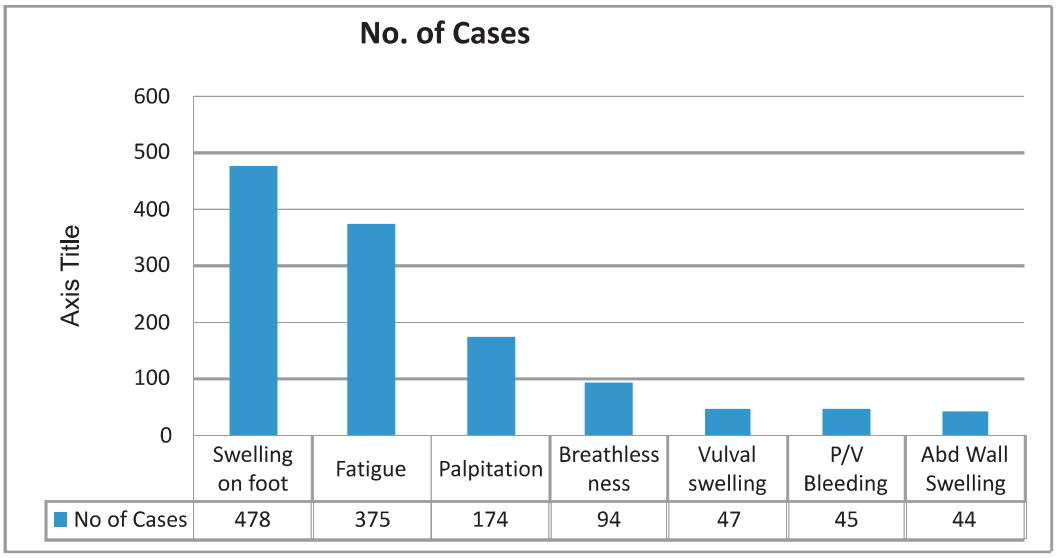

Fig: 1 Age wise distribution of anaemic patients

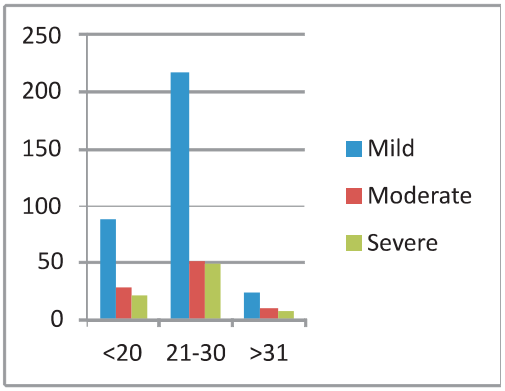

Table-3 Mode of Delivery in anaemic Patients

Mode of delivery	No. of cases	%
Normal delivery - Vertex - Breech	341 11	68.45 2.25
Instrumental - Ventouse - Forceps	37 11	7.42 2.20
L.S.C.S - Emergency - Elective	91 7	18.24 1.44
Total	498	100.00
Twin (Excluded from this study)	5	

It is evident that anaemia was common in the age group below 20 years and 21 to 25 years The cause for anaemia in the age group 21 to 25 years was poor nutrition, frequent pregnancies & increased rate of

Table-4:Maternal morbidity in anaemic patients

Complication	Mild	Moderate	Severe	Total
Pre-term	43	14	20	79
Puerperal	3	4	9	16
P.P.H	2	1	8	11
Wound gaping	1	3	5	9
Congestive	-	-	4	4
Others PIH	32	15	24	71
Maternal death	-	-	2	2
- Direct - Indirect	-	-	2	(0.4) 5

Table-5:Perinatal morbidity in anaemic patients

Foetal Complication	Mild	Moderat	Severe	Total (%)
Low birth Weight/IUGR	107	54	65	226 (45.3)
Birth Asphyxia /Sepsis	4	7	8	19 (3.8)
IUD/ Stillbirth	10	4	18	32 (6.4)
Neonatal Death	7		25	14 (2.8)

abortions along with low socioeconomic conditions. In another group, i.e. less than 20 years the cause of anaemia was mainly early pregnancy. R. Ali and M. Satyanarayana (1985) has noted percentage of anaemia are more prevalent in the age group of 20-25 years with the percentage being 40%. The incidence of anaemia is almost equal in the age group of 25-30 years and the percentage being 36%. It is less common above 30 years (18%) and least below 20 years (6.6%).[16]

It has also been found that as the number of gravida increased, the incidence of anaemia of high grade (moderate or severe) also increased. It was found that the incidence of severe anaemia in multigravida (more than three pregnancies) was 23.18% as against the incidence in primigravida 13.43%, second gravida 10.20% and in third gravida 16.9%. These findings definitely proved that as gravidity increased incidence and severity of anaemia increased.[16]

The incidence and severity of symptoms were increased with severity in anaemia. The most common cause of anemia in our study was nutritional deficiency which was similar to another study by Rathee et al (1987) where 84% of patients were found to be nutritionally deficient.[20] In the same study, 43% of anaemia were found to be due to malaria and 12.4% due to worm infestation. D. Yusuji et al (1973) had found hookworm ova in the stool of 35% of the women.[21] We found pallor to be seen in all the anaemic pregnant women followed closely by pedal oedema, probably due to increased hydrostatic pressure in lower extremity caused by the pressure of the gravid uterus. Hypochromic microcytic type of anaemia was the predominant type followed by normochromic normocytic. Similar results were observed by R Ali et al and Yusufj et al.[16,21]

Preterm delivery was the commonest complication, especially in the severely anaemic patients (15.96%). This could be due to placental insufficiency and intrauterine hypoxia leading to intrauterine death or intrauterine growth retardation. Other complications were wound gaping (1.8%), sepsis (3.21%), etc. post partum haemmorhage occurred in 2.2% of the cases as the patients could not withstand the loss of blood. The incidence of PIH in present series was noted in 14.27%, which was comparable with the results noted by R. Ali et al which is 16%.[16]

Among the complications in the neonates, the incidence of low birth weight was very high, especially in the moderate (51.92%) and severe (91.54%) anaemia. This again along with pre-term delivery predisposed to birth asphyxia and neonatal infections and sepsis increasing neonatal morbidity and mortality.

CONCLUSION:

Anaemia is a preventable condition. Good nutrition before and during pregnancy would definitely elevate the haemoglobin levels. It is revealed by our study that anemia, especially moderate and severe are high risk factors for mother and child morbidity and mortality. Therefore, aggressive treatment for this group is more necessary than for non-anaemic patients. As ours is a developing country with many of the people below the socioeconomic level, where women still believe eating the leftovers after the men have finished their meals, education with regards to the importance of nutrition is of utmost importance. In the present era, where there is equality of women, no woman, especially pregnant ones should suffer from malnourishment and anaemia.

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References:

1. Shiro Kozuma. Approaches to Anemia in Pregnancy. JMAJ, 2009;52(4):214-18.
2. World Health Organization. The prevalence of anaemia in women: a tabulation of available information. 2nd Ed. Geneva: World Health Organization, 1992.
3. WHO/UNICEF/UNU. Iron deficiency anaemia: Assessment, preventionand control. A guide for programme managers. Report of the WHO/UNICEF/UNU consultation, 6-10 December 1993, Geneva. Geneva: WHO.

4. Scanlon KS, Yip R, Schieve LA, Cogswell ME. High and low hemoglobin levels during pregnancy: differential risks for preterm birth and small for gestational age. Obstet Gynecol 2000;96:741-48.
5. Bondevik GT, Schneede J, Refsum H, Lie RT, Ulstein M, Kvale G. Homocysteine and methylmalonic acid levels in pregnant Nepali women. Should cobalamin supplementation be considered? Eur J Clin Nutr, 2001;55:856-64.
6. Knottnerus JA, Delgado L, Knipschild PG, Essed GG, Smits F. Maternal haemoglobin and pregnancy outcome. Lancet 1986;2:282.
7. Fanaroff AA, Stoll BJ, Wright LL, et al. Trends in neonatal morbidity and mortality for very low birth-weight infants. Am J Obstet Gynecol, 2007;196:147-48.
8. Hosain GM, Chatterjee N, Begum A, Saha SC. Factors associated with low birth-weight in rural Bangladesh, J Trop Pediatr, 2006;52:87-91.
9. Radhakrishnan T, Thankappan KR, Vasan RS, Sarma PS. Socioeconomic and demographic factors associated with birth weight: a community based study in Kerala. Indian Pediatr, 2000;37:872-76.
10. Deshmukh JS, Motghare DD, Zodpey SP, Wadhva SK. Low birth weight and associated maternal factors in an urban area, Indian Pediatr, 1998;35:33-36.
11. Bondevik GT, Lie RT, Ulstein M, Kvale G. Maternal hematological status and risk of low birth weight and preterm delivery in Nepal. Acta Obstet Gynecol Scand, 2001;80:402-8.
12. Pavord S,Myers B, Robinson B, Allard S, Strong J, Oppenheimer C. UK guidelines on the management of iron deficiency in pregnancy, Br J Haematol, 2012;156(5):588-600.
13. Johnson TA. Anaemia. In: Luesley DM, Baker PN, editors. Obstetrics and Gynaecology, an evidence-based text for MRCOG, 2nd Ed. London: Hodder Arnold, 2010;139-43.
14. Judith AN, Bhaduri A, Bhat HV. Prevalance of anaemia among pregnant women, A community based study in Udupi district, Health and Population Perspectives, 2008;31(1):31-40.
15. Ali R. Satyanarayana M. Anamea in pregnancy, J Obstet & Gynaec India, 1985;35:335.
16. Karaoglu L, Pehlivan E, Egri M, Deprem C, Gunes G, Genc MF, Temel I: The prevalence of nutritional anemia in pregnancy in an east Anatolian province, Turkey, BMC Public Health, 2010;10:329.
17. Buseri FI, Uko EK, Jeremiah ZA, Usanga EA. Prevalence and risk factors of anemia among pregnant women in Nigeria. Open Hematol J, 2008;2:14-19.
18. Alem M, Enawgaw B, Gelaw A, Kena T, Seid M, Olkeba Y. Prevalence of anemia and associated risk factors among pregnant women attending antenatal care in Azezo Health Center Gondar Town, Northwest Ethiopia, J Interdiscipl Histopathol, 2013;1:137-44.
19. Rathee et al. complications in pregnancy, J Obstet & Gynaecol, 1987;37:478.
20. Yusuji D et al :WHO Bulletin, 1973;48:15-22.