



PREVALENCE OF ANAEMIA IN PREGNANT WOMEN AND ITS OUTCOME: A SINGLE CENTRE EXPERIENCE IN A TERTIARY CARE HOSPITAL IN BIHAR, INDIA

Obstetrics & Gynecology

Dr Sangeeta Kumari	Senior Resident, Department of Obstetrics & Gynecology, Nalanda Medical College & Hospital, Patna.
Dr. Megha Sarakshi Chadha*	Senior Resident, Department of Obstetrics & Gynecology, Nalanda Medical College & Hospital, Patna *Corresponding Author
Dr (Prof) Renu Rohatgi	Professor and Head of the Department, Department of Obstetrics & Gynecology, Nalanda Medical College & Hospital, Patna

ABSTRACT

BACKGROUND: Anaemia is one of the most common medical disorders encountered in pregnant women in developing countries. Anaemia during pregnancy is commonly associated with poor pregnancy outcome, resulting in complications that threaten the life of both the mother as well as the fetus.

This study assesses the prevalence of anaemia among pregnant women and to determine its association with adverse maternal and fetal outcomes.

METHODS: This was a prospective study conducted in Department of Obstetrics and Gynaecology, Nalanda Medical College and Hospital, Patna, Bihar between April 2019 and February 2020. Four hundred pregnant women were included in the study and were followed up till 6 weeks after delivery.

RESULTS: During follow up, there was marked improvement in haemoglobin levels of pregnant women (10.0–11 gm%). Maternal or fetal morbidity was found in about 44.8% in our study. Most common pregnancy-related complication was anaemia (63.2%) in our study, other complications were difficult labour (1.6%), postpartum haemorrhage (6.5%), and preeclampsia (2.8%), abortions/stillbirths (4.9%). The fetal complications were low birth weight (24.1%) and birth asphyxia (0.01%).

CONCLUSIONS: A high prevalence of anaemia in pregnant women apparently increases the maternal and fetal risks. To improve maternal and fetal outcome, it is imperative that the primary health care be strengthened, and multiple awareness programs be conducted in the community. Prevention, early diagnosis and treatment of anaemia in pregnancy is to be given priority.

KEYWORDS

Fetal morbidity, maternal morbidity, prevalence.

INTRODUCTION

According to WHO, anaemia in pregnancy is defined as haemoglobin of less than 11 gm/100ml. Anaemia is one of the most common medical disorders encountered during pregnancy in developing countries. The prevalence in developed countries is 14%, in developing countries 51%, and in India, it varies from 65% to 75%^{1,2}. Anaemia is responsible for 20% of maternal deaths in the third world countries. The causes of anaemia during pregnancy in developing countries are multifactorial; these include dietary deficiencies of iron, folic acid, and vitamins A and B12 and due to parasitic infections, such as malaria and hookworm, or chronic infections like TB and HIV^{3,4,5}. The main symptoms are easy fatigue, reduced exercise tolerance and decreased immunity^{6,7}. Some studies have shown that anaemia during pregnancy contributes to 23% of indirect causes of maternal deaths in developing countries⁸.

Coming to fetal outcome, anaemia is an important cause of intrauterine growth retardation leading to poor neonatal health and perinatal death^{9,10}, as well as stunting among children of less than 2 years^{6,7,15}. It is associated with increased risk of preterm birth and low birth weight (LBW) babies^{11,12,13,14}, as well as an increase in intrauterine deaths (IUID) and low APGAR score at 5 minutes^{6,7,15}.

METHODOLOGY

This prospective study was conducted in our institution between April 2019 and February 2020. Four hundred pregnant women were selected for study and were followed till six weeks after delivery.

The pregnant women were examined, and data was collected. They were followed up every month in our OPD until 6 weeks after delivery. Their haemoglobin (Hb) was measured at the first visit and repeated at every 3rd month. Anaemia was classified based on the WHO criteria; Hemoglobin concentration of <11 g/dl was considered as anaemia. Hemoglobin concentration of 10–10.9 g/dl, 7–9.9 g/dl, and <7 g/dl was considered as mild, moderate, and severe anaemia respectively. The participants were also counselled about their Hb level and importance of consumption of the iron and folic acid tablets, locally available iron-rich foods and regular antenatal check-ups, etc.

RESULTS

A total of 400 pregnant women were enrolled for the study and were

followed up until 6 weeks after delivery. Out of 400, 386 women completed the follow-up with an attrition rate of 3.5%. Mean age of pregnant women was 25 years. Most of the women (43%) belonged to lower socioeconomic class.

The prevalence of anaemia was 63.2% in pregnant women, and it was observed that anaemia was common in the age group of 21–30 years (68.8%). There was a significant association of anaemia status with educational status and gravida. The prevalence of anaemia increased with the duration of pregnancy. Anaemia was more common in women with birth interval <1 year (42.2%).

Prevalence of anaemia according to the sociodemographic status of the study participants are shown in Table 1

Table 1

Particulars	Normal	Anaemia
Age		
<20	38(26.7)	68(27.86)
20-30	101(71.1)	168(68.85)
30-35	3(2.1)	8(3.2)
Education		
Illiterate	35(24.6)	96(39.3)
Primary education	73(51.4)	114(46.7)
Higher secondary or higher	34(23.9)	34(13.9)
Particulars	Normal	Anemia
Socioeconomic class		
Low	53(37.3)	119(48.8)
Medium	79(55.6)	89(36.4)
High	13(9.2)	36(14.8)
Gravida		
Primigravida	61(42.9)	82(33.6)
Second Gravida	72(58.7)	114(46.7)
Multigravida	9(6.3)	48(19.6)
Duration of pregnancy		
<12 weeks	27(19.0)	35(14.3)
13-25 weeks	67(47.2)	104(42.6)
>25 weeks	48(33.8)	105(43.0)

Birth interval(years)		
<1	69(48.6)	103(42.2)
1-2	37(26.1)	68(27.9)
>3	36(25.3)	73(29.9)

During follow-up, there was a significant improvement in the Hemoglobin levels from a mean of 10.3 to 11.0 g% is shown in our study. The number of women having different grades of anaemia reduced and the number of women with corrected anaemia increased during the follow-up.

Comparison of anaemia status between baseline and at the end of the study are shown in Table 2.

Table 2

Hb level(gm%)	Baseline N (%)	At full term N (%)
<7	10(2.5)	8(2.0)
7.1-9.9	62(16)	49(12.7)
10-10.9	163(42.2)	138(35.7)
>11	151(39.1)	191(49.5)
Total	386	386

About 44.8% of the pregnant women encountered maternal and fetal morbidity. Most of the fetal and maternal complications were observed in anaemic women. Out of 16 participants who underwent lower segment caesarean section (LSCS), 68.7% were anaemic. Similarly, 75% of participants who had abortions, 44.4% of obstructed labour, 86.6% of postpartum haemorrhage (PPH), 70% of preeclampsia, and all the women with prolonged labour were anaemic. Around 25.9% of women delivered low birth babies, 59% of low birth weight (LBW) babies, 75% of abortions/stillbirths, and all the neonates with birth asphyxia occurred in mothers who were anaemic.

Distribution of pregnant women according to complications and anaemia status are shown in Table 3.

Table 3

Complications during pregnancy	Normal	Anaemia	Total
Anaemia status	142(36.8)	244(63.2)	386
LBW	41(41)	59(59)	100
Abortions	4(25)	12(75)	16
PPH	2(13.3)	13(86.6)	15
Preeclampsia	3(30)	7(70)	10
Prolonged labour	0	3(100)	3
Birth asphyxia	0	2(100)	2
LSCS	5(31.2)	11(68.7)	16
Premature delivery	2(100)	0	2
Obstructed labor	5(55.5)	4(44.4)	9

DISCUSSION

Indian Council of Medical Research surveys showed that over 70% of pregnant women in the country were anaemic². Similar prevalence rate of anaemia (63.2%) in pregnant women was observed in the present study. In contrast, much higher prevalence rates were observed by Vivek et al., Totega, Agarwal et al., and Gautam et al. (82.9%, 84.9%, 84%, and 96.5%, respectively)^{4,7,11,12}.

Severe anaemia in pregnant women in our study was low (2%) which was similar to study by Kapil and Sareen (1.6%) and NHFS-2 (2.5%)¹³. Whereas other studies reported higher prevalence; Totega (13.1%), Agarwal et al. (9.2%), Vivek et al. (7%), and Gautam et al. (22.8%)^{4,7,11,12}. In a study by Bhargavi Vemulapalli et al., 40.97% had a moderate degree of anaemia and 6.28% of the population had a severe degree of anaemia¹⁴. The high prevalence of anaemia may be due to low dietary intake of iron and folic acid, deprived bioavailability of iron or chronic blood loss due to infections².

Maternal anaemia is considered as strong risk factor for poor pregnancy outcomes, and it threatens the life of fetus. Available data from India indicates that maternal morbidity rates are higher in anaemic women^{2,9,15}. In the present study, about 44.8% of the women had maternal and fetal morbidity, LSCS, abortions, obstructed labor, PPH, preeclampsia, prolonged labor, LBW, and birth asphyxia, which were more commonly seen among anaemic pregnant women.

There is a strong evidence showing that maternal iron deficiency anaemia early in pregnancy can result in LBW subsequent to preterm delivery¹⁰. In the present study, around 25.9% of women delivered low

birth babies; the majority of them (59%) were women with anaemia.

A study by Sangeetha in Bangalore reported highest (63%) prevalence of LBW among pregnant women, whereas Marahatta in Nepal observed least (16.6%)^{1,6}. Studies in India demonstrated that the high proportion of maternal deaths are due to anaemia in pregnant women⁸, whereas in our study, there were no maternal deaths and no preterm delivery.

In the present study, high gravidity, education of pregnant women, and bad obstetric history were significantly associated with anaemia. A study by Chowdhury et al. in Bangladesh also found that education of women was significantly associated with anaemia in pregnancy¹⁶. Anaemia is shown to be more common among women with parity more than three in the present study. In a similar study conducted by Obse et al. in Ethiopia parity > 5 has a significant association with anaemia¹⁷.

CONCLUSIONS

Anaemia is very common in pregnant women in India (63.2%), indicating that it is still a major health problem in our population. It increases the maternal and fetal morbidity and mortality. Socioeconomic status, high gravidity, low literacy, and bad obstetric history were important risk factors for anaemia in pregnancy. It's prevention, early diagnosis, and timely management will greatly improve maternal and fetal outcome, so it should be addressed at primary health centre and at community level. Consumption of iron folic acid tablets, early diagnosis of high-risk pregnancy, and appropriate management are the key factors for better maternal and fetal outcome.

REFERENCES

- [1] Marahatta R. Study of anaemia in pregnancy and its outcome in Nepal medical college teaching hospital, Kathmandu, Nepal. *Nepal Med Coll J*. 2007;9:270-4.
- [2] Kalaivani K. Prevalence and consequences of anaemia in pregnancy. *Indian J Med Res*. 2009;130:627-33.
- [3] S. E. Msuya, T. H. Hussein, J. Uriyo, N. E. Sam, and B. Stray-Pedersen, "Anaemia among pregnant women in northern Tanzania: prevalence, risk factors and effect on perinatal outcomes," *Tanzania Journal of Health Research*, vol. 13, no. 1, pp. 33-39, 2011.
- [4] Viveki RG, Halappanavar AB, Viveki PR, Halki SB, Maled VS. Prevalence of anaemia and its epidemiological determinants in pregnant women. *Al Ameen J Med Sci*. 2012;5:216-23
- [5] S. Brooker, P. J. Hotez, and D. A. P. Bundy, "Hookworm-related anaemia among pregnant women: a systematic review," *PLOS Neglected Tropical Diseases*, vol. 2, no. 9, article e291, 2008.
- [6] Sangeetha VB, Pushpalatha S. Severe maternal anemia and neonatal outcome. *Sch J Appl Med Sci*. 2014;2:303-9.
- [7] Gautam VP, Bansal Y, Taneja DK, Saha R, Shah B, Marg Z, et al. Prevalence of anemia amongst pregnant women and its socio-demographic associates in rural area of Delhi. *IJCM*. 2002;27:157-60.
- [8] R. E. Black, C. G. Victora, S. P. Walker et al., "Maternal and child undernutrition and overweight in low-income and middle income countries," *Lancet*, vol. 382, no. 9890, pp. 427-451, 2013.
- [9] Ivan EA, Mangaiarkkarasi A. Evaluation of anaemia in booked antenatal mothers during the last trimester. *J Clin Diagn Res*. 2013;7:2487-90.
- [10] Allen LH. Anaemia and iron deficiency: Effects on pregnancy outcome. *Am J Clin Nutr*. 2000;7:1280-4.
- [11] Agarwal KN, Agarwal DK, Sharma A, Sharma K, Prasad K, Kalita MC, et al. Prevalence of anemia in pregnant & lactating women in India. *Indian J Med Res*. 2006;124:173-84.
- [12] Totega GS. Prevalence of anemia among pregnant women and adolescent girls in 16 districts of India. *Food Nut Bull*. 2006;27:311-5.
- [13] Kapil U, Sareen N. Prevalence of anemia amongst overweight and obese children in NCT of Delhi. *ICJH*. 2014;26:295-7.
- [14] Vemulapalli B, Rao KK. Prevalence of anemia among pregnant women of rural community in Vizianagaram, North Coastal Andhra Pradesh, India. *Asian J Med Sci*. 2013;5:21-5.
- [15] Singh R, Chauhan R, Nandan D, Singh H, Gupta SC, Bhatnagar M. Morbidity profile of women during pregnancy: A hospital record based study in Western UP. *IJCH*. 2012;24:342-6.
- [16] Chowdhury HA, Ahmed KR, Jebunessa F, Akter J, Hossain S, Shahjahan M. Factors associated with maternal anaemia among pregnant women in Dhaka city. *BMC Women Health*. 2015;15:77.
- [17] Obse N, Mossie A, Gobena T. Magnitude of anaemia and associated risk factors among pregnant women attending antenatal care in Shalla Woreda, West Arsi Zone, Oromia Region, Ethiopia. *Ethiop J Health Sci*. 2013;23:165-73.