



IRON DEFICIENCY ANEMIA IN PREGNANT MOTHERS AS A CAUSE OF POOR MATERNAL HEALTH IN RURAL INDIA

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ABSTRACT

Worldwide Iron deficiency anemia (IDA) affects approximately 25% population and in India it affects 80% of pregnant mothers. A prospective observational study was conducted to know relationship between IDA in pregnancy and its effects on maternal health during pregnancy, labour and postpartum. Pregnant mothers with singleton pregnancy with gestational age > 36 weeks were selected and were divided into two groups. Women with Hb >10 gm% classified in nonanemic group and those with Hb <10 were classified in anemic group. It was further confirmed by serum ferritin levels. Both groups were followed till delivery and effects of anemia on maternal health were studied. Number of vaginal deliveries, instrumental deliveries and cesarean section (LSCS) were similar in both groups but more anemic mothers required induction of labour. More anemic mothers had PPH 5(6.09%) as compared to 2(2.56%) in non anemic group. Only anemic mothers after PPH required blood transfusion 3(3.65%). 18 (21.95%) mothers in anemic group had other morbid symptoms whereas in nonanemic group 3(3.84%) had similar symptoms. The study emphasize that IDA is widely prevalent in pregnant mothers and is associated with life threatening conditions during pregnancy and childbirth. Prevention of IDA during pregnancy can prevent many serious maternal complications.

Key words: Iron deficiency anemia, Haemoglobin, Induction of labour, postpartum morbidity.

INTRODUCTION

Nutritional deficiencies among pregnant women are very common and iron deficiency is the leading cause of maternal ill health. Women in reproductive years have iron intake that is too low to offset losses from menstruation and increased iron requirement for reproduction¹. Statistically 10% of adolescent girls suffer heavy blood loss during menstruation (>80ml/month)¹ and this further pushes adolescent girls to become anemic mothers in this reproductive life.

Worldwide IDA is most common nutritional disorder affecting approximately 25%-50% of population¹ and burden is more in developing countries (56% in developing and 18% in developed countries).¹ The commonest cause of anemia in pregnancy is iron deficiency¹. In India IDA is widely prevalent affecting 80% of pregnant mothers¹. In first trimester IDA affects 3.5% to 7.4% and this rate increases to 15.6% to 55% in third trimester. Pregnant mothers are at increased risk of developing IDA, because of an increased fetal demand for iron¹. IDA contributes significantly to poor maternal health in the form of impaired resistance to infection, maternal morbidity and mortality.¹ With increasing parity there is 3-fold higher requirement for mothers with 2-3 children and nearly 4-fold greater requirement for mothers with 4 or more children, thus implicating pregnancy¹ as an important reason for IDA.

Postpartum IDA is also prevalent in 4 to 27% of mothers around the globe¹ and is a major cause of maternal morbidity and mortality.¹ The symptoms of postpartum anemia include breathlessness, fatigue, palpitations, dizziness, infection, lactation failure and prolonged hospital stay depending on severity of blood loss and related anemia.¹ Maternal IDA has also been shown to be strongly associated with depression, stress and impaired cognitive function in postpartum period¹ and may result in difficulty for mother to care for her baby, thereby influencing emotional mother-infant bond. IDA also exposes mothers to an increased risk of blood transfusion during peripartum period because parturient can no longer cope with physiological blood loss of delivery. Hence to know the burden of IDA on the maternal health during pregnancy, following study was undertaken with the objective to evaluate the effects of Iron deficiency anemia on maternal health during pregnancy, labour and postpartum.

MATERIAL AND METHODS

This prospective observational study was carried out at Kasturba hospital Sevagram, a tertiary care rural hospital in central India. The study was conducted over a period of two years. Approval from the institutional ethical committee (IEC) was taken. Pregnant mothers with singleton pregnancy with gestational age more than 36 weeks who visited to outpatient department (OPD) of Obstetrics and Gynecology were enrolled in the study after taken informed written consent. Mothers were divided into two groups by computer generated random allocation numbers. Mothers with Hb >10 gm% were classified in nonanemic group and mothers with Hb <10 were classified in anemic group. Mothers having other type of anemia were

excluded from study. Both groups were followed till delivery at institute and effect of anemia on maternal health was studied. The outcome of pregnancy, need for induction of labor, intrapartum and postpartum maternal events were correlated with degree of IDA.

Observations:

Initially 241 mothers were registered for the study out of which 193 (80.08%) mothers could be upto delivery and postpartum. Additional 7 mothers turned up for follow up with personal efforts. 161 (80.50%) mothers reported for delivery in institution in which 82 mothers were anemic and 78 were nonanemic. One mother was excluded as she absconded after preterm birth and hence outcome could not be evaluated. After delivery, maternal health indicators were evaluated according to predesigned, pretested and validated proforma. Statistical analysis was done using Epi 6 software. Following are the observations of clinical study.

A. Mode of delivery:

The present study did not indicate any particular pattern in mode of delivery. 57 (69.51%) mothers in anemic group as compared to 64 (82.05%) in nonanemic group went into spontaneous labour. In anemic group 25 (30.48%) mothers needed induction of labour as compared to only 14 (16.66%) mothers in nonanemic group (Fig A). Number of vaginal deliveries, instrumental deliveries and LSCS were almost similar in both study groups (Table A and Fig A).

	Weeks of gestation	Spontaneous labour			Induced labour			Total
		Vaginal delivery	Instrumental delivery	LSCS*	Vaginal delivery	Instrumental delivery	LSCS	
Anemic group (n=82)	32-35	02	01	00	01	00	00	04
	35-37	15	02	01	09	00	01	28
	>=37	34	01	01	06	03	05	50
Total		51	04	02	16	03	06	82
Nonanemic group (n=78)	32-35	01	00	00	00	00	00	01
	35-37	08	00	00	04	00	00	12
	>=37	50	03	02	05	02	03	
Total		59	03	02	09	02	03	78

*LSCS= Lower Segment Caesarean Section

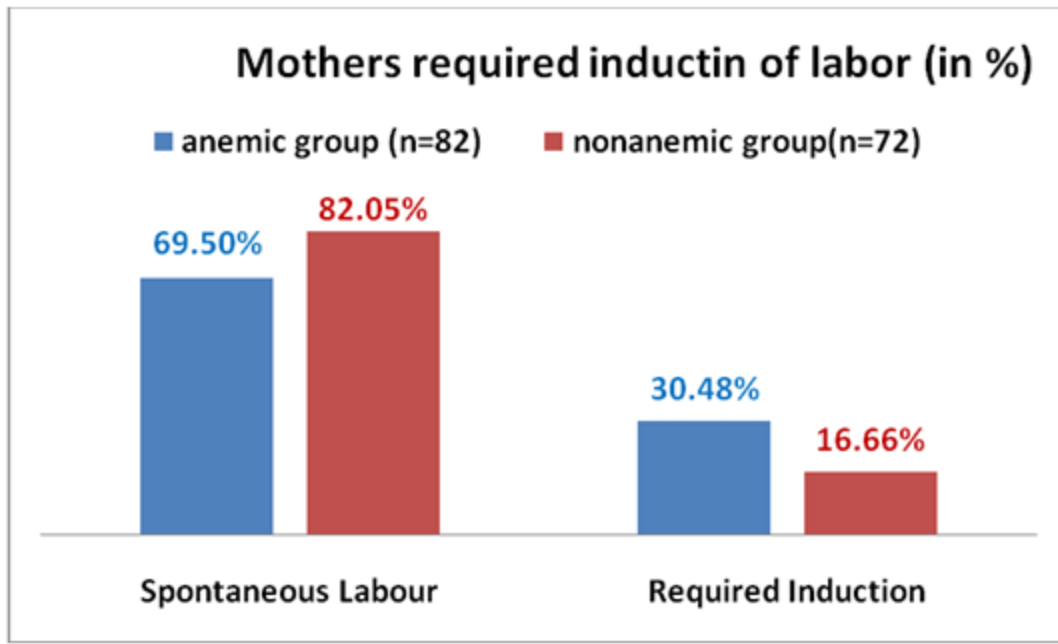


Figure A

B. Postpartum maternal morbidities:

Incidence of sepsis was more in anemic mothers (9.75%) as compared to 6.94% in nonanemic mothers. 6.09% nonanemic mothers had postpartum hemorrhage (PPH) in whom 3.65% required blood transfusion. 2(2.56%) nonanemic mothers had PPH but none required blood transfusion. 1 (1.21%) mother in anemic group had congestive cardiac failure (CCF) but none in the anemic group. When general symptoms in postpartum period were inquired, 18 (21.95%) mothers in anemic group had symptoms like those mentioned below (easy fatigability, poor appetite, lassitude, failure of lactation etc.) whereas in nonanemic group only 3(3.84%) mothers had similar symptoms (Fig. B)

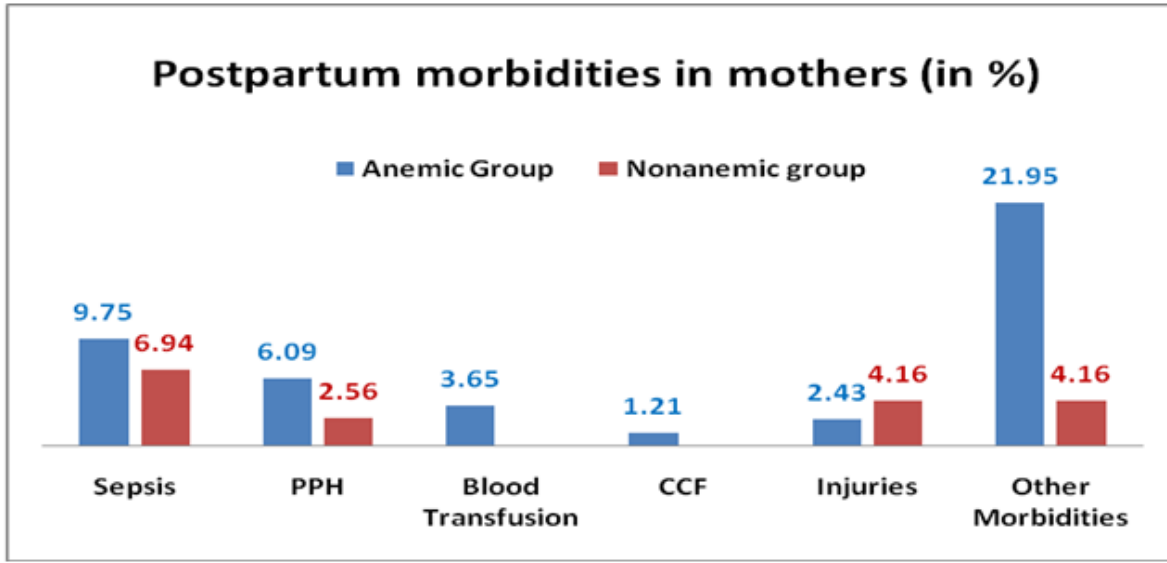


Figure B

Sepsis includes upper respiratory tract infection, fever of unknown origin, urinary tract infection. **CCF:** - Congestive cardiac failure. **Injuries included:** Cervical tear, vaginal tears, perineal tears etc. **Others:** - Failure of lactation, weakness, easy fatigability, breathlessness on exertion, poor appetite, postpartum depression

DISCUSSION

While comparing **mode of delivery** in our study, no mother required induction of labour for maternal indication. 30.48% mothers in anemic group required induction of labour for fetal causes whereas in nonanemic mothers 16.66% required induction of labour. Fetal indications for induction of labour were oligohydramnios, intrauterine growth restriction, non assuring non stress tests (NST) and adverse parameters given by fetal Doppler velocitometry. Number of vaginal deliveries, instrumental deliveries and LSCS were almost similar in both study groups. During literature search we found no evidences to correlate maternal anemia and mode of delivery.

Incidence of sepsis was more in anemic group. 5 mothers had postpartum hemorrhage (PPH) out of which 3 mothers required blood transfusion in anemic group. 2 nonanemic mothers also had PPH but none required blood transfusion hence indicating early detection of anemia and its management can prevent life threatening complications during intrapartum and postpartum period. 1 mother in anemic group had CCF which was managed in maternity intensive care unit (ICU) and the mother was well on discharge. When general symptoms in postpartum period were inquired, 18 mothers in anemic group had adverse symptoms like poor appetite, lassitude, and breathlessness on exertion, failure of lactation etc, whereas in nonanemic group only 3 mothers had similar symptoms.

Major concern about adverse effects of anemia on pregnant mothers is that this population is at greater risk of mortality and morbidity.^{1 1} Maternal mortality in selected developing countries ranges from 27 to 194 deaths per 100000 live births. In a large Indonesian study, maternal mortality rate for mothers with a hemoglobin concentration <100 g/L was 70.0/10000 deliveries compared with 19.7/10000 deliveries for nonanemic mothers.¹ In India, 16% maternal deaths are due to anemia.¹ In our study there was no maternal mortality because of prompt and timely care during labour and postpartum. A FOGSI-WHO study on maternal mortality revealed that 64.4% of mothers who died had hemoglobin of 8 gm% and 21.6% had hemoglobin level of less than gm%ⁱ Cardiac failure, cerebral anoxia, infections especially puerperal sepsis and inability to stand even slight blood loss during pregnancy and delivery are seen in those who are severely anemic. More than 1000 severely affected young mothers are reported to die every week because of their inability to cope with stress of childbirth²⁶.

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