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Original Research Article

Impact of severe anemia during pregnancy on maternal outcome

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ABSTRACT

Background: Anemia is a global problem. Its prevalence in India is about 60%. Anemia directly or indirectly contributes to a significant proportion (40%) of maternal deaths in developing countries. The present study aimed to determine maternal outcome among pregnant women with severe anemia.

Methods: This was a prospective study conducted in the department of obstetrics and gynecology, Mc Gann teaching district hospital, Shimoga, over a period six months i.e from January 2019 to June 2019. The study population included all pregnant women who were in their third trimester and with severe anemia (Hb% \leq 7g%) attending for routine care at our hospital. The interviews were conducted in regional language. The information collected was, social demographic characteristics, economic characteristics and reproductive health history. After the interviews, clinical examinations were conducted and clinical samples such as blood, urine and stool were collected to perform investigations.

Results: A total of 94 study participants were included in the study. All study participants were belonged to the low socio-economic strata of the society. 68.1% of women in anemia group were from a rural background. Unbooked and referred cases constituted nearly 4/5th of all anemic subjects (84%). In study group, preponderance of illiteracy was reported and accounted for 60.64% followed by primary and secondary education 23.04% and 14.90% respectively. Common maternal complications noted in the severely anemic group was PPH (14.9%), post-partum febrile morbidity (5.3%), CCF (3.2%) and sepsis (4.2%) while in the control group only one woman had post-partum febrile morbidity.

Conclusions: In our study, common maternal complications noted in the severely anemic group were post-partum hemorrhage, postpartum febrile morbidity, congestive cardiac failure and puerperal sepsis.

Keywords: Anaemia, Illiteracy, Maternal morbidity, Post-partum haemorrhage, Pregnancy, Sepsis

INTRODUCTION

Pregnancy is an extraordinary involvement in each woman's life. The idea of a developing in the mother's womb, surely is nature's method for communicating the properties of motherhood. Anemia is one of the most commonly encountered medical disorders during pregnancy the prevalence of anemia in developed countries is 14%, in developing countries 51%, and in India, it varies from 65% to 75%.¹ The prevalence of

anaemia is highest among pregnant women in Sub-Saharan Africa (SSA) (57%), followed by pregnant women in Southeast Asia (48%), and lowest prevalence (24.1%) was found among pregnant women in South America.²

Various causes are responsible for developing anaemia during pregnancy. Factors such as micronutrient deficiencies of iron, folate, and vitamins A and B12 and anaemia due to parasitic infections such as malaria and

hookworm or chronic infections like TB and HIV.³ Anemia is the second most common cause of maternal death in India and contributing to about 80% of the maternal deaths caused by anemia in South East Asia. Anemia is also an established risk factor for intrauterine growth retardation, leading on to poor neonatal health and perinatal death.⁴

Information on prevalence of anemia remains a significant issue in public health since anemia is related to morbidity and mortality in the population groups usually considered to be the most vulnerable; pregnant women and children under five. The negative health effects for the mother include fatigue, poor work capacity, impaired immune function, increased risk of cardiac diseases, and mortality.⁵

Studies have shown that anaemia during pregnancy contributes to 23% of indirect causes of maternal deaths in developing countries. Studies on prevalence of anemia are useful to monitor the progress of reproductive health.⁵ Despite efforts being made to reduce the burden of anemia, its prevalence is still high in developing countries.

Hence the need for this study is to reaffirm the various maternal consequences of anemia and to effectively counsel women to prevent further obstetrical mishap due to a condition which could be easily corrected.

METHODS

This was a prospective study conducted in the department of obstetrics and gynecology, Mc Gann teaching district hospital, Shimoga over a period six months i.e from January 2019 to June 2019.

A simple random sampling technique was used. A total of 94 subjects were included in the study. The study population included all pregnant women who were in their third trimester and with severe anemia (Hb% \leq 7g%) attending for routine care at our hospital. The study excluded women who reported that they will relocate/move after delivery, pregnant women who had history of blood transfusion (within the previous 2 weeks) and those who did not give consent. Women were informed about the study aims and follow up schedule and those agreeing to participate gave a signed consent. Face-to-face interviews using questionnaire were conducted by trained research assistants. The interviews were conducted in regional language. The information collected was, social demographic characteristics, economic characteristics and reproductive health history. After the interviews, clinical examinations were conducted and clinical samples such as blood, urine and stool were collected to perform following investigations;

- *Hematological:* Hemoglobin, HCT, RBC, MCV, MCH, MCHC and Peripheral smear

- *Urine analysis:* urine routine and urine culture and sensitivity
- *Stool examination:* for occult blood and ova cyst.

Control subjects

A total of 94 pregnant women who served as controls and had Hb% \geq 11g% during the study period.

All the study subjects were carefully followed in the antepartum, intrapartum and postpartum periods. Enquiries were made daily regarding new symptoms and women were subjected to clinical examination to detect the complications of anemia are the earliest.

Statistical analysis

Data was analyzed by using simple percentage method.

RESULTS

A total of 94 study participants were included in the study.

Table 1: Demographic details of Group I and Group II.

Variables	Group I	Group II
Age in years		
<20	9 (9.6%)	9 (9.57%)
20-30	78 (83%)	79 (84.04%)
31-40	7 (7.4%)	6 (6.3%)
Socio economic status		
Lower	94 (100%)	77 (81.91%)
Middle	0 (0%)	17 (18.09%)
Residence		
Urban	30 (31.9%)	74 (75.5%)
Rural	64 (68.1%)	24 (24.5%)
Literacy		
Illiterate	57 (60.64%)	53 (56.39%)
Primary	23 (23.04%)	25 (25.60%)
Secondary	14 (14.90%)	9 (9.5%)
Graduate and above	1 (1.07%)	7 (7.44%)
Registration		
Booked	15 (16%)	76 (80.85%)
Unbooked	79 (84%)	18 (19.15%)
Obstetric score		
Primi	32 (34%)	71 (75.53%)
Multi	62 (66%)	23 (24.47%)
Hemoglobin (g%)		
<4	8 (8.5%)	NA
4-7	86 (91.5%)	NA

NA: not applicable.

In our study, majority of study subjects belonged to the age group of 20-30 years in both study and control group which accounted for 83% and 84% respectively. The minimum age in the entire study group was 18 years and

the maximum age was 36 years. All study participants were belonged to lower socioeconomic group (100%). In control group, 77 (81.91%) belonged to lower socioeconomic group and remaining were from middle socioeconomic group 17 (18.09%). Majority of participants in study group were from rural area which accounted for 64 (68.1%). In control group, majority of participants were from urban which accounted 74 (75.5%). In study group, preponderance of illiteracy was reported and accounted for 60.64% followed by primary and secondary education 23.04% and 14.90% respectively. Unbooked participants were found to be higher in study group (84%). In study group, 34.1% participants were primigravidae. In study population, 8.5% patients had hemoglobin level below 4 gms% (Table 1).

Table 2: Labour events in two groups of patients studied.

Labour events	Group I (n=94)	Group II (n=94)
Undelivered	24 (25.5%)	0
Vaginal	57 (60.6%)	89 (94%)
LSCS	3 (3.2%)	1 (1.06%)
LSCS-CPD	1 (1.1%)	3 (3.19%)
Forceps	3 (3.2%)	0
LSCS-previa	2 (2.1%)	0
Vaccum	2 (2.1%)	0
LSCS fetal distress	0	1 (1.06%)
VBAC	1 (1.1%)	0
Pre-term delivery	17 (18.09%)	6 (6.38%)
Full term delivery	77 (81.91%)	88 (93.62%)
PPH negative	80 (85.1%)	91 (96.81)
Positive	14 (14.9%)	3 (3.19%)

Table 3: Mother related details in both groups.

Mother (maternal morbidity)	Group I (n=94)	Group II (n=94)
Nil	72 (76.6%)	93 (98.94%)
PPFM	5 (5.3%)	1 (1.06%)
BR ENG	3 (3.2%)	0 (0%)
CCF	3 (3.2%)	0 (0%)
Sepsis	2 (2.1%)	0 (0%)
Wound sepsis	2 (2.1%)	0 (0%)
Abruption	1 (1.1%)	0 (0%)
DIC	1 (1.1%)	0 (0%)
LDH raised	1 (1.1%)	0 (0%)
LRTI	1 (1.1%)	0 (0%)
PP CCF	1 (1.1%)	0 (0%)
SEC PPH	1 (1.1%)	0 (0%)

From Table 2, it is clear that, in the present study there was difference in the mode of delivery of the cases and controls but not much. Twenty-four patients (25%) were undelivered in study subjects. Vaginal delivery was accounted for 60% in study subjects whereas 94% in

control subjects. 18.1% of cases had preterm delivery as against only 6.1% of controls.

Common maternal complications noted in the severely anemic group were post-partum hemorrhage (14.9%), postpartum febrile morbidity (5.3%), CCF (3.2%) and puerperal sepsis (4.2%). As against the cases, only one woman had postpartum febrile morbidity in the controls (Table 3).

DISCUSSION

The present study aimed at analyzing the variables of maternal and fetal outcome in cases of pregnancy with severe anemia (Hb% \leq 7g%) and their outcome was compared with that of controls (Hb \geq 11g%). Majority of the study subjects were belonged to the age group of 20-30 years, the percentage being 83%. This is comparable with the results of the study conducted by Maka et al, as per their study the percentage of anemic women in was more in the in the age group of 20-30 years (88.3%).⁶ Our results are also comparable with the results of Alli R et al.⁷

All study participants in the present study were from lower socio-economic group. Poor income leads to limited access to nutritious diets and is associated with poor eating habits that might lead to anaemia. This is similar to the study conducted by Gedefaw et al. They showed that women with low income were more anaemic than women with higher income.⁸ Another study by Alli et al, also reported all study participants who were anemic were from low socio-economic group.⁷ Study by Rangnekar et al, showed less 67% of anemic women belonged to low socio-economic group.⁹

Among study population 68.1% were found to be from rural area. Pregnant women living in urban areas are 73% less likely to be anemic during pregnancy than women in the rural area. The difference in the socioeconomic status, educational and occupational status of pregnant women, difference in the health service access between rural and urban areas could be the justification for the difference. Additionally, inadequate counseling by health professionals in resolving the wrong beliefs and myths regarding the iron supplementation could contribute to higher prevalence of anemia among pregnant women in rural areas.^{10,11}

Study participants were predominantly observed among illiterates (60.4%). Women who had education were more averse to be sickly contrasted with their counterparts. Education has been accounted for to decrease the danger of being anemic in different studies. Taught pregnant women have better salary and eat nutritious nourishment and consequently don't get dietary anaemia.¹²

A study in Ethiopia likewise detailed higher commonness of anemia among pregnant women who had no education. Secondary and higher education had been related with a

few other great maternal and tyke results like higher frequency of exclusive breastfeeding, going to antenatal consideration visits for 4 or more prescribed visits, usage of skilled attendance during delivery, and social insurance looking for when the kids have pneumonia or malaria fever. Women education and strengthening are definitely not inside wellbeing part and there is a requirement for multisectoral coordinated effort in battling anemia and other maternal medical issues.¹³

In the present study, unbooked were 84%. This is in comparison with the previous studies conducted by Maka et al (74%) and Aswathi et al (83%).^{6,14} In the present 66% were multigravida, comparable with Awasthi A et al (65.5%).¹⁴

The commonest type of anemia in the present study was microcytic hypochromic (74.5%) anemia followed by dimorphic anemia (23.4%). No cases of megaloblastic anemia were seen. These results are similar to Maka et al. As per Maka et al, microcytic hypochromic anemia was most common (82%) followed by dimorphic anemia (18%).⁶ Hook worms compete with maternal nutrition and also are responsible for loss of blood and thus, can cause anemia. In the present study, worm infestation was in 8.5% among study population. All stool samples collected from controls participants were found to be nil for ova and cyst.

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.¹ Maternal complications like postpartum febrile illness, postpartum haemorrhage, sepsis, and congestive cardiac failure was seen which was comparable to Awasthi A et al, postpartum febrile illness (14.1%), PPH (7.5%) and puerperal sepsis (3.5%).¹⁴ As per the study conducted by Suryanarayana, et al., there was a significant statistical association between anemia and complications during pregnancy which is also similar to the study conducted by Nair et al.^{15,16}

As per the study conducted by Rohilla et al, 4,456 women's hospital record were reviewed and the result showed that 17.9% (798) of them were anemic, out of this 96 (2.15%) of them were found to be severely anemic and six out of 96 women died due to severe anemia.¹⁷ In our study no maternal death reported.

CONCLUSION

In this study, common maternal complications noted in the severely anemic group were post-partum hemorrhage, postpartum febrile morbidity, congestive cardiac failure and puerperal sepsis. To improve maternal outcome, it is prescribed that the essential health services must be fortified and high need must be given to aspects such as anticipation, early determination, also, treatment of anemia in pregnancy. Compelling measures to give toilet

to every single rural family by the government to be considered. Deworming ought to be seriously rehearsed during pregnancy. Further, authors suggest progressing instruction about impacts of iron deficiency particularly among women with low education and populace of adolescent and women of regenerative age when all is said in done.

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