



MATERNAL ANEMIA DURING PREGNANCY AND ITS OUTCOME – A RETROSPECTIVE STUDY

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ABSTRACT **Background And Objective:** Maternal anemia during pregnancy has huge adverse impact on both fetal and mother well being. The study aimed to determine the socio-demographic factors and to know the adverse perinatal and neonatal outcomes.

Methodology: A retrospective study was done from 2017 April to May 2020 April for a period of three years at PHC, Ankalagi, Belagavi. Over 718 pregnant women were enrolled. Regular ANC was done. Data was collected on Maternal Age, Body mass Index (BMI), Number of parity and Socio-economic determinants. A hemoglobin level was done for all trimesters. Hemoglobin levels were estimated by Sahil's hemoglobinometer method.

Results: Mean age was 18±39 yrs. Anemia among pregnant women was 60.30%. Nearly 347(48.32%) were mild anemic (Hb: 9-10.9g/L), 84(11.69%) were moderately anemic(Hb :7-8.9g/L) & 8(1.11%) were severe anemic (Hb :<7g/L). Increased anemic showed in the maternal age group between 31-35years (96%) and in group of underweight of about 84% and in the parity with gravid 6&7 (100%). Maternal complications were in the form of preterm labour(3.06%), PPH(2.08%), LSCS(22.42%), abortions(14.90%), and neonatal outcomes were analyzed in terms of still born(0.4%), low birth weight(11%), NICU admissions(2.36%), and neonatal death(0.13%).

Conclusion: Anemia during pregnancy is associated with maternal and perinatal complications. It is one of the preventable causes which can decrease the maternal & fetal mortality. Should reinforce the health education from adolescent girls, with regular antenatal check up and active participation of ASHA workers. A more focussed approach is required towards pregnant women in rural areas.

KEYWORDS :

INTRODUCTION

Haemoglobin, a hemoprotein whose primary function is to transport the oxygen to the body tissues¹. During pregnancy due to hemodilution, many women suffer from anemia. Anemia impairs the capacity of blood transport to cells which is indicator for poor nutrition & health². Most common form of anemia is iron deficiency, it is estimated that approximately 50% is attributable to iron deficiency anemia^{3,4,5,6}.

Anemia during pregnancy is considered if the haemoglobin concentration lower than 11.6g/dl in first trimester, 9.7g/dl in second trimester and 9.5g/dl in third trimester^{7,8}. Nearly 52 % were anemic in developing countries and 23% in developed countries⁹. Anemia has multifactorial etiology. Nutritional anemia is more common in pregnancy. Socio-demographic factors faulty dietary habits, increased iron demand, low immunity, compounded by physiological changes of pregnancy contribute to anemia in pregnancy¹⁰. Many studies have shown that pregnant women suffering from IDA, they are more prone for risk factors like abortion, preterm delivery, baby with low birth weight, increased perinatal & neonatal mortality¹¹⁻¹³. Thus our retrospective study aimed to know the socio-graphic determinants and adverse outcomes of low level haemoglobin on both maternal and fetal well being at primary health care, Ankalagi, Belagavi.

METHODOLOGY

A retrospective study was done at Primary Health Centre (PHC), Ankalagi, Belgavi from April 2017 to May 2020 for a period of three years. Nearly 718 pregnant women were enrolled. Data was collected on Maternal Age, Pre-pregnancy weight, Height to calculate the Body Mass Index (BMI), Number of parity, BP & Socio-economic determinants which included- occupation, educational status, monthly income.

BMI categories:

Pre-pregnancy BMI was calculated as the body weight within 3 months prior to pregnancy in kilograms divided by height in meters squared(kg/m²); the participants were categorized as follows : BMI<18.5kg/m² – under weight; BMI 18.5-24 kg/m² -normal weight; BMI 24- 28 kg/m² -over weight; BMI >28kg/m² -obese.

Haemoglobin Groups:

Further Anemia was classified according into WHO. Normal <11g/dl

of haemoglobin; Mild anemia (9-10.9g/dl), Moderate anemia (7-8.9g/dl) and Severe anemia (<7.0g/dl). Haemoglobin levels estimation: venous blood samples were drawn from medial cubital vein and stored in tubes containing EDTA to prevent coagulation and estimated by Sahil's haemoglobinometer. Simple tabulation and proportions were calculated.

The main perinatal outcomes were accepted as still birth, low birth weight, preterm labour, neonatal intensive care unit (NICU) admission, post partum haemorrhage, LSCS, abortions. These outcomes were obtained from the hospital records. Still birth was considered as death of fetus during pregnancy¹⁴. Low birth weight of baby was defined less than 2.5kg¹⁵. Preterm labour was defined the birth between 24-37 weeks of pregnancy^{16, 17}. Neonatal admissions were considered in following conditions like neonates with shorter than 32 weeks of gestation, transient problems, cardiorespiratory monitoring requirement or presence of Respiratory Distress Syndrome, severe jaundice, neonatal sepsis and conditions requiring exchange transfusion were admitted to NICU. PPH was defined as having blood loss of more than 500ml after vaginal delivery or 1000ml after LSCS within 24 hours of delivery¹⁸. Spontaneous Abortions/ miscarriage is defined as expulsion of the fetus before 20weeks of pregnancy¹⁹.

RESULTS

A total of 718 pregnant women were enrolled in the study at the PHC Ankalagi, Belagavi. Mean maternal age was 18±39 years. Nearly 41.78% were in the age between 20-25 years & least with >35 years of 1.25%. Most were housewife which showed 91.78% & 58.07% had only primary education. 51.25% had monthly income of about 5000-10000 (Table No.1).

Table No.1 Sociodemographic Features Of The Study Participants From April 2017 To May 2020

Sociodemographic factors	Number(%)
1.Age (years)	
<20	217 (30.22%)
20-25	300 (41.78%)
26-30	163 (22.7%)
31-35	29 (4%)
>35	9 (1.25%)

2.Occupation	
Housewife	659 (91.78%)
Government employee	07 (0.97%)
Private employee	05 (0.69%)
Farmer	17 (2.36%)
Merchant	03 (0.41%)
Daily labourer	27 (3.76%)
3.Educational status	
Unable to read and write	136 (18.94%)
Read and write	78 (10.86%)
Primary education	417 (58.07%)
Secondary education and above education	87 (12.11%)
4.Monthly income	
<2000	56 (7.79%)
2,001-5,000	294 (40.94%)
5,000-10,000	368 (51.25%)

Nearly 33.84% were underweight during pregnancy & 5.01% were overweight (Table No.2). Highest parity index were primigravida, gravida 2 followed by gravida 3 & gravida 4 i.e 37.46%, 31.89%, 19.35%, 8.4% (Table No.3)

Table No.2 Pre-pregnancy BMI Status

B.M.I	Total number (%)
Underweight	243 (33.84%)
Normal	430 (59.88%)
Overweight	36 (5.01%)
Obese	09 (1.25%)

Table No.3 Parity Index Status

Parity	N(%)
Gravida 1	269(37.46%)
Gravida 2	229(31.89%)
Gravida 3	139(19.35%)
Gravida 4	61(8.4%)
Gravida 5	17(2.3%)
Gravida 6	2(0.2%)
Gravida 7	1(0.13%)

Prevalence of anemia among pregnant women was 60.30% in which 48.32% were mildly anemic, 11.69% were moderately anemic and 1.11% were severe anemic respectively. (Table No.4)

Table No.4 Hemoglobin Levels And Grades Of Anemia In Pregnant Mothers

Haemoglobin level(gm%)	Grades of anemia	N=718	%
>11	Non -anemic	285	39.69%
9-10.9	Mildly anemic	347	48.32%
7-8.9	Moderately anemic	84	11.69%
<7	Severely anemic	8	1.11%
	Total anemic	433	60.30%

Nearly 22.42% were under gone to LSCS type of delivery and 14.90% had abortions (Table No.5)

Table No.5 Maternal Complications Due To Anemia

Maternal complication	Number (%)
Miscarriage/abortions	107(14.90%)
Preterm labour	22(3.06%)
LSCS mode of delivery	161(22.42%)
Intrauterine death	1(0.13%)
Post partum haemorrhage	15(2.08%)

11% were low birth weight and 2.36% were had neonatal admissions (Table No.6)

Table No.6 Neonatal Complications Due To Maternal Anemia

Neonatal complications	Number (%)
Low birth weight	79(11%)
Still born	3(0.4%)
Neonatal admissions	17(2.36%)
Neonatal death	1(0.13%)

DISCUSSION

Anemia is one of the frequent complications during pregnancy. Due to physiological changes in pregnancy affects haemoglobin and there is relative or absolute reduction in haemoglobin concentration. The most common cause is iron deficiency which contributes nearly 75% and

folate deficiencies. Due to decreased oxygen capacity carrying in tissues, has significant impact on both maternal & fetus like prematurity, post partum haemorrhage, spontaneous abortions, low birth weight and many more. In this study found, nearly 60.30% were anemic during pregnancy period. In this study, majority of anemic cases were of the mild type of about 48.32%, followed by cases of moderate anaemia of about 11.69% and 1.11% were severe anaemia. A similar report at Ethiopia stated 49% were of mild anaemia and 5% were severe anaemia²⁰. Whereas in contrast study in 2010 showed that majority had moderate anemia of about 50.9%, mild type was 30.17% & severe anemia was 18.9% respectively²¹.

In our study showed, as maternal complications, most of them underwent to LSCS mode of delivery (22.42%) and nearly 14.90% had abortions, 3.06% had preterm labour, 2.08% had post partum haemorrhage respectively. Whereas neonatal complications showed nearly 11% had low birth weight, 2.36% were had neonatal admissions and 0.4% had still born.

Thus oxygenation to the cells is crucial because it carries all nutrients through haemoglobin, so adequate intake of iron and vitamin C through supplementation of tablets or food or fortified food should be considered. Maternal anemia can have huge impact including infant mortality²². In many review literature showed significant relationship between maternal's anemia in the early of pregnancy with small for gestational and low birth weight²³⁻²⁵. On the other side, low birth weight increases the risk for neonatal mortality^{26, 27}. Birth weight is directly proportional to haemoglobin concentration. Nearly 0.14g/dl per gram increments in the birthweight of newborn²⁸.

CONCLUSION

Thus in our study showed that anemic in all phases of pregnancy has a negative impact on both maternal and fetal health. Majority of them had abortions and underwent LSCS mode of delivery. As neonate complications, low birth weight among babies were found. Since iron deficiency anemia is one of the preventable disease and complications can be overcome by providing the health education before pregnancy.

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