ORIGINAL RESEARCH PAPER

Volume-8 | Issue-7 | July - 2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ANEMIA IN PREGNANCY: RISK FACTORS AND ADVERSE MATERNAL AND PERINATAL OUTCOMES IN TERTIARY CARE HOSPITAL

Gynaecology

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ABSTRACT

Background: The aim of study was to find risk factors leading to anemia and to observe the impact of anemia on mother and perinatal outcomes among study participants.

Materials and methods: This is a prospective case control study in a tertiary care hospital to evaluate risk factors leading to anemia in pregnancy and the consequent maternal morbidity and perinatal outcome. Two groups were made Group A cases and Group B controls. Each group had 50 cases each. Females having Hb <11gm/dl were considered anemic and included in Group A and females having Hb >11gm/dl were considered controls and included in Group B.

Results: The mean haemoglobin(Hb) was 11. 604 gm/dl in controls, whereas it was 6. 808gm/dl among the cases. Nature of diet, family size, interpregnancy intervals, education, family income, gravida, parity, number of antenatal visits were the main factors associated with anemia in pregnancy. Anemic pregnant mothers had low birth weight babies, complications and more neonatal morbidity.

Conclusion: We found that there was significant association between anemia and low birth weight babies, preterm deliveries, age group, education level, gravida and number of antenatal visits.

KEYWORDS

Anemia, pregnancy, sociodemographic, neonatal morbidity, low birth weight

INTRODUCTION

Till date anemia during pregnancy is public health problem especially in developing countries and is associated with adverse outcomes in pregnancy[1]. WHO has defined anemia in pregnancy as Hb concentration of less than 11gm/dl[2]. According to WHO, anemia is considered to be a public health significance or problem if population studies find the anemia prevalence of 5% or higher. Prevalence of anemia of >=40% in a population is classified as a severe public health problem[3].

Anemia is one of the most common nutritional deficiency disorders affecting the pregnant women;the prevalence in developed countries is 14%, in developing countries 51% and in India it varies from 65% to 75% [4]. It is the second most common cause of maternal death in India and contributing to about 80% of maternal deaths caused by anemia in South East Asia [4, 5, 6].

Anemia has a variety of contributory factors including nutritional, genetic and infectious disease factors;however iron deficiency causes 75% of anemia cases. In, developing countries pregnant women start pregnancy with already depleted body stores of iron and other vitamins. This is mainly due to poor nutritional intake, repeated infections, menstrual blood loss and frequent pregnancies. It is associated with socioeconomic conditions, lifestyles, and health seeking behaviour across different cultures.

Anemia is also an established risk factor for intrauterine growth retardation leading to poor neonatal health and perinatal death [7, 8, 9].

Strategies should be built into the primary health care system and existing programmes such as maternal and child health, integrated management of childhood illness, adolescent health, making pregnancy safer or safe motherhood, treat malaria, deworming and stop tuberculosis. Knowledge of the sociodemographic factors associated with anemia in pregnancy can be used to formulate a multipronged approach strategy to attack this important health problem.

Aim : To find the risk factors for anemia in pregnancy and associated maternal and neonatal morbidity.

Objectives

1. To study the various sociodemographic factors leading to anemia and association between them.
2. To study the maternal and neonatal morbidity.
3. To study the relation of maternal anemia with low birth weight.

MATERIAL AND METHODS

Study design

The present was a case control study carried out in Jaipuriya hospital, a tertiary care hospital from 20th September to November 2018. Pregnant women in their third trimester admitted for labour were included in the study. Two groups were made by systematic random sampling. Among two groups 50 were cases and 50 were controls.

Inclusion criteria:

For cases were, hemoglobin count less than 11gm%(Grp A)
For controls were, hemoglobin count greater than 11gm%(Grp B)

Study procedure

Informed consent was obtained and explaination as to the purpose of study offered. Thus , pregnant women in labour were interviewed with predesigned , pretested questionarre. A detailed demographic profile of the women that is, age, age at first pregnancy, caste, type of family, education, income, birth interval, gravida, booked or unbooked and occupation was collected. Further maternal and foetal complications were studied in both groups.

Lab method :

Hemoglobin level was estimated by Sahli's acid haematin method of hemoglobin estimation.

Results

The mean maternal age of study participants in Grp A was 24.50yrs with SD 4. 186 whereas in Grp B it was 24. 52 with SD 3. 346 . Most number of participants(82 %) belonged to 20-30 yrs age in both groups . Around (56 %) had income between Rs 50001 -10, 000 in Grp A and (58 %) in Grp B. Around (30 %) participants in Grp A studied upto primary level, (28 %) upto secondary level, (30 %) were lliterate, (30 %) upto graduate level and above as compared to (10 %), (32%), (18%) (40 %) respectively in Grp B. Only (20 %) cases were enrolled as registered cases in Grp A as compared to (46 %) in Grp B. Almost (46 %) cases were multigravida and (28 %) cases were primipara in Grp A whereas in Grp B it was (34%) and (32 %) respectively. Among Grp A (38 %) cases and in Grp B (28 %) cases were pregnant within and upto 2 years of previous pregnancy.

Our study observed pregnancy related risk factors like PE, PROM, oligohydramnios in (20 %) cases in Grp A and (16 %) in Grp B. High incidence of adverse foetal outcome in form of preterm (22 %), LBW (52 %), NICU admissions (12 %) and IUD (14 %)in Grp A as compared to (4 %), (26 %), (10 %) , (12 %) in Grp B.

Anemia was seen more among illiterate women this association was

statistically more significant. Anemia seen among lower socioeconomic status and this was not statistically significant. Unbooked cases were more in anemic group than in non anemic group. LSCS observed more among participants with severe anemia.

Table 1: Association between sociodemographic factors and anaemia among study population

Particulars	Grp A (n=50)	Grp B(n=50)	Significance
Mean Hb level (gm/dl)	6.808±SD 1.3108	11.604±SD 0.6848	<0.001
Mean mat. Age at first pregnancy	20.40±SD 2.703	21.2±SD 3.761	0.346
Mean maternal age(yrs)	24.50±SD 4.186	24.52±SD 3.346	
<20	6 (12%)	6 (12%)	1
21-30	41(82%)	42(84%)	
31-40	3 (6%)	2(4%)	
Education status			
Illiterate	15 (30%)	9 (18%)	0.003
Primary education	15(30%)	5(10%)	
Secondary education	14 (28%)	16(32%)	
Higher secondary & above	6 (12%)	20(40%)	
Occupation			
Housewife	42(84%)	42(84%)	1
Working	8 (16%)	8 (16%)	
Caste			
General	10 (20%)	14(28%)	0.487
SC/ST	29 (58%)	35(70%)	
Others	11(22%)	1(2%)	
Gravida			
Primi	14(28%)	17(34%)	0.374
Second	13(26%)	17(34%)	
Multi	23(46%)	16(32%)	
Birth interval (yrs.)			
<1	4(8%)	0	
1-2	15(30%)	14(28%)	
3 yrs and above	17(34%)	19(38%)	
Type of family			
Joint	36(72%)	38(76%)	0.820
Nuclear	14(28%)	12 (24%)	
Monthly income			
2000-5000	8(16%)	2(4%)	0.414
5001-10,000	28 (56%)	29(58%)	
>10000	11(22%)	11(22%)	
Diet			
Veg	25 (50%)	27 (54%)	0.840
Non-veg	25(50%)	23 (46%)	
Booked	10 (20%)	23 (46%)	0.006

Table 2 : Complications during delivery

Complications	Grp A	Grp B
LBW (less than 2.5 kg)	26(52%)	13(26 %)
Premature delivery	11(22%)	2(4 %)
LSCS	12(24%)	5(10 %)
PPH	7(14 %)	0(0%)
PIH	5(10%)	5(10 %)
Oligo hydramnios , PROM	5(10 %)	3(6%)

Table 3

	Maternal Complications		Significance
	Present	absent	P=0.001
Grp A (Anaemic)	31	19	
Grp B (Normal)	14	36	

Table 4: Foetal complications during delivery

Complications	Group A	Group B
NICU admissions	6 (12%)	5(10%)
Meconium stained liquor	9 (18%)	6(12%)
IUFD	7 (14%)	0

Table 5:

	Birth Weight		Significance
	Low	Normal	0.013
Grp A	26	24	
Grp B	13	37	

Table 6:

Foetal complications	Grp A	Grp B	Significance
Yes	17	11	0.265
No	33	39	

DISCUSSION

Majority of anemic study subjects belonged to age group of 20-30 yrs(82%).This was comparable to results of Alli R et al(10) and also in a study by Suryanarayana R et al(11) anemia was more common in age group 21-30 yrs i.e. 66.1%, SC/ST (61.6%) and OBC (30.8%). In the present study, 56 % anemic women belonged to low socioeconomic status while 100% of women of Alli R et al(10) belonged to low socioeconomic group whereas study by Rangnekar et al (12) had 67% of anemic women in low socioeconomic group.A study by Choudhary et al(13) found that education of women was significantly associated with anemia in pregnancy whereas study by Singh et al.(14) observed an insignificant association between anemia and gravida.

Mean spacing between births has an impact on hemoglobin status of women.In our study last delivery interval < 2yr was 38 % and > 2 yr was 34% in Grp A and 28 % and 38 % in Grp B respectively.It was almost comparable to Khandait et al.(15) i.e. 55.9% and 44.1 % in < 2yr and > 2yrs respectively.In a study by Suryanarayan R et al(11) anemia was more common in women with birth interval < 1yr (40.2%).

A definite association has been suggested between severe anemia and pregnancy induced hypertension.In the present study,10 % women had pregnancy induced hypertension in Grp A whereas in study by Awasthi et al.(16) it was 24.5 % and by Sarin AR et al.(17) it was 28.5 %.

Most of the women were housewives in both the categories.Most of the women who were anemic were multiparous with more than gravid three.This was in concurrence with a study in Nigeria by Zama et al(18) who found that more of multiparous women were anemic.However, this was in contrast with study by Ahmed et al.(7) who reported that unipara were more susceptible to anemia.

There was high incidence of IUD(14 %), NICU admissions(12%),

meconium stained liquor (18%) in present study in Grp A.There were preterm deliveries in 22% of anemic cases which was comparable with study of Sarin AR(17) who observed 31.2% had preterm deliveries as compared to study by Awasthi et al(16) preterm (9.5%),IUGR (37.5%) and IUD (8 %) and in study by Rangnekar et al(12). preterm (73%),IUGR (4%) and IUD (16 %).Incidence of low birth weight babies in present study was(52%) in anemic patients which was comparable with 66% observed by Rangnekar et al(12) and 69.1% by Khalida.H et al(19).In another study from Nepal,no association was found between high hematocrit and either low birth weight or preterm deliveries.In a study by Suryanarayan R et al (11), anemia led to foetal complications low birth weight (25.5%) followed by premature delivery(0.2%).

In an analysis of 3728 deliveries in Singapore(20),571 women who were anemic at the time of delivery had a higher incidence of preterm delivery than did those who were not anemic,but no other differences in either pregnancy complicatios or neonatal outcomes were observed. Kumar et al(21) and Monika et al(22) have found that risk of preterm deliveries is high in severely anemic mothers i.e.,Hb<7gm/dl.

CONCLUSION

Anemia is a serious health problem in India where life of pregnant woman and her child is endangered.It is directly proportional to parity,less spacing between pregnancies and related to lower education status.It is significant cause of maternal and neonatal morbidity.Our data is insufficient to represent association of all risk factors with anemia and its effect on maternal and child health so further studies and research is the need of the hour.Therefore,more emphasis should be laid on girl education,balanced diet intake,regular antenatal check ups,iron folic acid supplementation with the motto of healthy mother and healthy baby.So,government as well as NGO's should actively participate to achieve goal of safe motherhood.

Compliance with Ethical standards

Conflict of interest The authors have no conflicts of interest.

Ethical approval For this type of study ,formal consent was not required.

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