



DETERMINANTS OF ANEMIA IN PREGNANCY IN TERTIARY CARE CENTER

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ABSTRACT **Background :** Anemia during pregnancy is a public health problem especially in developing countries. The World Health Organization (WHO) has defined anemia in pregnancy as a concentration of hemoglobin (Haemoglobin) below 11 g / dl. Anemia affects about two-thirds of pregnant women in developing countries and contributes to maternal mortality and low birth weight^[1]. In India, anemia is the second most common cause and accounts for 20% of total maternal mortality^[2]. Iron deficiency anemia (IDA) is the most common cause of anemia during pregnancy, affecting around the world about 1 million women -32 and at least half of all pregnant women in low-income countries.

Method : This was a Prospective Observational Study carried out in Department of Obstetrics and Gynecology, Swaroop Rani Nehru Hospital, Moti Lal Nehru Medical College and Kamla Nehru Hospital, Prayagraj From 1 August 2020 to 31 July 2021 among 301 pregnant women visiting antenatal clinics of obstetrics and gynaecology department.

RESULTS : Out of total 301 pregnant women, 216 (71.76%) were anemic and 85 (28.24%) had normal haemoglobin. Out of 216 anemic patients, total 63 (29.17%) patients were having mild anemia, 88 (40.74%) patients were having moderate anemia, 39 (18.06%) patients were having severe anemia, and 26 (12.04%) patients were having very severe anemia. Total 301 anemic patients were taken, out of which 69.48% patients were of iron deficiency anemia, 7.51% had VitB12/Folic acid deficiency, 22.54% had physiological anemia of pregnancy whereas 0.47% came out to be positive for β thalassaemia trait.

CONCLUSION : Anemia prevention is the need of the hour and needs several programmes along with effective management for detection. Iron supplements do improve the iron status of the mother during pregnancy and in the postpartum period, even in women who enter pregnancy with reasonable iron stores.

KEYWORDS :

INTRODUCTION:

Anemia during pregnancy is a public health problem especially in developing countries. The World Health Organization (WHO) has defined anemia in pregnancy as a concentration of hemoglobin (Haemoglobin) below 11 g / dl. Anemia affects about two-thirds of pregnant women in developing countries and contributes to maternal mortality and low birth weight^[1]. In India, anemia is the second most common cause and accounts for 20% of total maternal mortality^[2]. Iron deficiency anemia (IDA) is the most common cause of anemia during pregnancy, affecting around the world about 1 million women -32 and at least half of all pregnant women in low-income countries.^[3] The prevalence of anemia is estimated to be high in India compared to all other developing countries.^[4] Also, it is the second leading cause of maternal mortality in the country^[5]. International data show that 56% of pregnant women in low- and middle-income countries (LMIC) have anemia^[1].

MATERIAL AND METHODS

Study design: Prospective Observational Study

Setting: Study was carried out in Department of Obstetrics and Gynecology, Swaroop Rani Nehru Hospital, Moti Lal Nehru Medical College and Kamla Nehru Hospital, Prayagraj.

Duration of study: From 1 August 2020 to 31 July 2021

Patient selection: All pregnant women visiting antenatal clinics of obstetrics and gynaecology department.

Sample size: 301

Data Analysis : Considering the prevalence of anemia in pregnant women to be 50% in community to be studied (NFHS-4) taking alpha error to be 0.05 and margin of error to be 12% of prevalence the sample size was calculated. Sample size came out to be 301.

After taking approval from the institutional ethical committee, patient enrollment was done after taking written and informed consent.

INCLUSION CRITERIA:

- Pregnant women willing to participate
- Pregnant women with haemoglobin < 11 gm/dl

EXCLUSION CRITERIA:-

- Pregnant women not willing to participate
- Inadequate samples

An informed consent was taken from all subjects prior to carrying out any study related procedure.

OBSERVATION:

Distributions of pregnant women according to level of Haemoglobin are shown in Table 1. Total 301 pregnant women are enrolled in this study. In which, 85 (28.24%) had normal hemoglobin and 216 (71.76%) were anemic. Out of 216 anemic patient, total 63 (29.17%) patients were having mild anemia, 88 (40.74%) patients were having moderate anemia, 39 (18.06%) patients were having severe anemia, and 26 (12.04%) patients were having very severe anemia.

Table no 1

Group	Haemoglobin Level	Numbers	Percentage
Non anemic	Non anemic 11 or higher	85	28.24%
Anemic	<11	216	71.76%
	Mild 10-10.9	63	29.17%
	Moderate 7-10	88	40.74%
	Severe <7	39	18.06%
	Very severe <4	26	12.04%

Table 2 shows type of anemia amongst anemic group. Amongst anemic patients, 69.48% patients were have iron deficiency anemia, 7.51% had VitB12/Folic acid deficiency, 22.54% had physiological anemia of pregnancy whereas 0.47% came out to be positive for β thalassaemia trait.

Table 2: Distribution of population according to Type of Anemia in anemic group.

Types of Anemia	Number (216)	Percentage (%)
Iron Deficiency Anemia	148	69.48
Vitamin B12/Folic Acid Deficiency Anemia	16	7.51
Physiological Anemia of pregnancy	48	22.54
Thalassaemia	1	0.47

Table 3 show the distribution of study population according to dwelling in non anemic group and anemic group. The percentages of rural and urban were 24.71% and 75.29% in non anemic group and 54.17% and 45.83% in anemic group, respectively. On the basis of dwelling, both groups were significantly different

Table 3: Distribution of woman according to dwelling in non anemic and anemic group

	Non anemic group (n=85)		Anemic Group (n=216)		Chi Sq.	P value
	n	%	n	%		
Rural	21	24.71	117	54.17	0.28	<0.001*
Urban	64	75.29	99	45.83		

*=Significant (p<0.05)

DISCUSSION

DEGREE OF ANEMIA

In present study out of 301 patients, 216(71.76%) were anemic, out of which 63 (29.17%) patients were mild, 88 (40.74%) patients were moderate, 39 (18.06%) patients were severe, and 26 (12.04%) patients were very severe. A study conducted by Rao S et al 2013^[3] found that 30.2% of the anemic patients had mild anemia 35.4% moderate anemia and 3.4% had severe anemia. In a study done by Pathak P et al 1999^[4] the prevalence of mild anemia was 30.4%, moderate anemia 53.2% and severe anemia 1.5%. Contrary to our findings, the previous studies done by, Suryanarayana et al. (2017)^[5] found that the low frequencies of anemia (2.3%) in study population. Another study conducted by Kapil and Sareen, (2014)^[6] who reported that 1.6% severe and NHFS-2 (2.5%). In a study by Vemulapalli et al., (2013)^[7] observed that total 40.97% study population had a moderate degree of anemia and 6.28% of the population had a severe degree of anemia. On the contrary, few recent studies done in African continent found the prevalence of anemia in pregnant women as low as 25.8% to 37.6% [Mahamoud et al., 2020]^[8]. This variation may be due to various socio-demographic and comorbid conditions. Also, as present study participants are mainly poor from rural population with low socioeconomic status, low dietary intake of iron and folic acid, deprived bioavailability of iron or chronic blood loss due to infections therefore the prevalence of anemia during pregnancy may be remarkably high.

TYPE OF ANEMIA

In present study a total of 301 anemic patients were taken, out of which 69.48% patients were of iron deficiency anemia, 7.51% had VitB12/Folic acid deficiency, 22.54% had physiological anemia of pregnancy whereas 0.47% came out to be positive for β thalassemia trait. The study done by Tripathi R et al 2012^[9] showed iron deficiency, an important cause of anemia (48.1%), but there was also high prevalence of macrocytic anemia (40%) among cases of severe anemia in pregnancy. A similar prevalence of anemia was found in North Indian region in the study done by Somdutta et al 2009^[10]. In a study done by Satpute et al 2012^[11] and Mendiratta et al 2015^[12] the prevalence of thalassemia trait came out to be 3.3% and 7.9% respectively.

Urban/Rural distribution

In present study the percentages of rural and urban were 24.71% and 75.29% in non anemic group and 54.17% and 45.83% in anemic group, respectively. A study done by Kundap Rp et al 2016^[13] where they found prevalence of anemia being much more in women belonging to rural areas (81%) as compared to urban areas (51%). A study done by Shedole DT et al 2017^[14] also stated that the prevalence of anemia in 320 rural adolescent girls was 96.88% and out of 330 urban adolescent girls examined, 72.42% were anemic. This difference was found to be statistically significant (p<0.05). Similar findings have also been described by Khasnobis & James et al 2010^[15] that in rural population 53.7% women were anemic, whereas in urban dwellers only 39.2%. The high prevalence of anemia in rural population can be attributed to their poverty, ignorance, inadequate iron intake, lower literacy rates, lesser understandability, limited access to the health care, failure to utilize available medical facilities and more dependency on the elders in the family to accompany them to the healthcare centers. Though various government programmes are attempting to overcome these barriers by appointing ASHA and Anganwadi workers in anemia prevention programmes, we are still lagging behind and need to have more aggressive approach to bridge the gap between rural and urban population.

Study	Urban	Rural
Our study	45.83%	54.17%
Kundap RP et al 2016(63)	51%	81%
Shedole DT et al 2017(64)	72.42%	96.88%
Khasnobis & James et al 2010(65)	53.77%	39.2%

CONCLUSION

Anemia prevention is the need of the hour and needs several programmes along with effective management for detection. Iron supplements do improve the iron status of the mother during pregnancy and in the postpartum period, even in women who enter pregnancy with reasonable iron stores. The advice of routine iron supplementation during pregnancy, regardless of whether the mother is anemic, has been heavily debated and routine supplementation is not universally practiced in all industrialized countries. Maternal iron deficiency anemia increases the risk of preterm delivery and subsequent low birth weight and accumulating information suggests an association between maternal iron status in pregnancy and the iron status of infants postpartum. Especially adolescent girls should be educated to make them aware of the upcoming problem if not taken care since the same age. Education regarding hygiene, nutritious diet, iron supplement should be given to them.

Advertisement programs should be generated to draw the attention of policymakers as anemia is one of the major global problems. The health care system should not miss any health related opportunities afforded during the important years of adolescence before marriage and child bearing and strategic shift in the programme to mandatory regular supply of IFA tablets to adolescent girls and pregnant women.

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