



## Research Article

# A study of prevalence of anemia among pregnant women in rural area of Jabalpur

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## Abstract

**Background:** Nutritional anemia is the most common type of anemia worldwide. The anemia in pregnant women may cause increased risk of intra-uterine growth retardation or prematurity, perinatal and neonatal mortality, inadequate iron stores for the newborn, increased risk of maternal morbidity and mortality, and lowered physical activity, mental concentration, and productivity. The Government of India recommends a minimum dose of total 100 tablets containing 60 mg of elemental iron and 100mcg folic acid to be prescribed during pregnancy. However, prevalence of anemia is still 53% among women of reproductive age group, despite the availability of this effective, low-cost intervention for prevention and treatment. Therefore the present study was conducted to determine the prevalence of anemia in pregnant women in rural area of Jabalpur.

**Methods:** The present study was carried out at Sukh Sagar medical college, Jabalpur. 270 antenatal women attending ANC OPD were recruited in the study. After taking Informed consent, the pregnant women were interviewed with the predesigned proforma. Socioeconomic status assessed, Gestational age calculated. The height and weight were measured. Thorough general physical examination along with per abdominal examination was carried out. Basic routine investigations were performed followed by Hemoglobin level measurement.

**Results:** Overall prevalence of anemia among pregnant women was found to be 54.8%. Maximum women suffering from anemia were in the age group 30 years and above (88.9%). It was found that with lower socioeconomic status and increase in parity, the probability of suffering from anemia also increased. This relationship was found to be statistically significant ( $P < 0.05$ )

**Conclusions:** Anemia still continues to be a major public health problem in India causing maternal and perinatal mortality and morbidity. High parity, less spacing, low income, low educational status and low socioeconomic status etc. are the major barriers to the efforts for the prevention of anemia during pregnancy

**Keywords:** Anemia in pregnancy, haemoglobin, socio-economic status, parity.

## Introduction

Nutritional anemia is the most common type of anemia worldwide. It mainly includes iron, folate and vitamin B12 deficiencies. The most common cause of anemia is the Iron deficiency. According to World Health Organization (WHO), the prevalence of anemia among women in India is 53%<sup>1</sup> and is 50% among antenatal women<sup>1</sup>. The anemia in pregnant women may cause increased risk of intra-uterine growth retardation or prematurity, perinatal and neonatal mortality, inadequate iron stores for the newborn, increased risk of maternal morbidity and mortality, and lowered physical activity, mental concentration, and productivity<sup>2</sup>. Women with even mild anemia may experience fatigue and have reduced work capacity<sup>2</sup>. In view of high prevalence of anemia and its adverse health consequences, India launched a National Nutritional Anemia Prophylaxis Program (NNAP) to prevent anemia among pregnant women. NNAPP was initiated in 1970 during the fourth 5-year health plan with the aim of reducing the prevalence of anemia to 25%. The Government of India recommends a minimum dose of total 100 tablets containing 60 mg of elemental iron and 100mcg folic acid to be prescribed during pregnancy.<sup>3</sup> Public health program of distribution of the iron tablets to the pregnant women (during last trimester) and preschool children is in operation in India as part of Maternal and Child Health (MCH) services.<sup>4</sup> However, anemia decreased by only 3.5% between 2005-006 (56.5%) and 2015-2016 (53%)<sup>1</sup> among women of reproductive age group, despite the availability of this effective, low-cost intervention for prevention and treatment.<sup>3</sup> Therefore, the present study was conducted to determine the prevalence of anemia in pregnant women in rural area of Jabalpur, Madhya Pradesh and to identify different potential factors, like socio-cultural, economic, demographic, nutritional, reproductive and other influencing anemia in this and thereby adopting preventive measures to improve the health of mother and child.

## Materials and Methods

The present study was carried out at Sukh Sagar medical college, Jabalpur, over a period of 6 months between January 2018 to June 2018. 270 antenatal women attending ANC OPD were recruited in the study.

## Objective

- To determine the prevalence of anemia.
- To identify various socio-demographic factors associated with anemia in pregnant women.

**Inclusion criteria:** All ante natal females attending ANC OPD for the first time in present pregnancy.

## Exclusion criteria

- Taking iron and folic acid tablets before registration.
- Bleeding disorder in the previous pregnancy.
- History of passing worms in the stool.
- History of high-grade fever in the last 3 months.
- Not giving consent.

After taking Informed consent, the pregnant women were interviewed with the predesigned, pretested proforma which consisted of detailed demographic profile of the women including age, age at first pregnancy, religion, type of family, family size, educational level of a woman and her husband, occupation of a woman and her husband. Revised Kuppaswamy's Socio-economic classification<sup>5</sup> was used to assess socioeconomic status. Gestational age was assessed from the last menstrual period and for those who did not remember the last menstrual period date, gestational age was co-related to the local calendar events and assessing fundal height. The height and weight were measured. Thorough general physical examination along with per abdominal examination was carried out. Basic routine investigations like PCV, RBS, urine routine, CBC and ESR were performed. Hemoglobin level was estimated by cell counter. Reference range of haemoglobin for anemia (WHO)<sup>6</sup> were taken as:

- Hb < 11 g/dL - anemia during pregnancy
- mild anemia - 10.0–10.99 g/dL
- moderate anemia - 7.0– 9.9 g/dL
- Severe anemia - <7.0 g/dL

Those women who had severe anemia as well as high-risk pregnancies were further investigated and treated. Ethical approval for the study was obtained from the ethical committee of the institute.

## Results

In the present study, the mean duration of married life of pregnant women was 5.2 years. Mean age at menarche was found to be 13.6 years. Mean height and weight of the study subjects were 145.1 cm and 48.9 kg, respectively. Average calorie consumption per day was 1450 calories. The demographic characteristics of the study subjects are summarized in Table 1. The majority of the women belonged to age group of 20 to 29 years (73.4%). About 20% of all antenatal women were teenagers and 6.6% were women aged 30 years and above. Maximum number of the women were from Hindu religion 190(70.4%). The social classes of maximum numbers of women were class III and IV (37.1% and 44.8%) respectively. Table 2 shows that the overall prevalence of anemia among pregnant women was found to be 54.8% and the prevalence of mild, moderate, severe anemia being 29.3%, 22.5%, and 3%, respectively. Thus the prevalence of mild anemia was high in comparison to the others. Maximum patients were multigravida (55.6%) followed by primigravida (36.3%)(table 3). As shown in Table 4, it was observed that proportion of pregnant women suffering from anemia was maximum (88.9%) in the age group 30 years and above followed by the age group of 25-29 years (56.6%). The observed difference was not statistically significant ( $P > 0.05$ ). In the present study no women from socioeconomic class I was found. The proportion of pregnant women suffering from anemia in classes II were less (16%) as compared with the lower socioeconomic status (56%, 50.4%, and 88.2% in classes III–V, respectively). This

shows that the prevalence of anemia increased as the socioeconomic status decreased. Thus, lower socioeconomic status is the cause of increase risk of development of anemia in pregnancy. This association between the socioeconomic status of the family and anemia in pregnancy was found to be statistically significant ( $P < 0.05$ ).(table 5) In the present study we can see that 68.2% of grandmultigravida were anemic followed by primi patients (64.3%).It was found that with increase in parity, the probability of suffering from anemia also increased. This relationship was found to be statistically significant ( $P < 0.05$ ) (table-6)

**Table 1:** Socio-demographic information of the pregnant women

Parameter (n = 270)	Number	Percentage
<b>Age group</b>		
<20	54	20
20–24	138	51.2
25–29	60	22.2
≥30	18	6.6
<b>Religion</b>		
Hindu	190	70.4
Muslim	75	27.8
Others	05	1.8
<b>Socio-economic class</b>		
Class I	00	00
Class II	32	11.8
Class III	100	37.1
Class IV	121	44.8
Class V	17	6.3

**Table 2:** Distribution of pregnant women according to severity of anemia.(n=270)

Anemic state	Number	Percentage
Normal	122	45.2
Mild	79	29.3
Moderate	61	22.5
Severe	08	3.0

**Table 3:** Distribution of pregnant women according to parity.(n=270)

Parity of women	Number	Percentage
Primigravida	98	36.3
Multigravida (G2,G3)	150	55.6
Grand multigravida(≥= G4)	22	8.1

**Table 4:** Distribution of anaemia in pregnant women according to age (n = 270)

Age	Anemia n (%)				Normal n(%)	Total
	Mild	Moderate	Severe	Total		
<20	12(22.2)	11(20.4)	0(00)	23(42.6)	31(57.4)	54
20–24	42(30.4)	32(23.2)	1(0.7)	75(54)	63(45.6)	138
25–29	18(30)	13(21.6)	3(5)	34(56.6)	26(43.3)	60
≥30	7(38.9)	5(27.8)	4(22.2)	16(88.9)	2(11.1)	18
<b>Total</b>	79(29.3)	61(22.5)	08(03)	148(54.8)	122(45.2)	270

Chi-square test = 3.820, df = 3.82, P = 0.0506

**Table 5:** Distribution of anaemia in pregnant women according to socio-economic class (n=270)

Socioeconomic class	Anemia n (%)				Normal n(%)	Total
	Mild	Moderate	Severe	Total		
Class II	13(40.6)	3(9.3)	0(00)	16(50)	16(50)	32
Class III	27(27)	28(28)	1(1)	56(56)	44(44)	100
Class IV	32(26.4)	25(20.6)	4(3.3)	61(50.4)	60(49.6)	121
Class V	7(41.2)	5(29.4)	3(17.6)	15(88.2)	2(11.7)	17
<b>Total</b>	79(29.3)	61(22.5)	08(03)	148(54.8)	122(45.2)	270

Chi-square test = 8.969, df = 3, P = 0.0297

**Table 6:** Distribution of anaemia in pregnant women according to parity. (n=270)

Parity	Anemia n (%)				Normal n(%)	Total
	Mild	Moderate	Severe	Total		
Primigravida	42(42.8)	21(21.4)	00(00)	63(64.3)	35(35.7)	98
Multigravida (G2,G3)	36(24)	32(21.3)	02(1.3)	70(46.7)	80(53.3)	150
Grandmultigravida (>= G4)	01(4.5)	08(36.3)	06(27.3)	15(68.2)	07(31.8)	22
<b>Total</b>	79(29.3)	61(22.5)	08(03)	148(54.8)	122(45.2)	270

Chi-square test = 9.157, df = 2, P = 0.0103

## Discussion

Although much effort has been taken to prevent anemia in Indian women still anemia in India is a problem of major public health significance. In the present study the prevalence of anemia during pregnancy was found to be 54.8 %. This result is comparable with studies of Vanamala et al<sup>7</sup> where the prevalence was 52 %. “Indian Council of Medical Research (ICMR) Task Force Multicenter Study” revealed that the overall prevalence of anemia among pregnant women from 16 districts was 84.9% (range 61.0% –96.8%).<sup>8</sup> According to WHO up to 41.8% of all women in developing countries are anemic.<sup>9</sup>

In our study the age group of more than 30 years had the highest prevalence of anemia(88%). A study of Kaur S et al<sup>10</sup> higher prevalence of anemia in younger women (<30 years old), but another study in south India by Raghuram V et al<sup>11</sup> has considered women of 41-45 years for the highest prevalence. The relation of anemia with

age was found to be different for different locations.

Our study showed a higher prevalence of anemia in pregnancy in low socioeconomic Status and in patient with high parity. A cross-sectional study in New Delhi showed a trend of decreasing severity of anemia with higher per capita income as seen in the present study as well.<sup>12</sup>

In our study the parity had a clear effect on the prevalence of anemia, the women with four or more pregnancies had significantly higher rate of anemia, which is comparable to a study in south india<sup>11</sup> that has also reported higher rate of anemia for the parity index more than four. The reason might be the increase of women’s nutritional needs during pregnancy, and also shows the importance of contraception educations, particularly in rural areas.

## Conclusion

Anemia still continues to be a major public health problem in India causing maternal and perinatal

mortality and morbidity. Unfavourable socio-demographic factors like high parity, less spacing, low income, low educational status and low socioeconomic status etc. are the major barriers to the efforts for the prevention of anemia during pregnancy. Therefore, there is a need for a more effective programme regarding improvement in education and nutritional status of girl. Dietary counselling and nutritional education must be a part of antenatal clinics to prevent the issue of anemia in pregnancy. Behaviour change communication would tackle this issue by initiating timely interventions to protect the vulnerable group and save every single mother of a newborn baby.

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