

## ORIGINAL RESEARCH

### Prevalence of Anemia in Pregnancy and its Biosocial Connection with Other Factors at a Rural Centre of North India

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#### ABSTRACT

**Introduction:** Anemia is one of the commonest medical disorder in pregnancy all over the world. The burden is huge. Several international and national programs are running to reduce this burden.

**Aim:** The aim of the present study is to know the “Prevalence of Anemia in Pregnancy and its Biosocial connection with other factors at Integral Institute of Medical Sciences Research, Lucknow”, Uttar Pradesh, India. It is a tertiary care centre mainly catering the rural population.

**Methodology:** It was a prospective study, conducted on pregnant women attending antenatal clinic and admitted in the department of obstetrics and gynecology of Integral Institute of medical Sciences & Research. Study was conducted over a period of 11 months from February 2021 to December 2021. All pregnant women 18 years and above attending antenatal clinic were included in this study. The questionnaires were developed consisted of questions divided into three sections namely : socio-demographic, nutritional and other factors along with menstrual and obstetric history. Data was collected after women received antenatal services or after admission in the ward. Diagnosis of anemia was established after hemoglobin estimation by automated blood count.

**Results:** The total study subjects were 356 pregnant women. Among them 198 pregnant women (55.61%) suffered with mild, moderate and severe anemia. Among participants, 78.5% of pregnant women were 20-30 years of age group. The high prevalence anemia (96.5%) was among homemakers and daily workers as compared with working females. Among the parity group majority of the participants who suffered with anemia were second gravida (45.45%). The vegetarian group suffered with high prevalence of anemia (61.5%) as compared with the patients on mixed diet.

**Conclusion:** A very high prevalence of anemia (55.61%) in pregnant women is an indicator of the slow performance of national and international programs towards the desired goal because of various reasons.

**Key words:** Anemia, Pregnancy, Biosocial connections, Nutritional factors.

## INTRODUCTION

Anemia is a common global public health problem that particularly affects young children and pregnant women. WHO estimates that approximately 40% of pregnant women worldwide are anemic<sup>[6]</sup>. It is the commonest medical disorder in pregnancy. Out of many causes, nutritional anemia specially iron deficiency anemia is the most common during pregnancy.

According to National Family Health Survey (NFHS-5) (2019-21), 45.9 % of pregnant women are anemic in our country. Pregnant women suffering from anemia in rural area are 47.9% and in urban area are 37.1%<sup>[3]</sup>.

Because of physiological expansion of plasma during pregnancy, defining anemia is not straightforward. Center of Disease Control (CDC) defines anemia as “pregnancy hemoglobin <11 g/dl and hematocrit (Hct) <33% in first & third trimester of pregnancy and hemoglobin <10.5 g/dl and hematocrit (Hct) <32% in the second trimester of pregnancy<sup>[11]</sup>”.

It is a serious public health problem in South East Asia Region where about half of all the global maternal death are due to anemia. India account for about 80% of maternal death due to anemia in South East Asia Region.

Despite of various nutritional programs running in India to address this problem, there is only a marginal decrease in prevalence of anemia in pregnant women in the country from 51 % in NFHS-4 to 45.9 % in NFHS-5 survey<sup>[3]</sup>. So there is a continuous need of further studies to evaluate the prevalence of anemia, risk factors, impact of various national programs to decrease anemia in pregnant women.

## OBJECTIVES

- To study the prevalence of anemia in rural pregnant women
- To study the factors associated with anemia

## METHODOLOGY

It was a prospective study, conducted on pregnant women attending antenatal clinic and admitted in the department of obstetrics and gynecology of Integral Institute of medical Sciences & Research. This study was conducted over a period of 11 months from February 2021 to December 2021

## INCLUSION CRITERIA

- All pregnant women 18 years and above attending antenatal clinic

## EXCLUSION CRITERIA

- Pregnant adolescents (age less than 18 yrs)
- Pregnant women with history of recent blood transfusion
- Pregnant patients with chronic medical diseases, diagnosed haemo-globinopathies and bleeding disorders
- Patients with antepartum hemorrhage

The questionnaires were developed consisted of questions divided into three sections namely: socio-demographic, nutritional and other factors along with menstrual and obstetric history. Data were collected after women received antenatal services or after admission in the ward. Diagnosis of anemia was established after hemoglobin estimation by automated blood count. Data analysis was done using SPSS version 16. For categorical data Chi Square test was applied. P value < 0.05 was considered statistically significant.

## RESULTS

The total 356 pregnant women were included in the study, out of which 198 pregnant females (55.61%) suffered with mild, moderate and severe anemia.

78.5% of pregnant women were of 20-30 years of age group among participants. This result shows that majority of the antenatal women were below 30 years.

High prevalence of anemia (96.5%) was found among homemakers and daily workers as compared with the working females. When Chi-square test applied, its value was 6.98 & *P* value was < 0.018. This Result indicate that statistically significant anemia was present in homemakers and daily workers as compare to working females.

Among the parity group majority of the pregnant females who suffered with anemia were second gravida (45.45%). Females who were strict vegetarian, suffered with anemia more (61.5%) as compared to those who were on mixed diet

## DISCUSSION

The prevalence of anemia in pregnant women may vary to a very wide range in the world and in India among different states. In our study prevalence of anemia in pregnancy was found 55.61%. According to WHO/WHO health statistics data, 40.1 % of pregnant women worldwide were anemic in 2016<sup>[6]</sup>. Similar study was done on pregnant females in Punjab, India by Romi B et al in 2019 shows prevalence of anemia 81.8%<sup>[7]</sup>, whereas study done in Belgavi, India the prevalence was 33.9% only<sup>[8]</sup>. In India according to NFHS-5 (2019-21) 47.9% of women in rural area and 37% women in urban are anemic. The National Nutritional Anemia Prophylaxis Program (NNAPP) was initiated in 1970 with the aim to reduce the prevalence of anemia to 25%.

Table-1 shows maximum pregnant patients with anemia (78.5%) were 20-30 years of age at our hospital. Similar study was conducted in Telangana, India in 2016 by Rajamouli J et al. They found that maximum pregnant females with anemia were below 30 years<sup>[5]</sup>.

**Table-1: Age distribution of anemic pregnant females**

Age group	Number=198	Percentage (%)
Below 21 years	40	20.2
21-25 years	123	62.12
26-30years	30	15.15
Above 30 years	5	2.52

Table-2 shows that out of total anemic patients, mild anemia was in 34.34%, moderate was in 55.03 % and severe was in 10.6 %. Majority of the pregnant females who suffered with anemia were illiterate (44.44 %). Anemia in primary school educated females was 24.2 %, intermediate passed females was 20.2 % and in graduates/postgraduates was 11.11 %. The similar study done by Pushpa et al in Aurangabad, India revealed that proportion of pregnant women suffering from anemia were 96.4%, 94.8%, 92.1% and 91.5% among illiterates, those educated up to primary school, middle school and high school respectively<sup>[11]</sup>. So it can be inferred that probability of suffering from anemia is high with lower educational level.

**Table-2: Distribution of severity of anemia according to age, education & occupation**

Participant groups		Severity of anemia							
		Mild		Moderate		Severe		Total	
		N	%	N	%	N	%	N	%
Age group	Below 21 years	22		13		5		40	20.2
	21-25 years	36		77		10		123	62.12
	26-30years	10		16		4		30	15.15
	Above 30 years	0		3		2		5	2.52
Education	Illiterate	43		35		10		90	44.44
	Primary school	10		34		4		48	24.20

	Intermediate	15		21		4		40	20.20
	Graduate/Post graduate	10		14		2		22	11.11
Occupation	Home makers& daily workers	66		108		17		193	96.46
	Working women	2		3		2		7	3.53

There was high prevalence of anemia (96.5%) among homemakers and daily workers as compared with employed females (3.5%). The similar study shows that the proportion of pregnant women suffering from anaemia in classes I and II were less (47.61% and 71.42%, respectively) as compared with the lower socioeconomic status (93.51%, 94.49%, and 94.11% in classes III-V, respectively). It was obvious that as the socioeconomic status decreased, the prevalence of anaemia increased. This association between the socioeconomic status of the family and anaemia in pregnancy was found to be statistically significant ( $P < 0.05$ )<sup>[11]</sup>.

Table-3 shows, that majority of the anemic pregnant females (45.45%) were second gravida. It may be due to the fact that because of repeated pregnancies, iron reserves are depleted. Similar study by Rajmauli et al found maximum prevalence of anemia (43.3%) in second gravida<sup>[5]</sup> where as Suryanarayan et al could not find any such linkage with parity<sup>[2]</sup>. Those women who receive iron supplementation during antenatal period are less likely to have iron deficiency anemia.

**Table-3: Distribution of severity of anemia among different parity groups**

Parity	Mild Anemia		Moderate Anemia		Severe Anemia		Total	
	N	%	N	%	N	%	N	%
Primi gravida	24		41		7		72	36.36
Second gravida	32		47		11		90	45.45
Gravida >2	12		22		2		36	18.18

Table-4 shows that dietary habits also have some influence on anemia. Patients who were strictly vegetarian were more anemic (62.12%) as compared to the patients taking mixed diet (38.87%). Study done by BaigAnsary.N, Badruddin SH, it was found that tea consumption and low intake of red meat were associated with anemia<sup>[10]</sup>.

Meat is a good source of iron and other hemopoetic factors like proteins vitamin B12 etc . This also explains less prevalence of anemia in those countries where the meat consumption is high<sup>[12]</sup>.

**Table-4: Prevalence of anemia among vegetarian& mixed diet group**

Diet	Mild Anemia		Moderate Anemia		Severe Anemia		Total	
	N	%	N	%	N	%	N	%
Mixed diet	24		45		8		75	38.87
Vegetarian	45		66		12		123	62.12

## CONCLUSION

A very high prevalence of anaemia (55.61 %) in pregnant women in our study indicate that the burden of anemia is really very high despite of various national and international programs running to address this problem. It indicates the slow performance of these programs. There may be various social, economical and administrative reasons for this slow progress. Further studies are needed to find out those reasons. A continuous supply of iron & folic acid tablets, food fortification, regular deworming may be beneficial to decrease the problem.

## CONFLICT OF INTEREST

Nil

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