

## Original Research Article

# Anaemia in pregnancy: a cross sectional study

Gautam Madhavrao Bhaware, Sujata Namdeorao Muneshwar\*, Rutuja Dinkar Pundkar

Department of Community Medicine, Pravara Institute of Medical Sciences, Rural Medical College, Loni, Maharashtra, India

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### \*Correspondence:

Dr. Sujata Namdeorao Muneshwar,

E-mail: [sujatamuneshwarbhaware@gmail.com](mailto:sujatamuneshwarbhaware@gmail.com)

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## ABSTRACT

**Background:** Aim of the study was to find the factors leading to anemia in pregnancy. The main objective was to study the various sociodemographic factors leading to anemia and to assess the knowledge about anemia among pregnant females.

**Methods:** The present cross sectional study was carried out at urban health centre, to determine the factors leading to anemia in pregnancy. A total of 100 pregnant females were registered. Demographic data was collected by interview method. A pretested and pre designed questionnaire was used for data collection. Hb was estimated using Sahli's hemoglobinometer and females having haemoglobin less than 11 mg/dl were considered anaemic. Data analysis was done using SPSS software.

**Results:** The overall mean haemoglobin (Hb) was  $9.58 \pm 2.2$  g/dl. It was seen that diet, family size, education, social class, gravida and parity are associated with anaemia in pregnancy.

**Conclusions:** After adjusting for all the possible covariates there seems to be significant association between Hb levels and age group, education level, family size, diet, gravida and parity.

**Keywords:** Anemia, Pregnancy, Knowledge, Sociodemographic

## INTRODUCTION

The nutritional status of the expectant mother is the most important determinant of pregnancy outcomes, including the birth weight of the newborn.<sup>1</sup> Anaemia is particularly high for women with no education, women from scheduled tribes, and women in the two lowest wealth quantiles.<sup>2</sup> Anaemia is an indicator of both poor nutrition and poor health. Iron deficiency in its most severe form results in anaemia-IDA and since haemoglobin concentration is relatively easy to determine, the prevalence of anaemia has often been used as a proxy for IDA. Food-based approaches to increase iron intake through food fortification and dietary diversification are important sustainable strategies for preventing iron deficiency and IDA in the general population. However,

approaches that combine iron interventions with other measures are needed in settings where iron deficiency is not the only cause of anaemia. 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/safe motherhood, roll-back malaria, deworming (including routine antihelminthic control measures) and stop-tuberculosis.<sup>3</sup> Anaemia is considered a severe public health problem by World Health Organization when anaemia prevalence is equal to or greater than 40% in the population. Anaemia prevalence's during pregnancy differed from 18% in developed countries to 75% in South Asia.<sup>4</sup> The demand for iron increases about six to seven times from early pregnancy to the late pregnancy.<sup>5</sup> Besides poor nutrition,

frequent labour, multiparity, abortions, parasitic infestations, consuming excess tea or coffee after meals determined as the predictors of anaemia in reproductive age women.<sup>6</sup> Worldwide, anaemia contributes to 20% of all maternal deaths.<sup>7</sup> The world health organisation defines a non-pregnant woman with haemoglobin of less than 12 g/dl at sea level as likely to be anaemic. Accounting for the physiological changes in pregnancy, the equivalent value for pregnant women is 11 g/dl or a haematocrit less than 33% (WHO, 1972).<sup>8</sup> This study used 11.0 g/dl as the criteria for anaemia in pregnancy following the WHO recommendations.<sup>8</sup> Knowledge of the sociodemographic factors associated with anaemia in pregnancy can be used to formulate a multipronged strategy to attack this important public health problem. Hence, a case control study was undertaken to know the various factors leading to anaemia in pregnancy.

### **Aim and objectives**

Aim of current study was to find the factors leading to anaemia in pregnancy. Objectives of current study were; to study the various sociodemographic factors leading to anaemia, find the association between sociodemographic factors and anaemia and to assess the knowledge about anemia among study participants.

## **METHODS**

### **Study design, location and duration**

The present was a cross sectional study carried out at urban health centre of rural medical college from August 2018 to June 2020.

### **Sample size**

Pregnant women visiting the ANC clinic were enrolled by health worker separately for the first and the subsequent visit of pregnant women. A total 100 pregnant women visiting the health center were enrolled.

### **Inclusion criteria**

Inclusion criteria for current study were; age >18 years and willingness to participate.

### **Exclusion criteria**

Exclusion criteria for current study were; age <18 years, having haemoglobinopathies and not willing to participate.

### **Procedure**

Informed consent was obtained and explanation as to the purpose of study was offered. Thus, pregnant women were interviewed with predesigned, pretested, semi structured questionnaire. A detailed demographic profile of the women, that is, age, age at first pregnancy,

religion, family size, education, and occupation was collected. Socioeconomic classification suggested by B.G. Prasad was adopted and updated.<sup>9</sup>

### **Laboratory methods**

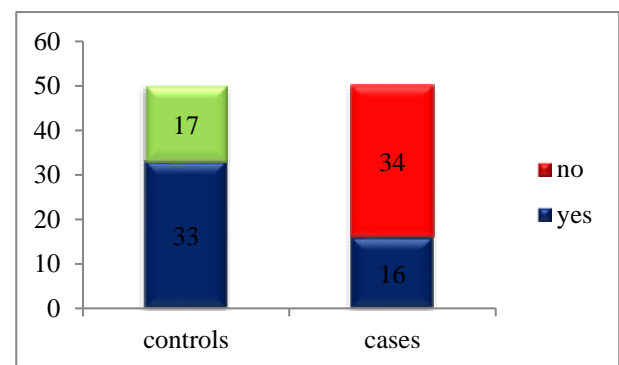
Hemoglobin level was estimated by Sahli's acid hematin method of hemoglobin estimation.<sup>10</sup> According to world health organization, hemoglobin level below 11g/dl is labelled as anaemia during pregnancy. The same criteria were used for diagnosing anaemia in pregnancy.<sup>11</sup>

### **Data analysis**

Data analysis was performed using SPSS 21. Descriptive statistics, including mean, range and standard deviations, were calculated for all variables. Proportions were compared using Chi-square test for trend at 0.05 level of significance.

## **RESULTS**

The present study revealed that the age of the respondents ranges from 19 to 29 years. It was seen that majority of the age of study participants ranged from 20 to 25 years with mean age being 22 years. It was seen that 65% pregnant females were anaemic and 35% were non anaemic.



**Figure 1: Knowledge about anaemia among controls and cases; here cases are anaemic females and controls are non anaemic females.**

## **DISCUSSION**

The overall mean haemoglobin (Hb) was 11.55g/dl in non anaemic, whereas it was seen that among the anaemic it was 9.58g/dl. It would seem that diet, family size, education, social class, gravida and parity are associated with anaemia in pregnancy. Present study showed that as the level of education goes on increasing the percentage of anaemia in pregnant women goes on decreasing. The study also showed that as the family size increased the percentage of anaemia also increased. The pregnant women having vegetarian diet were more prone to the disease as compared to those having mixed diet. Table 1 show that factors like education, family size, diet,

knowledge are associated significantly. Whereas factors like maternal age, occupation, previous obstetrics history, etc are not significant. As compared to other studies like; Haniff et al they found that age, ethnicity, education, social class, urban rural residence, gestational age, gravida and parity are also associated with anemia in pregnancy.<sup>12</sup> Study by Taner et al also showed that 41.6% had hemoglobin levels <11g/dl.<sup>13</sup> This high prevalence of anemia among pregnant women in Taner's study was explained by the distribution of socioeconomic status of

the population. It showed that low socioeconomic status had more anemic cases. Ahmad Z et al in their study stated that the age of the mother is significantly associated with anaemia, with the majority of mothers (56.6%) who more than 40 years old are being anaemic at the first antenatal visit.<sup>8</sup> By parity, 37.5% of the primigravida, 47.1% of the multigravida, 52.9% of the grandmultipara and 64.0% of the great grandmultipara were anaemic.

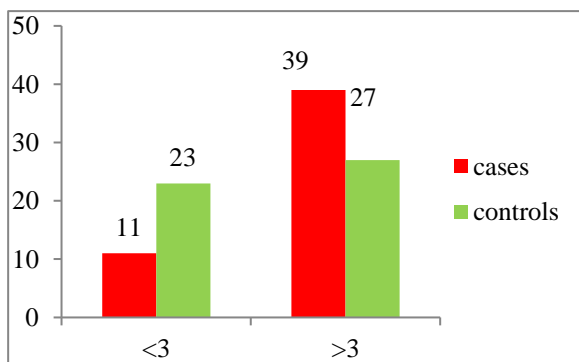
**Table 1: Association between sociodemographic factors and anaemia among the study population.**

Parameters	Anaemic (N=65)	Non anaemic (N=35)	Significance
Maternal age (mean years)	21.92±2.35	21.86±2.1	Not significant
Education (literate)	41	30	p<0.0076
Occupation (unemployed)	39	32	Not significant
spacing 2 or <2 years	18	16	Not significant
Family size (>3)	39	27	p=0.0056
Diet (non vegetarian)	15	5	p=0.0062

**Table 2: Assessment of knowledge among the study population.**

Assessment of knowledge	Anaemic	Non anaemic	P value
Knowledge	34	28	0.003
Don't know	31	7	

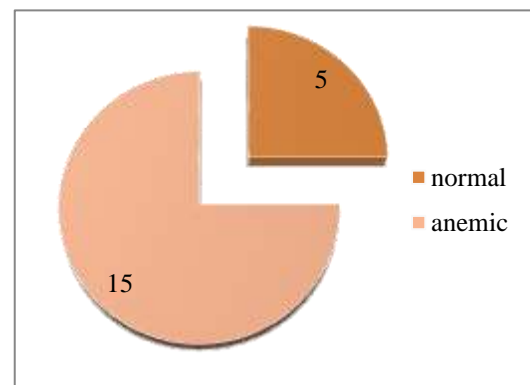
Again, parity is shown to be significantly associated with anaemia. A study in Pakistan showed that anaemic subjects were slightly older than nonanaemic subjects; whereas nonanaemic women were significantly taller and heavier, and a lower proportion was underweight (BMI<18.5).



**Figure 3: Family size and anaemia among the study population; here cases are anaemic females and controls are non anaemic females.**

In addition, anaemic women were more likely to have no formal education and to be employed outside the home. The number of prior pregnancies was inversely related to mean haemoglobin level. Women who reported consumption of red meat or chicken two or more times per week before pregnancy had higher haemoglobin

concentrations, but only the differences in mean haemoglobin concentrations associated with consumption of red meat were significant (10.03 vs. 9.87 g/dl, p=0.004).<sup>14</sup> In a study by Leyla it was seen that the mean ages of anaemic and nonanaemic women were similar, 26.9 and 26.4 years respectively (p>0.05).<sup>15</sup> Of the women, 10.2% were illiterate, 55.1% were primary school graduates. Anaemia was majorly seen in vegetarian (37.0%) (p<0.05).



**Figure 3: Diet and anaemia among the study population.**

### Limitations

Limitation of current study was follow up of participants was not done.

### CONCLUSION

After adjusting for all the possible covariates there seems to be significant association between Hb levels and age group, education level, family size, diet, gravida and parity. A study is in progress to ascertain the outcome of

anaemia in pregnancy in the primary health centre. Future studies are needed to look into the cut-off levels of Hb associated with the relative risks and odds ratio.

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*Ethical approval: The study was approved by the Institutional Ethics Committee*

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