

# Haemoglobin Levels and Prevalence of Anaemia amongst Pregnant Women- A Prospective Study

Gurdip Kaur<sup>1</sup>, Harcharan Singh<sup>2</sup>, Balkar Singh<sup>3</sup>

## ABSTRACT

**Introduction:** Anaemia is one of the most prevalent haematological disorders occurring during pregnancy. Its prevalence is highest in South Asian countries in the world and India has got the highest prevalence of about 87%. The aim of the present study is to determine the haemoglobin levels and prevalence of anaemia amongst pregnant women.

**Material and methods:** The present cross sectional study was conducted in the department of Obstetrics and Gynaecology Govt. Medical College and Rajindra Hospital Patiala from July 2015- December 2016. All the details were recorded in a predesigned proforma. Information regarding age, demographic details, education, and occupation were recorded. The questionnaire also contained information regarding primi gravida, 2<sup>nd</sup> gravida etc. Haemoglobin was estimated using Sahli's/acid hematin method. Analysis of data was performed using SPSS software. Chi square test was used for analysis and p value of less than 0.05 was considered significant.

**Results:** In the present study a total of 480 pregnant women were enrolled, out of these 418 were anaemic. The prevalence of anaemia was 87.08%. The mean age of the subjects was 28.25+/-4.72 years. There were 8.9% (n=37) subjects aged between 20-25 years who were anaemic. Majority of the population was illiterate (38.9%).

**Conclusion:** The prevalence of anaemia in our study was 87.08%. Timely visit to hospitals with proper diet counselling can help reduce the burden. Screening programmes should be conducted to help reduce the incidence of anaemia amongst girls especially in rural areas.

**Keywords:** Anaemic, Counselling, Haematological, Haemoglobin

## INTRODUCTION

When both the mother and the foetus come to a positive outcome, then it is regarded as a healthy pregnancy. Pregnancy is one of the fulfilling time periods in women's life but it is also associated with various complications that add to women's misery and can even cause ill health or death.<sup>1</sup> Both low and high hematocrit values adversely affect maternal and foetal outcome. Anaemia is one of the most prevalent hematological disorders occurring during pregnancy. Its prevalence is highest in South Asian countries in the world and India has got the highest prevalence of about 87%. In a study by World Health Organization, the prevalence of anaemia is 35% to 75% in developing countries and in industrialized countries there are 18% of women who are anaemic. Various Indian studies from different regions have indicated the prevalence of anaemia ranges between 33% and 100%. There is paucity of data regarding the prevalence in rural and backward area.<sup>2-8</sup> Anaemia is basically described

as a condition when there is a reduction in the amount of haemoglobin to a level below 11gm/dl for pregnant women.<sup>9</sup> There are various risk factors associated with anaemia like poor socioeconomic status, short birth interval, poor quality and quantity of diet, lack of health awareness, and a high rate of infectious diseases due to improper sanitation. The physiology behind occurrence of anaemia is that during early pregnancy there is a drop in haemoglobin concentration as the plasma volume expansion outpaces expansion of the red cells, while during late pregnancy, plasma volume stops to expand and haemoglobin concentration rise if iron stores are adequate.<sup>10</sup> Underprivileged people in developing nations have inadequate access to medical services due to which there is a higher incidence of maternal mortality in these area because of anaemia.<sup>6,11</sup> The aim of the present study is to determine the haemoglobin levels and prevalence of anaemia amongst pregnant women.

## MATERIAL AND METHODS

The present cross sectional study was conducted in the department of Obstetrics and Gynaecology Govt Medical College and Rajindra Hospital Patiala from July 2015-December 2016. All the subjects were informed about the study and a written consent was obtained from all in their vernacular language. In our study females more than 20 years were included. Females with any history of bleeding disorder, diagnosed haemoglobinopathies or any other medical condition were excluded from the study. All the details were recorded in a predesigned proforma. Information regarding age, demographic details, education, and occupation were recorded. The questionnaire also contained information regarding primi gravida, 2<sup>nd</sup> gravida etc. Haemoglobin was estimated using Sahli's/acid hematin method. Anaemia was classified based on world health organization's criteria. Haemoglobin level of 10-10.9 g/dl was taken as mild anaemia. If the level of haemoglobin was 7.0-9.9 g/dl, then it was categorised as moderate anaemia. Severe anaemia was considered if the level was below 7 g/dl. All the data was arranged in a tabulated form. Analysis

<sup>1</sup>Associate Professor, Department of Gynae and Obs., <sup>2</sup>Associate Professor, Department of Medicine, <sup>3</sup>Senior Resident, Department of Cardiology, Government Medical College and Rajindra Hospital, Patiala, India

**Corresponding author:** Dr. Gurdip Kaur, #21, Street No.1, North Avenue, Bhadson Road Patiala.-147001, India

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of data was performed using SPSS software. Chi square test was used for analysis and p value of less than 0.05 was considered significant.

## RESULTS

In the present study a total of 480 pregnant women were enrolled, out of these 418 were anaemic. The prevalence of anaemia was 87.08%. The mean age of the subjects was 28.25 $\pm$ 4.72 years.

Table 1 shows the details of the study group. There were 8.9% (n=37) subjects aged between 20-25 years who were anaemic. Out of these there were 3 females who had severe anaemia. There were 54.1% (n=226) subjects aged between 26-30 years who were anaemic. Out of these there were 25 females who had severe anaemia. There were 35.2% (n=147) subjects aged between 31-35 years who were anaemic. Out of these there were 15 females who had severe anaemia. There were 1.9% (n=8) subjects more than 35 years who were anaemic. Out of these there were 6 females who had mild anaemia. There was no significant difference of age group on prevalence of anaemia. Majority of the population was illiterate (38.9%). Amongst them 15 females had severe anaemia. The prevalence of anaemia was minimum amongst graduate population (12.2%). There were 30% females who were educated upto primary class who had anaemia. There was no significant difference of the education level on the prevalence of anaemia. Occupation of the subjects had a significant effect on the prevalence of anaemia. There were 87.1% housewives who were anaemic compared to only 12.9% working women were anaemic. There were 34 housewives and 9 working women who had severe anaemia. Amongst the parity group, 2nd gravida (42.9%) had maximum prevalence of anaemia followed by primi gravida (38.9%). There was no significant difference of parity on prevalence of anaemia.

## DISCUSSION

Anaemia has onset during childhood, and the incidence decreases during adolescence period in girls, which later gets intensified during pregnancy. Anaemia is one of the

most prevalent nutritional deficiency disorder in the world amongst women. As compared to other developing nations of the world, India has a greater prevalence of anaemia. The prevalence of anaemia in our study was 87.08% which is similar to the study of Srivastava et al [2005]<sup>12</sup> who showed prevalence of anaemia 87.4% in pregnancy. Mangla et al [2016]<sup>13</sup> showed prevalence of anaemia 98% in rural pregnant females. Vemulapalli et al [2014]<sup>14</sup> showed prevalence of anaemia 100% in pregnant women in rural community. In a study conducted by Fred Arnold et al<sup>15</sup> at Maharashtra which is one of the developed states the prevalence of anaemia was found to be 56.4%. In a study conducted by Sharma et al<sup>16</sup> at Rajasthan the prevalence was 63%. In a study conducted by bisoi et al<sup>17</sup> the prevalence of anaemia amongst women in West Bengal was 67.8%. The high prevalence of anaemia in our study may be due to low intake of dietary iron and folic acid intake or decreased bioavailability of iron due to blood loss or worm infestation. In our study, there were 8.9% (n=37) subjects aged between 20-25 years who were anaemic. Out of these there were 3 females who had severe anaemia. There were 54.1% (n=226) subjects aged between 26-30 years who were anaemic. Out of these there were 25 females who had severe anaemia. There were 35.2% (n=147) subjects aged between 31-35 years who were anaemic. Out of these there were 15 females who had severe anaemia. There were 1.9% (n=8) subjects more than 35 years who were anaemic. In a study conducted by Pushpa O Lokare et al<sup>18</sup>, maximum incidence of anaemia was between 20-30 years of age i.e. 87.2% subjects who were anaemic. In a study conducted by BN Seema et al<sup>19</sup>, majority of the females aged between 21-25 years of age were anaemic. In our study, majority of the population was illiterate (38.9%). Amongst them 15 females had severe anaemia.

The prevalence of anaemia was minimum amongst graduate population (12.2%). There were 30% females who were educated upto primary class who had anaemia. There was no significant difference of the education level on the prevalence of anaemia. Occupation of the subjects had a significant effect on the prevalence of anaemia. There were 87.1% housewives

Criteria		Anaemia Groups				P value
		Mild N%	Moderate N%	Severe N%	Total N%	
Age Group	20-25 years	14/3.3	20/4.8	3/0.7	37/8.9	>0.05
	26-30 years	148/35.5	53/12.6	25/5.9	226/54.1	
	31-35 years	104/24.8	28/6.7	15/3.7	147/35.2	
	More than 35	6/1.4	2/0.4	0	8/1.9	
Education	Illiterate	33/7.8	115/27.4	15/3.7	163/38.9	>0.05
	Primary School	25/5.9	86/20.7	14/3.3	125/30	
	Secondary School	45/10.7	25/5.9	9/2.2	79/18.9	
	Graduate	22/5.2	17/4.1	12/2.9	51/12.2	
Occupation	Housewife	141/33.7	189/45.2	34/8.1	364/87.1	<0.05
	Working	29/7.1	16/3.7	9/2.2	54/12.9	
Parity	Primi Gravida	47/11.1	79/18.9	37/8.9	163/38.9	>0.05
	2 nd Gravida	76/18.1	84/20	20/4.8	180/42.9	
	>2 Gravida	20/4.8	39/9.3	17/4.1	76/18.2	

**Table-1:** distribution of Anaemia according to Study Group

who were anaemic compared to only 12.9% working women were anaemic. There were 34 housewives and 9 working women who had severe anaemia. Amongst the parity group, 2nd gravida (42.9%) had maximum prevalence of anaemia followed by primi gravida (38.9%). There was no significant difference of parity on prevalence of anaemia. In a study conducted by Suryanarayana R et al,<sup>20</sup> the socioeconomic status significantly influenced the prevalence of anaemia. Majority of the women of lower socioeconomic strata were anaemic. Poverty and non availability of various medical facilities can be the contributing to various degrees of anaemia. Even mild degree of blood loss amongst severely anaemic females can produce grave consequence like shock and death. In a study conducted by Noronha et al [2008]<sup>21</sup> in Udipi district found the prevalence of anaemia to be 50.14%. In their study 65.60% of illiterate females had anaemia. The incidence of anaemia was lower amongst educated females compared to uneducated ones, which was similar in our study. Socioeconomic status, literacy, proper access to medical facilities and proper education about nutritional habit can help eradicate problem of anaemia.

## CONCLUSION

The prevalence of anaemia in our study was 87.08%. Various steps need to be taken both by the concerned authorities and the females to rectify this problem. Timely visit to hospitals with proper diet counselling can help reduce the burden. Screening programmes should be conducted to help reduce the incidence of anaemia amongst girls especially in rural areas.

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