

Assessment of the Hemoglobin Level among College Going Girls in Haryana

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Abstract—*The present study was conducted to assess the hemoglobin level and prevalence of anemia among 215 college going girls. The estimation of hemoglobin was done by lab practitioner. The present study shows that many of the college going girls were anemic but they were not aware about this. Age of the college going girls influenced their hemoglobin level i.e. with the increase in age, there was decrease in hemoglobin level. In order to combat anemia, there is an urgent need to have better information on the iron status of populations. Awareness of the college going girls about rich sources of iron should be raised.*

Keywords: *Anemia, College Going Girls, Hemoglobin Level, Age*

1. INTRODUCTION

One of the most common nutritional problems is anemia. Anemia can affect people of all ages and races. Anemia is a blood disorder. It can affect the health and quality of life.

The major cause of anemia is deficiency of iron as the body uses iron to make hemoglobin. Hemoglobin is a part of red blood corpuscles. Hemoglobin carries oxygen through the body. If one does not have enough iron, then the body makes fewer and smaller red blood cells resulting in less hemoglobin and less enough oxygen.

Anemia is the world's second leading cause of disability and is responsible for about 1 million deaths a year, of which three-quarters occur in Africa and South-east Asia (**World Bank 2004**). In terms of lost years of healthy life, **Iron Deficiency Anemia** causes 25 million cases of **Disability Adjusted Life Years (DALYs)**; this accounts for 2.4 per cent of the total DALYs worldwide (**World Health Organization 2011**).

Among other causes of anemia are infectious diseases (Hook worm, malaria), deficiency of vitamin A, foliate, vitamin B₁₂ and thalassaemia, auto immune disorders, heavy internal or external bleeding from injuries, heavy menstrual bleeding, lack of enough iron in food and lack of absorption of iron in the body. One may not notice the symptoms of anemia because it develops slowly and the symptoms may be mild. One may not be able to notice these symptoms until anemia is severe.

Anemia may occur during pregnancy if the body can't meet its increased need for red blood corpuscles. Anemia has important consequences not only on health of women, but on their infants during prenatal period. It hinders the physical and mental development of children reduces the efficiency of workers.

Anemia affects adversely not only health but also social and economic development. The symptoms of anemia can be tiredness, weakness, breathlessness, headache, paleness and hindrance in physical and mental development of children, lack of concentration, damaging of immune mechanism and increased morbidity rates. During pregnancy, iron deficiency is associated with multiple adverse outcomes for both mother and infant, including an increased risk of hemorrhage, sepsis, maternal mortality, prenatal mortality and low birth weight. It is estimated that nearly all women are to some degree iron deficient and that more than half of the pregnant women in developing countries suffer from anemia. Even in industrialized countries, the iron stores of most pregnant women are considered to be deficient. College going stage is a vulnerable stage as students especially girls are at high risk of iron deficiency and anemia due to accelerated increase in requirements for iron and nutrition, poor dietary intake of iron, high rate of infection and worm infestation as well as the social norm of early marriage and early pregnancy. Moreover, prevalence of anemia among college going girls has been constantly neglected by public health programs. Compared to the vast amount of work done on pre-school and school going children and pregnant mothers in India, there are relatively few published studies on the prevalence of anemia among college going girls. So the present study was designed to find out the prevalence of anemia among college going girls.

2. OBJECTIVES

1. To study the age and stream of college going girls.
2. To assess the hemoglobin level of college going girls.

3. HYPOTHESIS

1. There is no relationship between age and hemoglobin content of college going girls.

4. METHODOLOGY

A sample of 215 girls studying in different streams in a college in Panipat (Haryana) was randomly selected. All were studying in undergraduate classes. Hemoglobin level was checked by the laboratory practitioner. Frequencies, percentages were calculated. Ch-square and correlation tests were applied to find out the association and relationship between variables.

5. RESULTS & DISCUSSION

Age of College Going Girls

It can be observed from the **Table 1** that the mean age of girls was **18.7 years**. Majority of the college girls (84.2%) were in the age group of 17-19 years whereas 15.8 per cent belonged to 21-24 age group category.

Table 1: Age of the College Going Girls

Age of the Students	Frequency	Percentage
N= 215		
17 – 19 years	181	84.2
21 – 24 years	34	15.8
Mean	18.7	
S.D.	1.8	

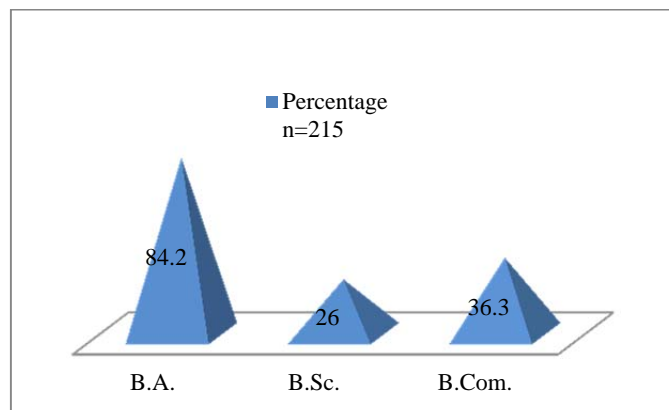


Fig 1: Stream of the College Going Girls

Hemoglobin Level of College Going Girls

Stream of the College Going Girls

It is visible in **Fig 1** that majority (84.2%) of the girls were studying in B.A, followed by B.Sc. (26%) and B.Com (36.3%).

It is highlighted in **Table 2** that 52.6 per cent of the college going girls had 12-14 grams of hemoglobin per 100 milligrams of blood whereas 45.1 per cent of college girls had 9-11 grams of hemoglobin per 100 milligrams of blood. Only 2.3 per cent had 6-8 grams of hemoglobin per 100 milligrams of blood.

Table 2: Hemoglobin Level of College Going Girls

Hemoglobin Level	Frequency	Percentage
	N = 215	
12 – 14	113	52.6
9 – 11	97	45.1
6 - 8	5	2.3
Mean	11.4	
S.D.	1.9	

According to **World Health Organization and Centers for Disease Control (2004)**, Anemia is considered to exist in those whose hemoglobin levels are lower than the figures given below (The values are given in grams/100 ml of venous blood of persons residing at sea level) i.e.

Children aged 6 months to 6 years = 11

Children aged 6–14 years = 12

Adult males = 13

Adult females (Non-pregnant) = 12

Adult females (Pregnant) = 11

The present study shows that many of the college going girls were anemic but they were not aware about this. These findings are supported by the **Ministry of Health and Family Welfare and National Nutrition Monitoring Bureau Survey (2006)** data that anemia is widely prevalent among all age groups. The prevalence of anemia among girls (Hb <12 gm %) and boys (Hb <13 gm %) is alarmingly high. Percentage prevalence of anemia among adolescent girls in the age group 15–19 years and in the older age group 20–29 years remains almost stagnant at 55.8 per cent and 56.1 per cent respectively.

Relationship between Age and Hemoglobin Level

Chi-square value shows significant association between hemoglobin level and age of college going girls (Chi-square = 41.3, Sig. at 0.01 Level) (**Table 4**). There was also significant correlation between

Table 4: Chi-square Value Showing the Association between Variables

Independent Variables	Dependent Variables Chi – square Value	df
	Hemoglobin Level	
Age	41.3**	2

** Significant at 0.01 Level

hemoglobin level and age of college going girls ($r = 0.119$, Sig. at 0.05 Level) (Table 5). Thus the null hypothesis was rejected and it can be concluded that age of the college going girls influenced their hemoglobin level i.e. with the increase in age, there was decrease in hemoglobin level.

Table 5: Co-relation Value showing the Relationship between Variables

Variables	Hemoglobin	Age
Hemoglobin	-	0.119*
Age	0.119*	-

Significant at 0.05 Level

6. SUGGESTIONS

Many steps have been taken to fight anemia over the past few decades in India but it is still prevalent. In order to combat anemia, there is an urgent need to have better information on the iron status of populations. Awareness of the college going girls about rich sources of iron should be raised i.e. they can obtain iron from animal foods called hem iron sources as well as from plant foods called non-hem iron sources.

Hem iron is absorbed by the body about 10 times more easily than non-hem iron. Meats are the best source of hem iron. **Non-hem iron** is found in some plant foods and is not absorbed much by the body. One needs to eat more of these foods if they are the only iron source. Legumes, wholegrain,

green leafy vegetables, nuts and dried fruits are the good sources of hem iron. They should restrict intake of coffee, tea and some soy proteins as they can block plant iron being absorbed by the body

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