

## **PREVALENCE OF ANEMIA AMONG ADOLESCENT GIRLS: A SCHOOL BASED STUDY**

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### **ABSTRACT**

The nutritional anaemia in adolescent girls attributes to the high maternal mortality rate, the high incidence of low birth weight babies, high prenatal mortality and the consequent high fertility rates. Objective was to determine the prevalence of anaemia among school going adolescent girls. The present study included 320 adolescent girls from selected Government Secondary Schools of district Rohtak (Haryana) and the study included the all adolescent girls of 9<sup>th</sup> and 10<sup>th</sup> class of selected school. Prevalence of anaemia among adolescent girls is a matter of great concern, as these girls enter the reproductive life soon after the attainment of their menarche. The overall prevalence came out to be 73% among study subjects. On the basis of severity nearly half of subjects (54%) were found with mild anaemic, 18% of girls had moderate anaemia while 1% girls were severely anaemic. The school health authority should impart nutrition education among school adolescents girls to prevent the nutrition anemia.

**Keywords:** *Anemia, Adolescent Girls*

### **INTRODUCTION**

Anaemia is the most prevalent nutritional problem worldwide and it is mainly caused due to iron deficiency. Its prevalence is highest among young children and women of childbearing age; particularly in pregnant women (Shah and Gupta, 2002). The nutritional anaemia in adolescent girls attributes to the high maternal mortality rate, the high incidence of low birth weight babies, high prenatal mortality and the consequent high fertility rates. This phase of life is also important due to the ever-increasing evidence that the control of anaemia in pregnant women can be more easily achieved if a satisfactory iron status can be ensured during adolescence (Kaur *et al.*, 2006). Iron deficiency anemia is estimated to cause 591,000 prenatal deaths and 115,000 maternal deaths globally. When direct sequel of iron deficiency anemia are added, the global burden attributed to iron deficiency anemia amounts to 841,000 deaths and 35,057,000 disability adjusted life years. In 1993, the world health organization (WHO) also recommended actions for the development of assessment, advocacy, prevention, and control initiatives, in most countries, to reduce anemia among adolescent girls (Chatterjee, 2008). Adolescent girls are at a high risk for anaemia and malnutrition. Inadequate nutrition during adolescence can have serious consequences throughout the reproductive years of life and beyond. Very often, in India, girls get married and pregnant even before the growth period is over, thus doubling the risk for anaemia (Chatterjee, 2008).

A high prevalence of anaemia among adolescent girls was found, which higher low economic strata were. It was seen that anaemia affects overall nutritional status of adolescent girls. The problems of adolescence are multidimensional in nature and require holistic approach. Some of the problems faced by adolescents are anorexia nervosa, obesity, overweight, micronutrient deficiency, emotional problems, behavioral problems, substance abuse, sexually transmitted diseases, and identity and study problems (Siddharam *et al.*, 2011).

According to WHO estimates, India is one of the countries in the world that has highest prevalence of anemia. WHO estimates that 27 percent of adolescents in developing countries are anemic; the (International center for research on women) ICRW studies documented high rates in India (55%), Nepal (44%), Cameroon (32 %) and Guatemala (48%). Adolescents are at risk of developing iron deficiency and iron deficiency anemia because of the increased iron requirements for growth. Following the end of their

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growth spurt, boys rapidly regain adequate iron status, whereas girls may continue to be or become more deficient because of the increased requirements for iron due to menstruation, pregnancy, and lactation (Gupte, 2004). According to National Family Health Survey, (2005-2006) report shows that 56% of adolescent girls were anaemic (Ministry of Health and Family Welfare, Government of India, 2007). The prevalence of anaemia in Karnataka shows that 42.4% of women suffer from anaemia, 26.7% with mild anaemia, and 13.4 % with severe anaemia. Adolescence in India goes hand in hand with iron deficiency anaemia (Nutrition and Prevalence of Anaemia, 2010).

### **Objective**

To determine the prevalence of anaemia among school going adolescent girls.

## **MATERIALS AND METHODS**

### **Methodology**

**Study area:** The Government Secondary Schools of District Rohtak (Haryana)

**Study subjects:** The study subjects were adolescent girls of 9<sup>th</sup> and 10<sup>th</sup> class of selected government secondary school of Rohtak.

**Sample size and Sampling techniques:** The present study included 320 adolescent girls from selected Government Secondary Schools of district Rohtak (Haryana) and the study included the all adolescent girls of 9<sup>th</sup> and 10<sup>th</sup> class of selected school.

**Data collection:** A list of all the government secondary schools having the class 9<sup>th</sup> and 10<sup>th</sup> class was obtained from the office of Block Education Officer (BEO) District Rohtak (Haryana). There were 25 government secondary schools in the District Rohtak. The two government secondary schools were selected randomly from these schools. The investigator contacted the principals of schools personally. The objective and nature of the study was explained and a verbal consent was sought to carry out the survey in the schools. Class wise lists of adolescent girls were obtained from class incharge. Every school was visited with prior information to school authorities in school timings.

The present study included 160 students from each school and randomly 80 adolescent girls were selected from each class. The informed written consent was obtained from each student and in case of any student who was not willing to participate in study the next student was involved. Every selected student was called one by one in the separate room with the help of school personnel without any interference in studies and other routine activity. The help from female teacher was sought and she asked to stay in the class room.

The purpose of the survey was explained and assurance about the confidentiality of the information was given to the students. Interview was started with general discussion to build up a rapport with respondents and to gain their confidence.

A pre-tested semi-structured interview schedule was administered to the study subjects and the responses were recorded by the investigator himself. The questionnaire was including age, religion and family income, history of illness, type of family, food habits and health information such as clinical signs of anaemia, height and weight of subject.

Hemoglobin estimation was done by cyanmethaemoglobin method. The hemoglobin estimation was obtained by finger prick method using sterile needles. 20µl of blood sample will be collected in 5ml Drabkin solution. The severity of anemia is classified on the basis on WHO i.e. Hb < 7gm%: Severe anaemia, Hb 7-10 gm%: Moderate anaemia, Hb 10-12 gm%: Mild anaemia and Hb >12 gm%: Non-anaemic (World Health Organization, 2011).

### **Data Analysis**

Data was analyzed by using descriptive and inferential statistics Descriptive statistics i.e. mean, median, percentage and standard deviation and inferential statistics i.e. chi-square test.

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## RESULTS AND DISCUSSION

### Observations

**Table I: Age wise distribution of study subjects (N= 320)**

Age in years	Numbers	Percentage (%)
12-13	11	3
14-15	63	51
16-17	143	45
>17	3	1
<b>Total</b>	<b>320</b>	<b>100</b>

*Mean age: 15±1.2*

The table 1 shows that majority of subjects belonged to 14-15 years (51%) age group and followed by 16-17 years (45%). Only 3 cases were found in >17 years age group. The overall study subjects ranged from 13 years to 18 years and mean age of subjects came out to be 15±1.2.

**Table II: Hb wise distribution of study subject (N=320)**

Hb (gm%)	Number	Percentage (%)
< 7	3	1
7-10	57	18
10-12	174	54
>12	86	27

*Mean Hb: 11.3±1.43*

The overall prevalence came out to be 73% among study subjects. On the basis of severity nearly half of subjects (54%) were found with mild anaemic, 18% of girls had moderate anaemia while 1% girls were severely anaemic. Only 86 (27%) girls were non anemic in the study.

### Discussion

Prevalence of anaemia among adolescent girls is a matter of great concern, as these girls enter the reproductive life soon after the attainment of their menarche. The main cause of the dietary anaemia is inadequate food intake as well as poor availability of dietary iron in the habitual cereal based diets. Compared to the vast amount of work done on pregnant women and young children, there are relatively few studies on the prevalence of anaemia in adolescent girls.

The study found that majority of subjects belonged to 14-15 years (51%) age group and followed by 16-17 years (45%). Only 3 cases were found in >17 years age group. The overall study subjects ranged from 13 years to 18 years and mean age of subjects came out to be 15±1.2.

The overall prevalence came out to be 73% among study subjects. On the basis of severity nearly half of subjects (54%) were found with mild anaemic, 18% of girls had moderate anaemia while 1% girls were severely anaemic. Only 86 (27%) girls were non anemic in the study. A study conducted by Kotecha (2005) among the girls who belonged to the low income families in Vadodara and reported that 67% of the adolescent girls were anaemic (Kotecha *et al.*, 2005). The study conducted by Sing (2008) reported that 53.6% adolescent girls were found to be anemic (Premalatha *et al.*, 2012).

When we compare the prevalence of this study with other study with other study, it was elucidated that there is high prevalence of anaemia which indicates a major health problem. It requires a solution to decrease the prevalence of anaemia. Though there are various factors that contribute to the prevalence of anaemia, but the present study has helped to narrow down this major health problem through the health education on dietary modification and menstrual hygiene.

### Conclusion and Recommendations

The school health authority should impart nutrition education among school adolescents girls to prevent the nutrition anemia. The school teacher should provide health education like provision of safe drinking

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water, improvement in environmental sanitation, healthy eating habits especially consumption of iron rich foods (green leafy vegetables) and vitamin C rich foods and discouraging intake of tea after meals. There is need to strengthen the national iron and initiative programme in the schools.

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