

## **DETERMINATION OF FACTORS FOR ANAEMIA AMONG SCHOOL GOING ADOLESCENT GIRLS IN HARYANA**

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### **ABSTRACT**

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. Objective was to assess the correlate factors 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. The overall prevalence came out to be 73% among study subjects. The study found that those who are eating green leafy vegetables twice weekly or twice weekly have significant increase in Hb level as compared to those who are not taking fortnightly, monthly or occasionally. Statistically, the correlation of Hb with family income of study subjects was found to be non-significant  $p > 0.05$ . The study recommended that teachers should impart health and dietary education to adolescent girls in the school. There is need to strengthen the national nutritional anaemia control programme at school level.

**Keywords:** *Anaemia, School Students*

### **INTRODUCTION**

Adolescence more broadly refers to the phase of human development which encompasses the transition from childhood to adulthood. The WHO has defined adolescence as the age period between 10 to 19 years of age for both the sexes (married and unmarried). There are about 1.2 billion adolescents in the world, which is equal to 1/5<sup>th</sup> of the world's population and their numbers are increasing. Adolescents are the best human resources. But for many years, their health has been neglected because they were considered to be less vulnerable to disease than the young children or the very old. Their health attracted global attention in the last decade only (World Health Organization, 1999).

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 (Kaur *et al.*, 2006). Very often, in India, girls get married and pregnant even before the growth period is over, thus doubling the risk for anaemia (Seema *et al.*, 2003). 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). Iron deficiency anemia is one of most prevalent nutritional disorder worldwide. 4-5 billion people (66-80%) of the global population are iron deficient. 30% of the global population in the world are anemic (2 billion anemic people). It is estimated that South East Asia contributes 1/5<sup>th</sup> of the population but contributes to more than 40% of death due to anemia and almost 1/3<sup>rd</sup> of the (disability adjusted life year) DALY loss due to anemia (Toteja, 2006).

In 2008, World Health Organization global estimates of anemia prevalence averaged 56%, with a range of 35–75% depending on geographic location. Prevalence of anemia in South Asia is among the highest in the world, mirroring overall high rates of malnutrition (DiMaggio, 2000). Adolescent constitutes over 23% of the population in India high birth rate will continue to increase this number. Half of group is sexually active before marriage. Fertility rate is high in adolescent group as a result this population faces all problems of motherhood specifically risk death and disability for both the mother and her new born

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child. It is estimated that half of them suffer from nutritional anaemia about 59% boys and 37% of girls are stunted (Pathak *et al.*, 2003).

### Objective

To assess the correlate factors 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 determine the factors responsible for anemia 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 (Type and quantity) etc. 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.

## RESULTS AND DISCUSSION

### Results

**Table I: 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

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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.

**Table 2: Correlation of Hb with green leafy vegetable (n=320)**

Consumption of green leafy vegetable	<10 gm %	(%)	10-12 gm%	(%)	12-14 gm%	(%)
Daily	0	0	4	1	10	3
Twice weekly	6	2	41	13	62	19
Weekly	24	8	81	25	72	22
Fortnight	3	1	9	3	1	0.31
Monthly	0	0	0	0	0	0
Occasionally	5	2	2	1	0	0

$p < 0.001$  highly significant

Table -2 shows that subjects who are eating green leafy vegetables twice weekly or twice weekly have significant increase in Hb level as compared to those who are not taking fortnightly, monthly or occasionally. When statistically test was applied, it was found that correlation of Hb with green leafy vegetable was found to be highly significant i.e.  $< 0.001$ .

**Table 3: Correlation of Hb with family income of study subjects (n=320)**

Family income (Rs)	<10 gm %	(%)	10-12 gm%	(%)	12-14 gm%	(%)
1000-5000	17	5	50	16	43	13
5001-10000	17	5	69	22	85	27
10001-15000	4	1	18	6	17	6
15001-20000	0	0	0	0	0	0

$\chi^2 = 4.02, p > 0.05$

Table-3 depicts the correlation of Hb with family income of study subjects and found that 85 (27%) subjects belonged to Rs 5000-10000 income category in Hb 12-14gm% followed by 69 (22%) in Hb 10-12 gm%. None of the subjects found in higher income group i.e. Rs 15000-20000. Statistically, the correlation of Hb with family income of study subjects was found to be non-significant  $p > 0.05$ .

**Discussion**

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<sup>2</sup> Very often, in India, girls get married and pregnant even before the growth period is over, thus doubling the risk for anaemia. Anemia in adolescence is on increasing trends in India especially in last two decades.

So there is a question of need to emphasize on the investigation of factors associated with anemia. Though there are various factors that contribute to anemia, the current study has tried to find out major factors such as diet (type and quantity of food), age, socio economic condition and menstrual discharge. The overall prevalence of anaemia in adolescent girls was 73% (Hb<12g %) that is 3(1%), 57(18%) and 174 (54%) girls were found with severe anaemia, moderate and mild anaemia respectively. Similar observation was also reported by Premalatha *et al.*, (2012) and Sen and Kanani (2006).

This study reveals that subjects who are eating green leafy vegetables twice weekly or weekly have significant increase in Hb level as compared to those who are not taking fortnightly, monthly or occasionally. When we compared these groups statistically it was found to be highly significant i.e.  $< 0.001$ . So, we can say that people who are eating regularly green leafy vegetable had a good Hb level as compared to those who are not taking.

Similarly the Choudhary (2010) reported that the most of the subjects had mild anaemia but there was no case severe anaemia. He also found a significant association was observed between anaemia and green

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leafy vegetables (Choudhary, 2006). Deshpande *et al.*, (2013) and Premalatha *et al.*, (2012) conducted the study among adolescents and quoted the same findings

### **Conclusion and Recommendation**

The present study revealed anaemia to be a major health problem among the adolescent girls. There was a higher prevalence of mild anaemia as compared to moderate and severe anaemia. There were highly significance associations between anaemia and consumption of green leafy vegetables. The study recommended that teachers should impart health and dietary education to adolescent girls in the school. There is need to strengthen the national nutritional anaemia control programme at school level.

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