Pervasiveness Of Anemia In Adolescent Girls Of Low Socio-Economic Group Of The District Of Kurukshetra (Haryana)

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Citation

Abstract

During adolescent, due to growth spurt anemia appears to be more for both sexes and risk is high in girls due to onset of menstruation and may continue later during their reproductive life. In the perspective study, one hundred ten adolescent girls between ages 13 -16 years of low socio-economic group of district Kurukshetra (Haryana) were screened out for their hemoglobin level and for nutritional as well as socio-economic status. Data regarding socio-economic status was collected through pre-structured questionnaire cum interview method. Nutritional status was adjudged by their anthropometric measurements (height, weight and BMI) and nutrient intake. Dietary intake of selected subjects was adjudged by 24 hour recall method for three consecutive days and intake of nutrients from the diet was calculated with help of nutritive value of Indian foods. Hemoglobin level of each subject was measured by using Sahil's technique. Out of one hundred ten girls, more than two third (81.81 per cent) girls were suffering from various degree of anemia as their Hb level ranges between 6.6 g/dl to 11.0 g/dl. The dietary data revealed that nutrient intake especially iron intake was very much less than as recommended by ICMR for adolescent girls. Due to low dietary intake, their weight was found less and the subjects were in energy deficit state. Analysis of data further disclosed that prevalence of anemia was directly related to family size and type of family as that affect quality and quantity of food consumption. Thus, inspite of various welfare programmes, it appears from the study that these girls are not benefited from any scheme run by government such as ICDS .

INTRODUCTION

Adolescence is a state or process of growing up from puberty to maturity. Adolescent account for 1/5 of the world's population and in India they account for 22.8 per cent of the total population. Number of adolescent in India particularly girls live under suboptimal conditions marked by poor nutritional status and high level of morbidity and mortality. Adolescent girls who are potential mothers and future homemakers constitute an important part of our society.

The nutritional requirements of adolescent are influenced primarily by the normal event of puberty and simultaneous spurt of growth. Puberty is an intensely anabolic period with increase in height and weight, alteration in the body composition resulting from increased lean body mass and change in the quantity and distribution of fat and enlargement of many organ systems. Adolescent are particularly susceptible to iron deficiency anemia in view of the increased need for dietary iron for hemoglobin and myoglobin synthesis during the rapid period of growth when blood volume and muscle mass are increasing. Nutritional anemia due to iron deficiency is the most prevalent nutritional problem in the world today. More than 500 million people have iron deficiency anemia (ACC/SCN 1992, Craig 1994). Iron deficiency is not life threatening but it can have detrimental effect on work capacity, learning ability and resistance to disease. Once anemia result, there is also impairment in cognitive performance and behavior (Indjradinata and Pollitt, 1993) and in girls further cause pregnancy complications (Viteri, 1994)

In one of the survey NIN (1994) reported that 70 per cent of the Indian young girls suffered from anemia. The present study was therefore carried out as a baseline survey to find out the pervasiveness of anemia among rural adolescent girls of district Kurukshetra (Haryana) belonging to the weaker socio-economic group.

MATERIAL AND METHODS
LOCALE OF STUDY AND SELECTION OF

SUBJECT

The study was confined to the 110 girls students who were studying in VIII, IX, X, XI class of Kurukshetra of Haryana. The age group of the subjects was 13-16 years belonging to low socio economic group and were selected by random purposive sampling technique.

METHODOLOGY FOLLOWED

1. Haemoglobin – Hb level of all selected subject was determined by Sahli's acid hematin method which is as follow:

    1. Filled the graduated tube of haemoglobin meter to 20 marks with N/10 HCL.

    2. Added 0.2ml of blood mixed well and left for.

    3. Added distilled water drop by drop mixing between each addition until the colour matched with standard comparator (brown glass standard)

    4. Read the lower level of fluid meniscus on gm/100ml of blood.

The classification of anemia as recommended by WHO (1992) and NIN (1986) was followed for categorization of the subjects.

Figure 1

Table 1: Classification of Anemia

Standard	Category	Hb level (gm/dl)
NIN	Severe Anemia	< 7.0
	Moderate Anemia	8.0 – 9.9
	Mild Anemia	10.0 – 10.9
		11.0 – 11.9
WHO	Anemia	<12.0
	Non-Anemia	> 12.0

2. Socio-economic information: For the present study, the data was collected from all the respondents with the help of a well designed questionnaire-cum-interview method which consists of:

General Information: It includes name, class, father's name and age.

Composition of the family: It included the total family members, their age, education level, relation to the respondent and occupation.

Dietary pattern: Information regarding the food habits, meal pattern fast sleeping, skipping of meals, food fads and fallacies are recorded.

General Health: It was divided again into two sub-parts. In first part, information was collected regarding the type of sickness, its duration medicine taken and second part included the information regarding the menstrual cycle i.e. regular/irregular, its duration, blood flow during menstruation and problem during the period and if medicines was taken for problem etc

3. Anthropometric measurement: The height and weight of the subjects were measured by the method of Jeliffe (1966) and BMI was calculated by the given by Garrow (1986).

Height: The measurement of height (in cm) was taken with the help of measuring tape to the nearest 0.5 cm. and the height was measured in centimeters.

Weight: The body weight is the simplest measurement of growth and nutritional status. The subjects were weighed on a simple weighing machine (bathroom sale). The reading was taken to the nearest 0.5Kg.

Body Mass Index: BMI is expressed as a ratio of weight in kilogram to square of height in meters.

BMI = Weight (Kg)/Height (m^2)

Figure 2

Table 2: BMI Classification

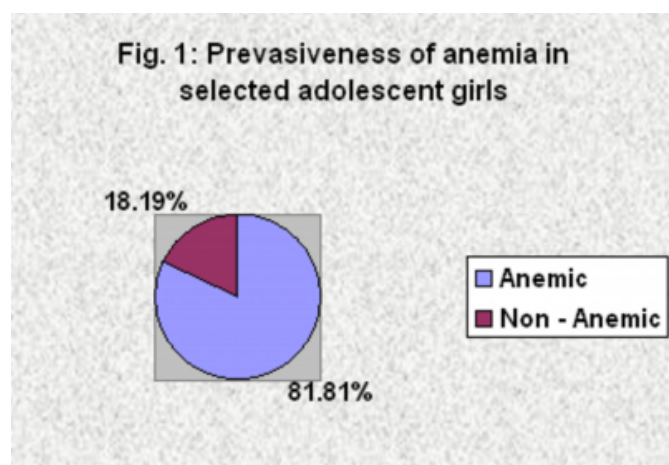| BMI Class	Classification
< 16.0	*CED Grade-III (Severe)
16.0 – 17.0	*CED Grade-II (Moderate)
17.0 – 18.5	*CED Grade-I (Mild)
18.5 – 20.0	Low Weight Normal
20.0 – 25.0	Normal

* CED – Chronic Energy Deficit

Based on classification given by Garrow (1986) and Naidu (1997) etc.

4. Dietary intake : Information regarding the food intake of the respondent was recorded by 24 hour recall method for three consecutive days and intake of nutrients from the diet was calculated with help Nutritive value of Indian foods (Gopalan et al.,. 1991)

RESULTS AND DISCUSSION
HEMOGLOBIN LEVEL

Figure 3

Fig. 1: Prevasiveness of anemia in selected adolescent girls

Following the NIN classification it was found that out of one hundred ten girls, only 20 (18.19 %) subjects were non anemic and remaining 90 (81.81 %) subjects were suffering from various degree of anemia as their Hb level ranges between 6.6 g/dl to 11.0 g/dl (Fig. 1). Perusal of table 3 cleared that among the anemic subjects , 20 per cent had mild, 73.33 per cent had moderate and 6.67 per cent of subjects had severe degree of anemia .

Figure 4

Table 3: Severity of anemia among anemic adolescent girls (N= 90)

Degree of anemia	No. of subjects (n=)	Percent age of subjects (n/N x 100)
Severe Hb<8g/dl	6	6.67
Moderate Hb<10g/dl	66	73.33
Mild Hb<12g/dl	18	20

RELATIONSHIP BETWEEN ANEMIA AND SOCIO-ECONOMIC INFORMATION

General information: Majority (78%) of subjects belongs to nuclear families but size of family was found large All the selected subjects were vegetarian and all girls were religious having pattern of keeping fast. Some girls also skip breakfast. Sixty five per cent of subjects had monthly income less than 5000 rupees while rest 35 per cent subjects had monthly income more than 5000 but less than 10,000 rupees.

Anemia in relation to age: Available data revealed that severe anemia was more prevalent in girls > 14 years of age compared to girls <14 years of age. The approximate age at menarche was found to be between 13-14, thus higher

prevalence in age group > 14 years seems to be due to menstrual loss. It was also noted that anemic girls suffer from pain during menstruation and also take medicine for relieving from pain.

Anemia in relation to type and size of family: Prevalence of anemia was found lower in nuclear families than joint families. Further, size of family also affect, higher the number of members in the family, higher the prevalence of anemia. As both quality and quantity of food consumption get affected by number of members in family especially with limited income sources.

Anthropometric measurements

Mean height of selected girls was found 151.012 ± 13.36 cm while mean weight was 40.69 ± 12.60 kg and from the above values, BMI (body mass index) was computed which was 17.40 ± 2.78 kg/m^2 . The mean BMI value revealed that the selected subjects were in chronic energy deficit state Grade I (table 2).

NUTRIENT INTAKE

The mean calorie and protein intake of the subjects was 1513.5 ± 6.94 cal and 45.5 ± 9.8 g, respectively. The corresponding values for intake of calories and protein were very much lower than that recommended by ICMR. Like calorie and protein, intake of calcium, iron and folic acid were also less than RDA than ICMR requirement and respective values of calcium, iron, and folic intake were 537.36 ± 203.66 mg, 15.43 ± 1.15 mg and 63.71 ± 7.77 mg. Contrary to above nutrients, consumption of fat (25.59 ± 2.91g) and vitamin C (88.56 ± 36.22 mg) were higher than recommended dietary allowances, respectively. Thus the available data revealed that iron and protein intake is not adequate to acquire substantial iron stores during this time.

CONCLUSION

In spite of the fact that anemia is a preventable condition, it is highly prevalent among the adolescent in all over India, as from the last ten years much focus has been given on adolescent pregnancies and diseases like sexually transmitted disease including HIV, but a very less attention has been paid to nutrition. An attempt was made to explorate the effect of some of the dietary and non- dietary factors on the prevalence of anemia. From these results, it is concluded that over all socio- economic development, adequate nutrient intake and education will surely help in reducing the prevalence of anemia in adolescents.

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