

Prevalence and Risk Factors of Anaemia Amongst Adolescent Girls

Sujata Talan

Associate Professor, Department of Paediatrics,
Rajshree Medical Research Institute & Hospital, Bareilly, Uttar Pradesh, India.

ABSTRACT

Background: Adolescence is the formative period of life when the maximum amount of physical, psychological, and behavioral changes take place. Therefore the present study was conducted with the major objective to estimate the prevalence and distribution of anaemia amongst adolescent girls.

Materials and Methods: This present cross sectional study was conducted for a period of one year. All the girls who were aged between 10-19 years and were unmarried and non-lactating reporting to the Department of Paediatrics, Rajshree Medical Research Institute & Hospital, Bareilly, Uttar Pradesh (India) for any illness were included in the study. 5 ml venous blood was collected from the antecubital vein and transferred in EDTA vials. Chi square test and Maan Whitney test were used for comparison. Probability value less than 0.05 was considered significant.

Results: A total of 500 subjects were enrolled in this study. There were 258 subjects (51.6%) in which the level of haemoglobin was less than 12 g/dl. Majority of the early adolescents (65.7%) had anaemia.

Conclusion: Prevalence of anaemia amongst girls of adolescent age group was 51.6%. There was a higher proportion of under nourished girls who had anaemia. Hospitals should initiate awareness camps to provide knowledge about the nutritional status so that anaemia can be prevented.

Keywords: Adolescence, Anaemia, Anticubital, Haemoglobin.

*Correspondence to:

Dr. Sujata Talan

Associate Professor, Department of Paediatrics,
Rajshree Medical Research Institute & Hospital,
Bareilly, Uttar Pradesh, India.

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INTRODUCTION

According to WHO, adolescents can be defined as population aged between 10 to 19 years of age.¹ Adolescence is the formative period of life when the maximum amount of physical, psychological, and behavioral changes take place.²

The prevalence of anemia among adolescents is 27% in developing countries, and 6% in developed countries. Iron deficiency anemia constitutes the major anemia during adolescent period. Accelerated development, hormonal changes, malnutrition and starting of menstrual periods in girls are major causes in this period. Because iron is an essential element for the function of various organs, its deficiency may lead to impaired perception and learning difficulties ending up with declined school success.³ practice and knowledge that children adopt during the period of adolescence remain with them throughout their life. It acts as cross road of life where the children have to make important and crucial decisions of life. WHO defines anaemia as a condition if haemoglobin is less than 11 g/dl in case of children below 6 years of age and less than 12g/dl in case of children above 6 years of age.⁴ Nutritional anemia is one of India's major public health problems. The prevalence of anemia ranges from 33% to 89% among pregnant women and is more than 60% among adolescent

girls. Under the anemia prevention and control program of the Government of India, iron and folic acid tablets are distributed to pregnant women, but no such program exists for adolescent girls.⁵ However there is not enough study on adolescents especially girls in the country. Adolescent population covers a larger population and iron availability in girls of reproductive age is crucial, therefore this population deserves special attention. Therefore the present study was conducted with the major objective to estimate the prevalence and distribution of anaemia amongst adolescent girls in India.

MATERIALS AND METHODS

This present cross sectional study was conducted for a period of one year. All the girls who were aged between 10-19 years and were unmarried and non-lactating reporting to the Department of Paediatrics, Rajshree Medical Research Institute & Hospital, Bareilly, Uttar Pradesh (India) for any illness were included in the study.

The study was approved by the Institute's ethical board and all the subjects were informed about the study and a written consent was obtained from all. Patients with any history of thalassemia,

malignancy or any chronic condition were excluded from the study. A predesigned Performa was used to record the patient's age, demographic details, occupation, socioeconomic status, education, diet, living conditions and menstrual bleeding etc. Physical examination of the patients was done and findings like icterus, pallor, cyanosis, lymphadeno-abnormality were noted. Patient's BMI was also calculated.

5 ml venous blood was collected from the anticubital vein and transferred in EDTA vials. Estimation of haemoglobin was done using cyanmethaemoglobin method. Anaemia was considered according to WHO regulation. All the data was recorded in a tabulated form and analyzed using SPSS software. Chi square test and Man Whitney test were used for comparison. Probability value less than 0.05 was considered significant.

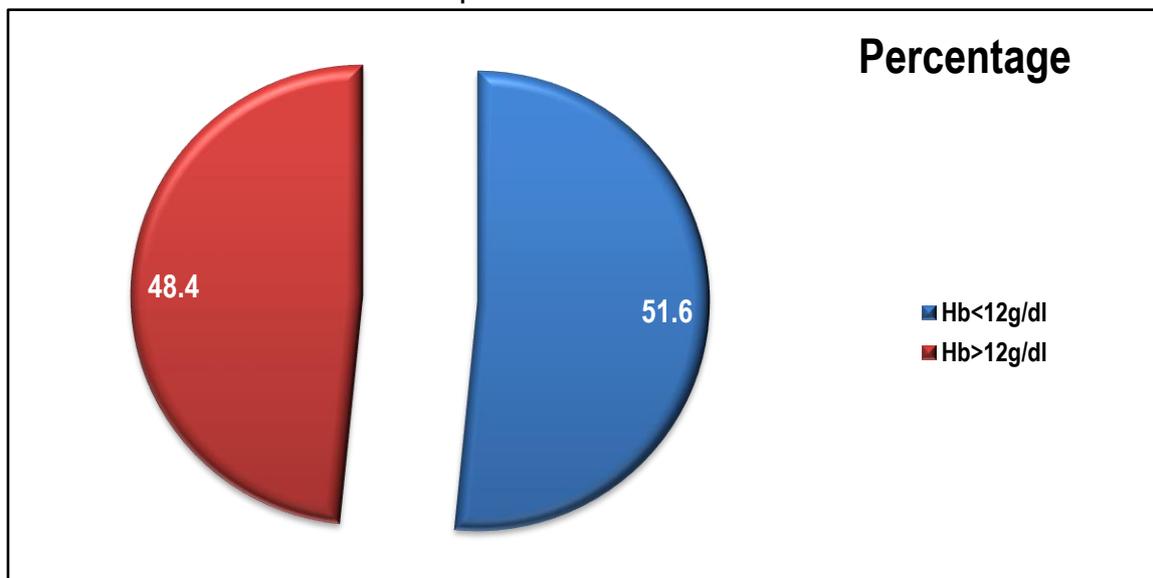
Table 1: Prevalence of anaemia

HAEMOGLOBIN	FREQUENCY	PERCENTAGE
<12g/dl	258	51.6
>12g/dl	242	48.4

Table 2: Prevalence of anaemia amongst different age groups

AGE GROUP	FREQUENCY	ANEMIA	
		PRESENT	ABSENT
Early adolescent	175	115 (65.7%)	60 (34.3%)
Mid adolescent	45	14 (31.1%)	31 (68.8%)
Late adolescent	280	129 (46.1%)	151 (53.9%)

Graph 1: Prevalence of anaemia



Graph 2: Prevalence of anaemia amongst different age groups

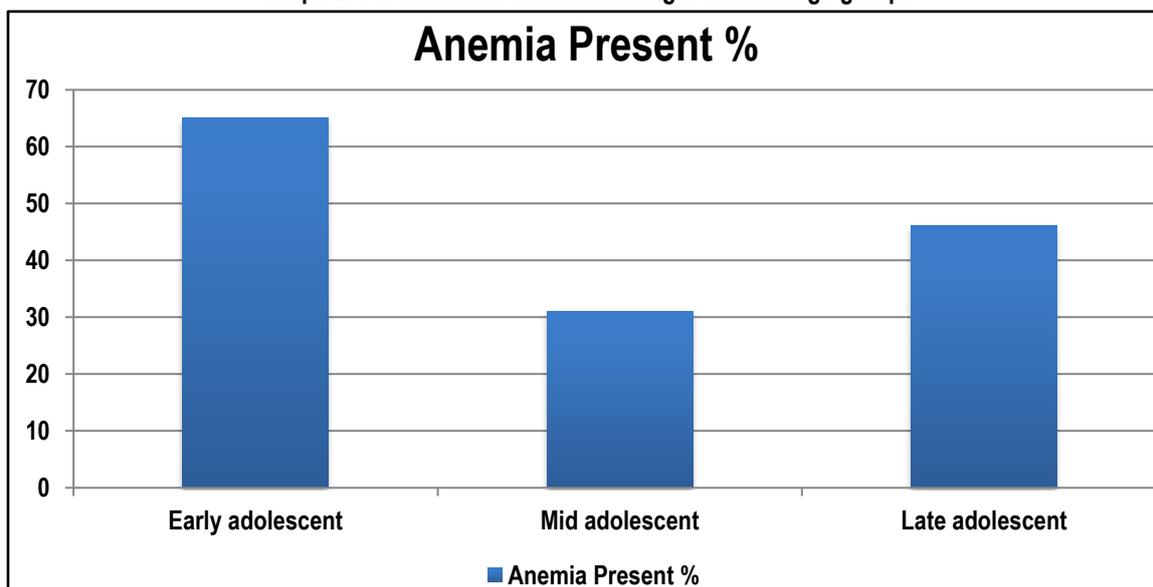


Table 3: Prevalence of anaemia according to personal characteristics

CHARACTERSTICS	ANEMIC N=258	NON ANEMIC N=242	P VALUE
Diet consumed			
Vegetarian	26 (66.6%)	9 (23.6%)	>0.05
Non vegetarian	232 (49.8%)	233 (50.1%)	
Passage of worms			
Yes	52 (52%)	48 (48%)	>0.05
No	206 (51.5%)	194 (48.5%)	
Menstrual status			
Pre menarcheal	110 (63.9%)	62(36.1%)	>0.05
Post menarcheal	148 (45.1%)	180 (54.9%)	
Nutritional status			
Undernourished	98 (72.5%)	37 (27.4%)	<0.05
Normal	139(43.4%)	181 (56.5%)	>0.05
overweight	21(46.6%)	24(53.3%)	>0.05
Paternal education			
No schooling	111(48.8%)	116(51.1%)	>0.05
Primary education or above	147(53.8%)	126(46.2%)	

RESULTS

A total of 500 subjects were enrolled in this study. Table 1 shows the prevalence of anaemia. There were 258 subjects (51.6%) in which the level of haemoglobin was less than 12 g/dl. Approximately 48.4% subjects (n=242) had haemoglobin more than 12 g/dl.

Table 2 shows age wise distribution of the anaemic patients. Majority of the early adolescents (65.7%) had anaemia. Least number of anaemic patients was seen in mid adolescence. There were 46.1% girls in late adolescence that showed signs of anaemia.

Out of the total population, there were 7% of the adolescents girls who were vegetarian, rest of 93% girls were non vegetarian. Out of the vegetarian population 66.6% were anaemic and out of non-vegetarian subjects 49.8% (n=232) were anaemic. There was no significant difference of diet on anaemia. There were 20% of girls who have had once passage of worms in their stools. Out of these girls 52% were anaemic. There were 51.5% girls (n=206) who never had history of worms in stool and were anaemic and 45.1% of the post menarcheal subjects showed signs of anaemia. There was no significant relation of passage of worms and menstrual status with anaemia. There was 72.5% of the under nourished population who had anaemia and 46.6% of overweight girls also suffered from anaemia. Majority of parents were educated. Amongst them 53.8% girls were anaemic. Paternal education and nutritional status does not significantly affect anaemia but there were significantly higher percentage of underweight girls who were anaemic.

DISCUSSION

Nutritional anaemia is a common condition worldwide with approximately one billion people is iron deficient.⁶ The incidence of anemia is higher in developing countries than that of developed ones. Poverty limits the availability and consumption of foods of animal origin.³ Shah BK et al⁷ conducted a study in Nepal and reported prevalence of anemia in adolescent girls was 68.8%

whereas in USA, Christel LL et al⁸ reported the same rate detected as 2%. According to our present study, there were 51.6% of adolescents girls who were anaemic. Some other studies have reported similar prevalence between 40 to 60%.^{9,10}

According to our study, there was no significant relation of anaemia with diet. Girls with both vegetarian and non-vegetarian diet suffered from anaemia. But according to a study by Verma et al,¹¹ amongst school children in Punjab, India; there was a higher prevalence of anaemia amongst vegetarian adolescent girls compared to non-vegetarian. Proper supplementation with iron and periodic de worming procedures are essential for curing anaemia and prevention of anaemia. Females should be educated about the proper dosage of iron that is essential for their age. Chaudhary SM et al² reported a significant association of the prevalence of anemia with educational status of parents; reflects better awareness among literate mothers, as well as better socio-economic conditions. More school and community based programs should be initiated to establish the awareness about anaemia.

CONCLUSION

Prevalence of anaemia amongst girls of adolescent age group was 51.6%. There was a higher proportion of under nourished girls who had anaemia. Hospitals should initiate awareness camps to provide knowledge about the nutritional status so that anaemia can be prevented.

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