



Anemia in Adolescent Boys- A Study in Aligarh

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ABSTRACT

Background: Adolescent is the period between 10 and 19 years. They form the future generation of a country. Adolescents' nutritional needs are critical for the well being of a society. The adolescents have different needs and have diverse problems. This study was conducted to assess the nutritional status and find out the morbidity pattern of the school going adolescents. **Objectives:** To study anemia in adolescent school boys aged 10-19 years. **Methods:** A cross-sectional study was done covering 500 students between 10-19 years of age from rural and urban schools of district Aligarh. Students were interviewed and clinical examination was done. The data obtained were tested statistically by percentages and Chi-square Test using SPSS 20. **Results:** Overall prevalence of anemia in the study population was found to be 24.0%. Students with severe thinness were most anemic (50.0%)

Conclusion:

Adolescent is vulnerable age group with high prevalence of anemia, therefore should be given priority in national health programs.

KEYWORDS : anemia, adolescents, thinness, nutritional status.

INTRODUCTION

The term adolescence meaning "to emerge" or "achieve identity" is a relatively new concept, especially in developmental thinking. The world is home to 1.2 billion individuals aged 10–19 years forming 18% of world population. Adolescents number have been doubled since 1950. Adolescence may be divided into three developmental stages based on physical, psychological and social changes²

- Early adolescence- 10 to 13 years
- Middle adolescence- 14 to 16 years
- Late adolescence- 17 to 19 years.

Adolescents account for more than one-fifth of the world's population. In India, this age group forms 21.4 percent of the total population.³ The National Family Health Survey -3 (NFHS-3)⁴ says that 30 percent among adolescent boys are anemic in India. It is found that prevalence of anemia decreases in post-adolescence stage (19.3 percent for the age group 20–29 years).

It is noteworthy that health services in developing countries focus on preschool-age children and pregnant women, with the consequence that health needs of adolescents may not be adequately met.

METHODS

The study was done in registered schools of the Department of Community Medicine, JNMC, AMU, Aligarh. The total population of male adolescents in all the schools was 2533, out of which a sample of 512 students (256 from the rural schools and 256 from the urban schools) were selected using Probability Proportionate to Size sampling (P.P.S.). Only 500 students cooperated in the study. The sample size was

calculated using the formula –

$$\text{Sample} = \frac{\{(1.96)^2 PQ\}}{L^2}$$

where prevalence

(P) = 20%, Q = (1- P), Precision (L) = 9%.

The age of the student was recorded on their last birthday (Gregorian calendar) from the school record. A detailed clinical and dietary his-

tory and a thorough physical examination were conducted for each adolescent and clinical impression was made at the end of the examination. Weight (kgs) and height (cms) was taken according to standard protocol.

The present cross sectional study was carried out for a period of one year from 1st of August 2013 to 31st July 2014. Male students between 10 to 19 years were included in the study. Students below 10 & above 19 years, non co-operative, chronic absentee and girl students were excluded. In the study pretested pre-framed proforma, measuring tape and weighing machine were used. Before the starting of the study approval was taken from Institutional Ethical Committee. Permission was taken from school authority in each and every school. Principal of the schools was the main authority in all schools. If a student was 18 years or old, an informed consent was also taken. Health education & adequate counseling were provided to all the students of concerned class.

The data obtained were tested statistically by percentages and chi-square test. SPSS 20 was used for the same.

RESULTS

Table 1 - Distribution of the study population according to age and place of residence

Age group (yrs)	Place				Total	
	Urban		Rural			
	No.	(%)	No.	(%)	No.	(%)
10-13 (Early adolescents)	47	18.36	127	52.05	174	34.80
14-16 (Mid adolescents)	143	55.85	69	28.28	212	42.40
17-19 (Late adolescents)	66	25.79	48	19.67	114	22.80

Figure 1 - Distribution of school children according to their family type-

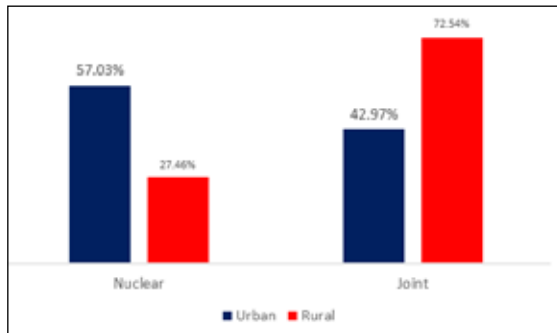


Table 2 - Distribution of anemia and severity of anemia in relation to age in the study population

Age group (yrs)	No. of Boys	Presence of anemia		Mild		Moderate		Severe	
		No.	%	No.	%	No.	%	No.	%
10-13	174	33	18.96	33	18.96	0	0	0	0
14-16	212	62	29.35	62	29.35	0	0	0	0
17- 19	114	25	21.93	22	19.30	3	2.63	0	0
Total	500	120	24.00	117	23.40	3	0.60	0	0

Table 3- Distribution of anemia in relation to BMI in the study population—

BMI	Category	No. of Boys	Cases of anemia	
			No.	%
Normal	SD to -2SD	344	57	16.57
Thinness	-2 to -3 SD	103	45	43.69
Severe thinness	<-3SD	30	15	50.00
Overweight	+1 to +2 SD	21	3	14.28
Obesity	+2 SD	2	0	0
Total		500	120	24.00

The distribution of the school children by age is shown in table, the age of the study population ranged from 10-19 years. Majority of the population 212 (42.4%) belonged to 14-16 years age group (mid adolescence) followed by 174 (34.8%) in the 10 to 13 years (early adolescence) and the least population of 114 (22.8%) were in the 17 to 19 years age group (late adolescence). Table 1 also depicts that in urban areas of our study population, mid adolescent population was maximum (55.85%) and early adolescent population was the minimum (18.36%) and in rural areas, maximum population was of early adolescents (52.05%) and minimum was of late adolescents (19.67%). In rural areas less student population in late adolescent group was probably due to school drop-out.

India has been traditional joint family systems for centuries. In urban area, majority of families were nuclear (57.03%). This clearly shows that due to modernization and urbanization, socio-economic demands of younger population are changing, hence the joint family system is struggling for its existence in urban settings and the nuclear family system is taking over the joint one. In rural area, majority of families were joint (72.54%).

Table 2 describes the prevalence of anemia in the study population. Overall prevalence of anemia was found to be 24% in the study. Maximum prevalence of 29.35% was seen in mid adolescence (14-16 years) followed by 21.93% in late adolescence (17-19 years) and the minimum prevalence of anemia 18.96% was seen in early adolescence (10-13 years). 23.40% of the study population had mild anemia and that of 0.6% had moderate anemia. None of the boy had severe anemia. Table 3 shows that there was a correlation between BMI for age and anemia in the study population as seen in the table. Adolescents with severe thinness had prevalence of anemia 50.0% followed by 43.69% in adolescents who were thin. This association was highly significant. (Chi Square=45.140, degree of freedom=4, p=0.00)

DISCUSSION

In a study done in Aligarh by Ahmad et al⁵ showed that in rural area, majority of the population (59%) belonged to 10-13 years age group as compared to (26.5%) of urban area of same age group.

Verma et al⁶ did a study on adolescents in Rohtak and found the overall prevalence of anemia was 67.7% which was higher than present study. In another study Jain et al⁷ showed overall 43% of the boys were found to be anemic with 23% having moderate to severe anemia. Srivastava et al⁸ studied Bareilly children aged 5-15 years and found that overall prevalence of anemia was 37.5% of children. The prevalence of anemia in girls (42.8%) was significantly higher than in boys (33.7%).

Balki⁹ found that the overall prevalence of anemia was 5.6% in Denizli, Turkey. Muzammil et al¹⁰ did a study in Dehradun and found that prevalence of anemia among adolescent boys was 37.4%.

Handa et al¹¹ studied 7-10 years school going children in Allahabad to assess nutritional status. Clinical status assessing anemia was also recorded. Study revealed that 65.33% had anemia, out of which approximately half (53.33%) were mild anemic and 12% were moderate anemic. Goel et al¹² did a school based cross-sectional study in Shimla and found that prevalence of anemia in adolescent boys was to be 12.9%. Mean age of adolescent boys suffering from anemia was 15.3 years.

REFERENCES

1. United Nations, Department of Economics and Social Affairs, Population Division, World Population Prospects: The 2008 Revision. www.esa.un.org/unpd/wpp2008/index.htm
2. Adolescent Development: Perspectives and Frameworks- A Discussion Paper. UNICEF, New York, 2005.
3. National Youth Policy. Ministry of Youth Affairs and Sports, Govt of India; 1990.
4. Nutrition in India. National Family Health Survey (NFHS-3), 2005-06. Ministry of Health and Family Welfare, Government of India, 2009.
5. Ahmad A, Khalique N, Azmi SA, Khan Z, "Pattern of sexual development and anthropometry in adolescent males", Delhi Psychiatry Journal, Vol 14, No 2. 2011.
6. Verma R, Kharb M, Yadav SP, Chaudhary V, Ruchi, Ajay, "Prevalence of anaemia among adolescents under IBSY in rural block of a dist. of Northern India", IJSSIR, 2. 2013.
7. Jain G, Bharadwaj SK, Joglekar AR, "To study the prevalence of overweight and obesity among school children (13-17yrs) in relation to their socioeconomic status and eating habits", Int J Sci Res Publ, 2, pp 2-3. 2012.
8. Srivastava A, Mahmood SE, Srivastava PM, Shrotriya VP, Kumar B, "Nutritional status of school-age children - A scenario of urban slums in India", Archives of Public Health, Vol 70 No8. 2012.
9. Balki IY, Karabulut A, Gurses D, Ethem CI, "Prevalence and risk factors of anemia among adolescents in Denizli, Turkey", Iran J Pediatr, 22, pp 77-81. 2012.
10. Muzammil K, Kishore S, Semwal J, "Common nutritional deficiencies of adolescents in Dehradun", Indian J Sci Res, 1, pp 77-80. 2010.
11. Handa R, Ahmad F, Kesari KK, Prasad R, "Assessment of nutritional status of 7-10 years school going children of Allahabad district", Middle-East Journal of Scientific Research, 3, pp 109-115. 2008.
12. Goel S, Gupta BP, "Low anemia prevalence among adolescents of an urban hilly community", Indian J Community Med, 2007-01 - 2007-03;32.