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Research article

A CROSS SECTIONAL STUDY OF SOCIO-DEMOGRAPHIC DETERMINANTS OF ANAEMIA IN ADOLESCENT BOYS OF URBAN SLUM AREA IN SOUTH INDIA

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ABSTRACT

Background: Adolescence a period of transition between childhood and adulthood is a significant period of human growth and maturation. The term “adolescence” has been defined by WHO as those including between 10 to 19 years. During this period, more than 20% of the total growth in stature and 50% of adult bone mass are achieved and iron requirement increases dramatically in both adolescent boys and girls. Available literature from India confirms that anaemia is common among adolescent girls but there is a paucity of information on status of anaemia among adolescent boys and most of the studies are based on school – going population and are not from the community. **Materials and methods:** The present cross-sectional study was conducted in 440 Adolescent boys aged 10 to 19 years residing in the registered families in the urban slum area of Andhra Pradesh. **Results:** The prevalence of anemia in adolescent boys aged 10 to 19 years were found to be 36.14%. The various sociodemographic determinants which were found to be statistically significant in boys includes type of family , socio-economic status, adolescents educational status, H/o of malaria infection, habit of taking meal. **Conclusion:** Iron supplements have to be provided to the adolescent boys also as in our country, most of the National programmes related to supplementary nutrition are focusing only on adolescent girls, but none of the programmes include adolescent boys.

Key words: Adolescent boys, Anaemia, Urban slum

INTRODUCTION

Adolescence – a period of transition between childhood and adulthood is a significant period of human growth and maturation. The term “adolescence” has been defined by WHO as those including between 10 to 19 years ¹. The health of adolescents attracted global attention in adolescent boys. There are 1.2 billion adolescents in the world, 85% of them live in developing countries ². The adolescent

population constitutes about 18 to 25% of the total population of the South East Asia Region ³. Adolescents represent

About a fifth of India’s population⁴, during this period, more than 20% of the total growth in stature and 50% of adult bone mass are achieved⁵ and iron requirement increases dramatically in both adolescent boys and girls, from a preadolescent level of 0.7-0.9 mg Fe/day to as

much as 2.2 mg Fe/day. This increase in iron requirement is the result of expansion of total blood volume; increase in lean body mass and the onset of menstruation in adolescent females⁶. Iron needs are highest in males during peak pubertal development because of a greater increase in blood volume, muscle mass and myoglobin⁷.

Globally, according to WHO, a total of 1.62 billion people are anaemic.⁸ Every 9 out of 10 persons affected by anaemia live in developing world⁹. WHO also estimates the benefits of anaemia correction and suggests that timely treatment can restore personal health and raise national productivity levels by as much as 20%¹⁰. Available literature from India confirms that anaemia is common among adolescent girls but there is a paucity of information on status of anaemia among adolescent boys and most of the studies are based on school – going population and are not from the community. So the community based study was planned to highlight the problem of anaemia in adolescent males and to study socio-demographic factors and other determinants related to anaemia.

MATERIAL AND METHODS

Total 440 boys in the age group of 10 to 19 years were selected for the present cross-sectional

study. The sample size was calculated assuming prevalence of anemia to be 50% with 95% confidence interval and relative precision of 10%. So the minimum required sample size was 400 and adding 10% for incomplete responses to it, the total sample size came out to be 440. Adolescents aged 10 to 19 years residing in the registered families in urban slums, ShrinavasRao Thota, Guntur, Andhra Pradesh, a catchment area of urban health and training centre, department of Community Medicine, Katuri Medical College, Guntur were included for the study. The period of study was from April 2011 to March 2012. From the 1560 registered families, 440 families were selected randomly by lottery method and if there were more than one adolescent in the selected family, one adolescent was randomly selected from each family.

A pre designed semi structured schedule was used to elicit the necessary information from participants. For hemoglobin estimation, direct cyanmethaemoglobin method was used using Photochem-Micro digital calorimeter. Informed written consent was obtained from each participant after explaining about the study. Statistical analysis was done by using the statistical software, SPSS Version 10.0, proportions were calculated and chi square test was used as a test for significance.

RESULTS

Table.1: Distribution of anaemia in adolescent boys according to its severity

Severity (Hb g/dl)	No of adolescents	Prevalence (%)
Mild (>10 –cut-off)	87(54.72)	19.77
Moderate (7-10)	54(33.96)	12.28
Severe (<7)	18(11.32)	04.09
Total	159(100)	36.14

The prevalence of anaemia in adolescent boys aged 10 to 19 years was found to be 36.14%, with 54.72 % of the boys had mild anaemia and 11.32% boys had severe anaemia.

Table.2: Distribution of prevalence of anaemia in adolescent boys according to age

Age group	No of boys (%)	Anaemic cases (5)
10-13	217(49.32)	87(40.09)
14-16	159(36.14)	56(35.22)
17-19	64(14.54)	16(25.00)
Total	440(100)	159

Table 3: Prevalence of anaemia in adolescent boys according to socio-demographic determinants

Socio-demographic determinants	Boys (%)	Anaemic boys	Prevalence (%)	X ² , df, p-value
Type of family				14.8
Nuclear	338(76.82)	139	41.12	1
Joint	102(23.18)	20	19.61	0.0001*
Socio-economic status				
Upper(I)	21(04.77)	03	14.29	7.96
Upper middle(II)	147(33.41)	48	32.65	4
Lower middle(III)	189(42.96)	71	37.57	0.09
Upper lower(IV)	66(15.00)	30	45.45	
Lower(V)	17(03.86)	07	41.18	
Educational status				
Illiterate	11(02.50)	04	36.37	14.9
Primary	97(22.05)	37	38.14	4
Middle	189(42.95)	83	43.92	0.004*
High School	126(28.64)	33	26.19	
Intermediate	17(03.86)	02	11.76	

*Significance

The various sociodemographic determinants which were found to be statistically significant in boys and includes type of family (prevalence of anaemia was more (41.12%) in those belonging to nuclear families in comparison to 19.61% in joint families) and socio-economic status (the

prevalence of anaemia decreased with increase in socio-economic status) and adolescents educational status (prevalence of anaemia was maximum in those who were illiterate/just literate and minimum in those who had completed intermediate class).

Table 4: Prevalence of anaemia in adolescent boys according to other determinants

Determinants	Boys (%)	Anaemic boys	Prevalence (%)	X ² , df, p-value
Hand washing before eating main meal				
Every time with soap & water	187(42.50)	54	28.87	7.94
Sometimes with soap & water	123(27.96)	49	30.82	3
With water only	91(20.68)	38	41.76	0.04
Never	39(08.86)	18	46.15	
History of malaria infection				
Yes	38(08.64)	21	55.26	5.72
No	402(91.36)	138	34.33	1
				0.01
Frequency of main meal(daily)				
Once	27(06.14)	16	59.26	18.08
Twice	254(57.72)	104	40.94	2
Thrice	159(36.14)	39	24.53	0.0001
Daily consumption of lemon/sour fruits				
Yes	78(17.73)	13	16.67	14.56
No	362(82.27)	146	40.33	1
				0.0001

The various other determinants which were found to be statistically significant in adolescent boys & includes practice of hand washing before eating main meals (the prevalence of anaemia was maximum(46.15%) in those who never washed their hands before eating main meal and minimum(28.87%) in those who always washed their hands every time with soap and water before eating main meal), history of malarial infection (prevalence of anaemia was more(55.26%) in those who had positive history of malarial infection) and frequency of main meals daily (prevalence of anaemia was more (59.26%) in boys who were taking only one main meal daily as compared to those boys taking meals twice(40.94%),daily consumption of lemon/sour fruits(prevalence of anaemia was more in adolescent boys (40.33%) who were not taking daily lemon/sour fruits as compared to those who were taking daily lemon, sour fruits(16.67%).

DISCUSSION

The present study yielded relatively low prevalence (36.14%) of anaemia among adolescent boys when compared to studies conducted by Jain et al¹² in Urban Meerut, Hyder et al¹³ in Bangladesh and Hettiarchi et al¹⁴ in Sri Lanka who found prevalence of anaemia to be 42.8%, 69%, and 49.5% respectively. Basu et al¹⁵, however, reported the prevalence of anaemia among school going adolescent boys of Chandigarh to be 7.7%. These differences may be due to difference in age groups studied, different study settings and difference in cut-off values for diagnosis of anaemia.

Prevalence of anemia in 10-13 yrs, 14-16 yrs and 17-19 yrs age group was found to be 40.09%, 35.22% and 25% respectively. Prevalence of anemia was reported to be 27.8% in 12-14 yrs and 41.3% in 15-18 yrs age group of adolescent boys of schools of rural Delhi by Anand et al¹⁶.

In the present study, the prevalence of anemia varies significantly among adolescents when

associated with socioeconomic class. But high prevalence of anemia was also reported in upper and upper middle class (14.0% and 39.4% respectively) among urban school children (5-15 years) of Punjab (Verma et al., 1998)¹⁷ However, severe anemia was more common among lower socioeconomic classes. Similar results have been reported by a study done by population council in Egypt (Population Council)¹⁸. A high prevalence of anemia was found in upper (27.3%) and upper middle (39.1%) socioeconomic class. Thavraj and Reddy¹⁹ had also noted iron deficiency among 20% of healthy, non-anemic, high income group children. In the study on anemia among Egyptian adolescents it was found that the prevalence of anemia was relatively high among adolescents belonging to higher socioeconomic stratum (43.4%)²⁰. They suggested that anemia in a higher stratum of society may be related to their choice in dietary habits.

Daily frequency of main meals influence anaemia to a large extent as it was very high (59.26%) among those boys who had their main meals once daily when compared to 24.53% in those who had their main meals thrice daily. ICRW²¹ and Jain et al¹² also documented that anaemia to be significantly more in those who eat two or fewer meals in a day.

CONCLUSION AND RECOMMENDATIONS

The present study highlights the high prevalence of anaemia among adolescent boys in the urban slum population of Andhra Pradesh, thus indicating that the problem of anaemia was related to a wider population than the traditional groups of the adolescent, pregnant and lactating females and children. We suggest that there is a need for well planned, systematic and large-scale studies by using standardized methodologies to estimate the prevalence of anaemia as well as the causes of anaemia at the community level among males in all the age groups, with the representation of the different regions of India. It

is seen that anemia affects the overall nutritional status of adolescent males .So iron supplements have to be provided to the adolescent boys also as in our country, most of the National programmes related to supplementary nutrition are focusing only on adolescent girls, but none of the programmes include adolescent boys.

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