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Research Article

**A CROSS SECTIONAL ANALYSIS OF SOCIO-
DEMOGRAPHIC FACTORS OF ANAEMIA IN ADOLESCENT
BOYS**Dr Meryem Tanveer¹, Dr Farwa Sikandar², Dr Lubna Nawaz³¹ Nishtar Medical University and Hospital, Multan² Akhtar Saeed Medical and Dental College, Lahore³ Hamdard College of Medicine and Dentistry, Hamdard University, Karachi**Article Received:** May 2020**Accepted:** June 2020**Published:** July 2020**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 anemia is common among adolescent girls but there is a paucity of information on status of anemia 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 in the Pediatric Unit II and Medicine Unit I of Nishtar Hospital Multan for one-year duration from March 2019 to March 2020.

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, Anemia,

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INTRODUCTION:

The transition period between puberty and childhood and adulthood is an important period of human growth and adolescence. The term "Growing Up" is defined by the WHO as being between the ages of 10 and 19. There are 1.2 billion teenagers in the world, and 85% of them live in developing countries. The youth population accounts for 18-25% of the total population of the Southeast Asian region. Adolescents, who make up about one fifth of India's population during this period, achieved more than 20% of the total increase in height and more than 50% of the bone mass of adults, and the demand for iron in both adolescents and women increases significantly from 0.7-0.9 mg to Fe/day 2.2 mg. increase in lean body mass and onset of menstruation in adolescent women. Due to blood volume, muscle mass and greater growth in myoglobin, the demand for iron in men is higher during the highest development of puberty. A total of 1.620 million people worldwide is anemic, according to the WHO. Nine out of 10 people affected by anemia live in developing countries. DSA also suggests that the benefits of anemia correction can improve their personal health and up to 20% of national performance levels. Current Indian literature confirms that anemia is common among teenagers, but there is a

lack of knowledge about the state of anemia among adolescent children, and most studies are based on school - the population goes and does not come from society. For this reason, community-based research is planned to highlight the problem of anemia in adolescent men and explore socio-demographic factors and other anemia-related factors.

MATERIAL AND METHODS:

A total of 440 boys aged 10 to 19 were selected for the cross-sectional study held in the Pediatric Unit II and Medicine Unit I of Nishtar Hospital Multan for one-year duration from March 2019 to March 2020. The sample size was calculated assuming a 50% anemia frequency with 95% confidence intervals and a relative precision of 10%. Thus, the minimum sample size required was 400 and, after adding 10% for incomplete responses, the total sample size was 440. A pre-designed partially structured schedule was used to obtain the necessary information from participants. The method of direct cyanomethemoglobin with the use of the Photochem-Micro digital calorimeter was used to assess hemoglobin. After the study was explained, informed written consent was obtained from each subject. Statistical analysis was performed with SPSS statistical software version 16.0, proportions were calculated and the chi-square test was used as a test of 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

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 anemia in adolescent boys according to socio-demographic determinants

Socio-demographic determinates	Boys (%)	Anemic 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				7.96
Upper(I)	21(04.77)	03	14.29	4
Upper middle (II)	147(33.41)	48	32.65	0.09
Lower middle (III)	189(42.96)	71	37.57	
Upper lower (IV)	66(15.00)	30	45.45	
Lower(V)	17(03.86)	07	41.18	
Educational status				14.9
Illiterate	11(02.50)	04	36.37	4
Primary	97(22.05)	37	38.14	0.004*
Middle	189(42.95)	83	43.92	
High School	126(28.64)	33	26.19	
Intermediate	17(03.86)	02	11.76	

Table 4: Prevalence of anemia 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	
Sometimes with soap & water	123(27.96)	49	30.82	7.94
With water only	91(20.68)	38	41.76	3
Never	39(08.86)	18	46.15	0.04
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

DISCUSSION:

This study found a relatively low prevalence (36.14%) of anemia among adolescent boys compared to a study by Jain et al. 12 in Urban Meerut, Hyder et al. 13 in Bangladesh and Hettiarchi et al. 14 in Sri Lanka, who found the occurrence of anemia at the level of 42.8%, 69% and 49.5% respectively. However, Basu et al 15 reported that the incidence of anemia among adolescent Chandigarh boys was 7.7%. These differences may be due to differences in the age groups studied, different test settings, and differences in the cut-off values for the diagnosis of

anemia. The incidence of anemia in the age groups 10-13 years, 14-16 years and 17-19 years was 40.09%, 35.22%, and 25%, respectively. The incidence of anemia was 27.8% in the 12-14-year-old group and 41.3% in the 15-18-year-old group of adolescents from rural schools in Delhi by Anand et al. 16. In this study, the incidence of anemia varies significantly between adolescents when they are related to the socio-economic class. However, high prevalence of anemia was also reported in the upper and upper middle class (14.0% and 39.4%, respectively) among school-age children (5-15 years old) in Punjab (Verma et al.,

1998) 17 However, severe anemia was more frequent among the lower socio-economic classes. Similar results were found in a study by the Egyptian Population Council (Population Council). High prevalence of anemia was found in the upper (27.3%) and upper middle (39.1%) socioeconomic classes. Thavraj and Reddy¹⁹ also found iron deficiency in 20% of healthy, non-anemic, high-income children. A study of anemia among Egyptian adolescents found that the incidence of anemia was relatively high among adolescents belonging to the upper socioeconomic strata (43.4%)²⁰. They suggested that anemia in the upper class may be related to their dietary choices, traditions. The daily frequency of main meals greatly contributed to anemia as it was very high (59.26%) in boys who ate their main meals once a day, compared with 24.53% in those who ate their main meals three times a day. ICRW²¹ and Jain et al.¹² have also documented that anemia is more common in people who eat two or less meals a day.

CONCLUSION AND RECOMMENDATIONS:

This study highlights the high incidence of adolescence among adolescents thus indicating that the problem of anemia 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 anemia as well as the causes of anemia at the community level among males in all the age groups, with the representation of the different areas. 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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