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Original Research Article

Prevalence of anaemia amongst adolescents attending OPD at rural health and training centre, Era's Lucknow Medical College and Hospital

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ABSTRACT

Background: Nutritional anemia is worldwide problem with highest prevalence in developing countries. Causes of anemia are inadequate intake and poor absorption of iron, malaria, hookworm infestation, diarrhea, heavy menstrual blood flow etc. It involves population of all age group and sex. But adolescent are more vulnerable to it. The objective of the study was to find prevalence of anemia amongst adolescents attending rural health and training Centre of Era's Lucknow Medical College and Hospital.
Methods: This cross-sectional study was carried out in the Rural Health Training Centre (RHTC), Era's Lucknow Medical College. All the adolescents attending OPD at RHTC for any health problem were included in the study. Study period was about one year i.e. from November 2016 to October 2017. Blood sample was collected for hemoglobin estimation. Hemoglobin estimation was done by Sahli's hemoglobinometer. Hb criteria were taken according to WHO standard.
Results: The overall prevalence of anemia was 55.1 % for both males and females. 64.7% of the females and 32.5% of the males were anemic. The proportion of mild anemia was 55.6% (53.9% in females and 68.1% in males), moderate anemia was 33% (35.2% in females and 25% in males) and severe anemia was 11.2% (10.7% in females and 6.8% in males).
Conclusions: Anaemia was significantly higher in females in comparison to males in moderate and severe category. There is need to develop strategies for intensive adult education, nutrition education and dietary supplementation and anemia prophylaxis.

Keywords: Anemia, Adolescents, Prevalence, Medical college

INTRODUCTION

Anaemia is the most common nutritional disorder worldwide. It is a major public health problem in INDIA. It is a condition in which the number of red blood cells (RBCs), and consequently their oxygen-carrying capacity, is insufficient to meet the body's physiological needs. Causes of anemia are inadequate intake and poor absorption of iron, malaria, hookworm infestation, diarrhea, heavy menstrual blood flow etc.[1,2] The physical and physiological changes that occur in adolescence places a great demand on the nutritional requirements and make them more vulnerable to nutritional deficiencies.[3] The World Health Organization has defined adolescence as the age period between 10 to 19 years of age for both the sexes (married and unmarried).[4] This is the formative period of life when the maximum amount of physical, psychological and behavioral changes take place. This is a vulnerable period in the human life cycle for the development of nutritional anaemia, which has been

constantly neglected by public health programs. Adolescents are at high risk of iron deficiency and anaemia due to accelerated increase in requirements for iron, poor dietary intake of iron, high rate of infection and worm infestation as well as the social norm of early marriage and adolescent pregnancy. During this stage the requirement of nutrition and micronutrients is relatively high. Therefore, adolescents, especially girls are vulnerable to iron deficiency mainly because requirements are at a peak.[5] The magnitude of the anaemia has been well-documented in pregnant women and infants; however, there is scarce data on the prevalence of anaemia in adolescent population. The present study was undertaken to estimate the prevalence of anemia among adolescent children in rural area of Lucknow district.

METHODS

This cross-sectional study was carried out in the Rural Health Training Centre (RHTC), Era's Lucknow Medical College. All the adolescents aged between 10 to 19 years attending OPD at RHTC for any health problem were included in the study. Study period was about one year i.e. from November 2016 to October 2017. Blood sample was collected for hemoglobin estimation. Hemoglobin estimation was done by Sahli's hemoglobinometer. Hb criteria were taken according to WHO standard. Anemia was defined as hemoglobin of less than 13g/dl in males and less than 12 g/dl in females. Mild anemia was hemoglobin level of 10 to 12.9 g/dl in males and 10 to 11.9 g/dl in females, moderate anemia was hemoglobin level of 7 to 9.9 g/dl and severe anemia was hemoglobin level of less than 7g/dl both among males and females respectively. Pregnant and lactating females are excluded from this study.

Statistical analysis

Data will be analyzed using the statistical software SPSS 17.0 for windows. Chi–square test was used to make categorical comparison.

RESULTS

A total of 450 adolescents i.e. 315 girls and 135 boys from the field practice area of RHTC who fulfilled the inclusion and exclusion criteria, were included in the study. Table 1 showing the sex wise distribution of anaemia. The overall prevalence of anemia in study participants was 55.1 % while 44.9 % were non-anaemic. A higher prevalence of anaemia was observed among girls (64.7%) than boys (32.5%) (Table 1). The difference was highly significant statistically (Chi-square–39.53, p<0.001). Out of 315 girls, 64.7 % girls have varying degree of severity of anaemia, which includes 35% mildly anaemic, 22.9 % moderately anaemic and 6.9 % were severely anaemic. On the other hand out of 135 boys, 32.5 % have varying degree of severity of anaemia, which includes 22.2 % mildly anaemic, 8.1 % moderately anaemic and 2.2% were severely anaemic. Thus the prevalence of mild, moderate and severe anaemia was observed to be higher among girls than boys (Table 2). Age wise distribution is shown in Table 3. A higher prevalence of anaemia was observed in 10-14 years age group for both the sexes. Boys from age group 10-14 years were found to be more anaemic as compared to girls in that group. But overall prevalence of anaemia is higher in girls. 56.9 % girls from age group 10-14 years and 43.1% from age group 15-19 years were anaemic which was found to be statistically significant (Chi-square $\chi 2=6.07$, p=0.014).

Table 1: Prevalence of anemia, according to sex.

Anaemia	Male		Female	
	No.	Percent (%)	No.	Percent (%)
Present	44	32.5	204	64.7
Absent	91	67.5	111	35.3
Total	135	100	315	100

Chi-square=39.53, p<0.001.

Table 2: Distribution of anemia according to grading of anaemia.

Grade of anemia	Male (n=135)		Female (n=315)	
	No.	%	No.	%
Normal	91	67.4	111	35.2
Mild	30	22.2	110	35
Moderate	11	8.1	72	22.9
Severe	3	2.2	22	6.9

Chi-square=3.01, p=0.22.

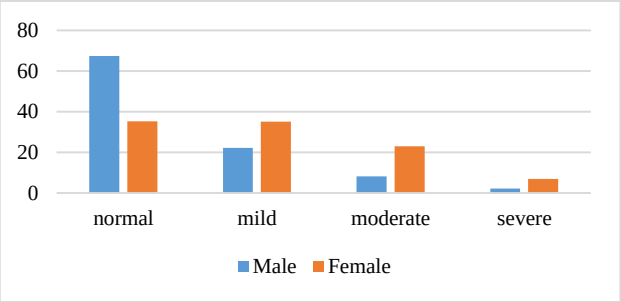

Figure 1: Prevalence of anaemia according to grade of anaemia.

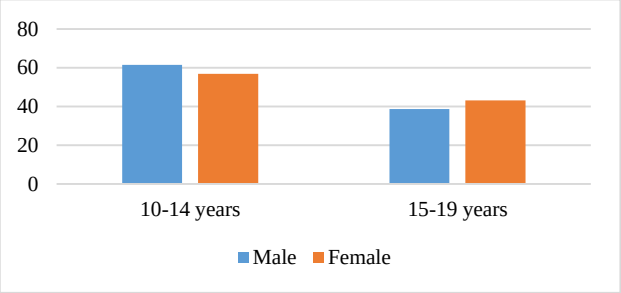

Figure 2: Prevalence of anaemia according to sex.

Table 3: Age wise distribution of anemia among adolescents.

Age group	Gender							
	Male (135)				Female (315)			
	No anemia (91)		Anemia (44)		No anemia (111)		Anemia (204)	
	No.	%	No.	%	No.	%	No.	%
10-14	43	47.3	27	61.4	47	42.3	116	56.9
15-19	48	52.7	17	38.6	64	57.7	88	43.1
Chi-square $\chi 2$	2.37				6.07			
P value	0.124				0.014			

DISCUSSION

Overall prevalence of anaemia observed in this study was 64.7% among girls and 32.5% in boys higher prevalence of anemia was reported in our study which was highly significant similar finding was observed in the study conducted by Ramalingam et al overall prevalence of anemia was 29.3% among male and 48.7% in females.[6] And in study conducted by Anand et al prevalence of anemia was 38% in boys and 43.8% girls respectively.

National Family Health Survey (NFHS), 4 reveals the prevalence of anaemia among men and women in age group 15-49 years are 22.7% and 53% respectively.[7] The following cut off points, which were suggested by the WHO were used to determine whether iron deficiency anaemia was a major problem among the general population.[8]

Table 4: Prevalence of anaemia as per NFHS.

Prevalence	Public health problem
<5%	Not a problem
5-14.9%	Low magnitude
15-39.9%	Moderate magnitude
40% and above	High magnitude

The problem of anaemia said to be of high magnitude in a community when prevalence rate found to be 40% and above. Thus, the prevalence of 64.7% among adolescent girls and 32.5% of anaemia among boys as observed in our study is a serious public health problem.

The overall prevalence of severe, moderate and mild anaemia in the present study was 5.5%, 18.4% and 31.3% respectively. This was higher than the findings reported by Dulipala et al from their study conducted among school going adolescent in Guntur where the prevalence of severe, moderate and mild anaemia were 0.8%, 4.6% and 22% respectively.[10] Our findings were almost similar to those reported from a study conducted in rural Tamil Nadu where severe anaemia was 2%, moderate anaemia was 6.3% and mild anaemia was 36.5%.[11]

In our study, we found that anaemia was more prevalent in girls who were less than 14 years of age as compared to girls who were more than 14 years of age. While in a study conducted by Biradar et al high prevalence of anaemia in girls was found to be in age group more than 14 years.[12]

CONCLUSION

The present study showed that anaemia continues to be a major health problem among the adolescents. There was a higher occurrence of mild anaemia as compared to moderate and severe anaemia in both sexes. Significant difference was observed among adolescent boys and girls with respect to the prevalence of anaemia. Severity of anaemia is more in 10-14 years of age group in comparison to 15-19 years age group. This age group should be screened regularly and appropriate measures taken for correction of anaemia, increase productivity, reduce morbidity and mortality.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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