Original Article

An epidemiological study on prevalence of anaemia among adolescents in Cherlapally village, Nalgonda district

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ABSTRACT

Introduction: Anaemia is a global health challenge, and India is no exception. Large number of studies including National Family Health Survey-3 has quantified the prevalence of anaemia among children, adolescents, women in reproductive age group, pregnant & lactating mothers and adult men. However, there is a lack of studies among rural adolescents, especially in Nalgonda district of Telangana. This study was conducted among adolescent students of a government school located in Cherlapally village of Nalgonda district to detect the prevalence of anaemia, and study the associated socio-demographic factors.

Material and Methods: 150 students (71 boys: 79 girls) between 11 to 19 years of age were included in the study. Haemoglobin levels were detected by Sahli technique. The data was analysed using statistical software SPSS version 19.

Results: The study revealed that, based on WHO definition of anaemia, 55.33% of study population were anaemic. The prevalence of anaemia was significantly higher among girls than boys. No associations were found between prevalence of anaemia and age, religion, type of family, education and income of head of the family and type of diet.

Conclusion: The study identified that anaemia is a significant public health problem among rural adolescents. The authors recommend that larger studies should be conducted to identify the prevalence of anaemia among adolescents, to provide baseline data for planning appropriate interventional programme.

Key Words: Adolescents, Anaemia, Nalgonda

Introduction

Anaemia is defined as a condition in which the number of red blood cells, and consequently their oxygen-carrying capacity is insufficient to meet the body's physiological needs. Specific physiological needs of an individual vary with age, gender, altitude, smoking behaviour, and pregnancy.

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Iron deficiency is the most common cause of anaemia globally, but other nutritional deficiencies (Folate, Vitamin B12, and Vitamin A), acute and chronic inflammation, parasitic infections, inherited and acquired disorders of haemoglobin synthesis, RBC's production or RBC's survival, can all cause anaemia.[1] Although clinical evaluation of anaemia requires multiple laboratory tests to identify the severity, type and cause of anaemia, haemoglobin concentration is the most reliable indicator of anaemia at the population level. [2]

Anaemia is an important public health problem globally. World Health Organization (WHO)

estimates that 1.62 billion people globally (95% CI 1.50-1.74 billion) are affected with anaemia which corresponds to 24.8% of the world population.[3] Public health significance of anaemia among populations in India needs no reiteration. National Family Health Survey-3 (2005-06) identified that 69.5% of children aged 6-59 months, 55.3% of women in reproductive age-group (15-49 years), and 24.7% of men during most productive period of their lives (15-54 years) were anaemic.[4] In view of significant health implications of anaemia especially on maternal and child health, as well as huge social and economic loss, the government of India has initiated programmes to decrease the burden of anaemia among children, adolescent girls, non-pregnant women in reproductive age group and pregnant and lactating women through direct as well as indirect interventions.[5,6,7] The present study was undertaken to study the prevalence of anemia among school attending adolescents of Cherlapally village of Nalgonda (Telangana), a village in the jurisdiction of Rural Health Training Centre, of Kamineni Institute of Medical Sciences.

Materials and Methods

A cross sectional study was conducted during August 2015 in Government High School located in Cherlapally village under Rural Health Training Centre of a Medical College located in Nalgonda district of Telangana. A pilot study was conducted to refine the study instrument, standardize laboratory procedures and obtain approximate prevalence rate for calculation of sample size. A sample size of 150 was calculated based on prevalence of anaemia at 40% obtained after pilot study, level of significance 5% and allowable error of 20% of the estimated prevalence. Government High School, Cherlapally was selected for the study, based on understanding that the students would represent the rural adolescents, and convenience of the study. Sampling frame of the study included all students studying in 8th, 9th and 10th classes of the school. Simple random sampling was done to identify the study population. The socio-demographic and anthropometric data were recorded on a pre-tested questionnaire by trained undergraduate students. Knowledge of the study participants was classified as good, satisfactory and poor based on 13-questions scale with questions ranging from functions of haemoglobin, effects of anaemia on adolescents, and preventive measures. Haemoglobin estimation was done at the school by Sahli technique by laboratory technicians. WHO recommended levels for diagnosis and classification of anaemia[1] were utilized to classify the cases as mild, moderate and severe anaemia. Data was compiled on Microsoft excel sheet and analyzed using statistical software SPSS version 19. Permissions of the District Education Officer and Head Master of the school were obtained. Students detected to have moderate and severe anemia were provided iron-folic acid tablets, and referred to the nearest health care unit. Health education of the students and teachers was conducted as a part of the survey.

Results

A total of 150 students aged 11-19 years (mean 14.45 + 1.87 years) of both sexes (boys 71: girls 79) participated in the study. The study revealed that 83 (55.33%) adolescents were anaemic. The prevalence of anaemia among study population as per severity is shown in fig.1.

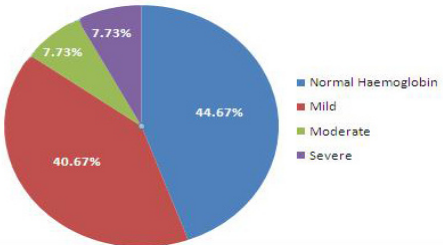

Fig. 1: Prevalence of Anaemia in study population

Table I depicts the prevalence of anaemia as per various socio-demographic variables. The analysis reveals that prevalence of anaemia in the study population was significantly higher among girls as compared to boys. No association was detected between prevalence of anaemia and age, religion, type of family, education and occupation of the head of the family, per capita income, and type of diet.

The examination of prevalence of anaemia in different age-groups in two genders revealed that the prevalence does not follow a time-trend, and the variation of prevalence in both sexes among

adolescents of different age-groups was statistically insignificant (Fig 2).

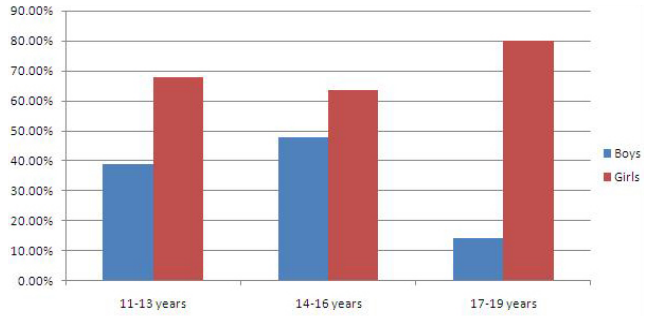

Fig. 2: Prevalence of Anaemia in two sexes in different Age-groups

Fig. 3 depicts the comparison of severity of anaemia between two sexes. It is seen that girls had, not only higher prevalence of anaemia, but mild, moderate and severe anaemia were also more prevalent among girls as compared to boys.

Table 2 reveals the knowledge of adolescents regarding anaemia. Statistical analysis showed that level of knowledge was not associated with the prevalence of anaemia.

Table 1: Distribution of Severity of Anaemia based on Socio-demographic Factors

Characteristics/ Variable	Group	Severity of Anaemia (gms/L)				Total	p value (Chi-square test)
		Severe < 80	Moderate 80-109	Mild 109-119	Normal > 120/130*		
Age (years)	11-13	3	6	17	20	46	p > 0.05
	14-16	4	5	39	39	87	
	17-19	4	0	5	8	17	
Sex	Boys	2	3	25	41	71	p = 0.01
	Girls	9	8	36	26	79	
Type of Family	Nuclear	9	9	59	61	138	p > 0.05
	Joint	2	2	2	6	12	
Religion	Hindu	9	10	60	63	142	p > 0.05
	Others	2	1	1	4	8	
Occupation of Head of Family	Labourer	8	6	38	38	90	p > 0.05
	Self Employed	2	4	20	23	49	
	Service	1	1	3	6	11	
Education of Head of Family	Illiterate	3	5	22	12	42	p > 0.05
	Primary	4	4	21	28	57	
	Secondary or higher	4	2	18	27	51	
Per Capita Income (Rs/ month)	< 2,000	7	7	24	18	56	p > 0.05
	2,000-3,999	3	3	22	24	52	
	4,000- 5,999	1	0	7	11	19	
	> 6,000	0	1	8	14	23	
Type of diet	Non-veg	11	10	54	61	136	p > 0.05
	Veg	0	1	7	6	14	

Note: *Hb > 120 gm/l for girls in all age groups and boys aged <15, Hb > 130 gm/litre for boys >15years of age

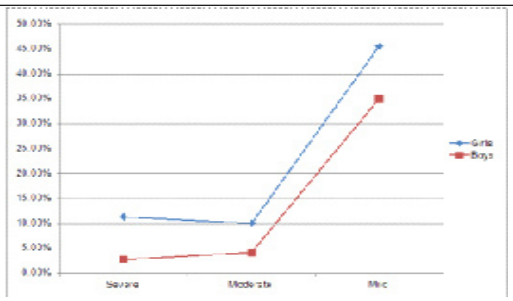

Fig. 3: Comparison of Severity of Anaemia between boys and girls

Table 2: Knowledge of Adolescents regarding Anaemia

Level of Knowledge	Number of Students (n=150)	Number of anaemic students (n= 83)	p value (Kruskal Wallis test)
Good	24	13	p > 0.05
Satisfactory	65	36	
Poor	61	34	

Discussion

The study revealed that anaemia is a significant public health challenge among rural adolescent in Nalgonda district with prevalence rate of 55.33% (95% CI 47.31-63.15%). The prevalence rate among boys was 39.86% (95 % CI 34.2-45.5%), while girls had a prevalence rate of 67.08% (95% CI 56.18-76.76%). Statistically higher prevalence of anaemia among adolescent girls was reported by NFHS-34 as well as by Basu et al in a study conducted in Chandigarh[8], while Verma et al[9] in a study conducted in Rohtak district of Haryana found higher prevalence of anaemia among adolescent boys (68.7%) as compared to girls (67%) which was not statistically significant. The study revealed that the anemia is significantly higher, both in quality and severity among girls than among boys. This is likely to be because of higher demand of micronutrients after menarche. Unsatisfactory knowledge of the adolescents regarding one of the most important health challenges in India is also a matter of concern. We, the Public health workers should also appreciate that knowledge in itself will not do, and much more is required of us to achieve positive attitudes, practices, results and impact.

Conclusion

As highlighted earlier, there is a lack of community based studies on prevalence of anaemia among adolescents in rural Telangana. The study reveals that anaemia among adolescents is an important public health problem. The authors recommend that anaemia among adolescents should be studied through larger studies e.g. NFHS-4, so that the public health importance of the disease can be quantified at state and national levels in this demographic group also. This will provide baseline data for planning and evaluating intervention strategies to improve health of adolescents. The authors also suggest that weekly iron should be provided to all boys also, as the disorder is not uncommon among male adolescents.

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