RESEARCH PAPER | Medical Science | Volume : 6 | Issue : 5 | May 2016 | ISSN - 2249-555X | IF : 3.919 | IC Value : 74.50

Prevalance of Anaemia in Rural School Going Adolescents of Kolhapur

KEYWORDS: Anaemia, adolescents, Body Mass index(BMI)

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ABSTRACT *Aims and Objectives: To evaluate the prevalence of anaemia among school going adolescents in rural area of Kolhapur .*

Materials and Methods: A prospective study was carried out among 1045 children of 4 different schools between the age group of 12 to 16yrs. The haemoglobin levels were estimated by cyanmethaemoglobin method.The collected data were screened to identify the prevalence of anaemia.

Results: The overall prevalence of anaemia of rural school going adolescents was 46.9%. The prevalence of anaemia was very much higher in girls (58.6%). The highest prevalence is in the age group of 13 to 14 yrs (30.6%). Majority of adolescents suffered from moderate anaemia (27.8%). 35.6% overweight, 62.3 under% underweight, 42.2% normal BMI and 20% obese adolescents were anaemic.

Conclusion: Rural school going adolescents of Kolhapur have high prevalence of anaemia especially in girls and underweight adolescents.

Introduction:

Anaemia is one of the major public health problem that affects the world's total population widely(1). The prevalence of anaemia among adolescents is 27% in delevoping countries and 6% in developed countries(2). India has the worlds highest prevalence of iron deficiency anaemia among women, with 60 to 70 percent of adolescent girls being anaemic (3). Adolescence is a crucial phase of growth in the life cycle of an individual. It is a period of transition between childhood and adulthood occurring between 12-18 yrs of age. Adolescents of both the sexes are particularly vulnerable to developing anaemia because of rapid growth, weight gain and blood volume expansion and in girls additionaly because of onset of menstruation. In girls, middle adolescence growth happens earlier(i.e. during 12-15 yrs) than in boys(i.e. during 13-16 yrs)[4]. Anaemia leads to serious health problems such as poor cognitive and motor development and behavioural problems in adolescence (5,6). So we planned this study with the aim to study prevalence of anaemia in rural school going adolescent of rural Kolhapur, Maharashtra.

Materials and Methods:

This prospective study was conducted in four government and semi government schools, among 1045 children in rural area of Kolhapur. Children between 12-16 years were selected for study. The study was carried out after approval by Institutional Ethical committee and informed consent of parents/guardian. Permission from school authorities was also taken. A specially designed data entry format was used to enter all adolescents details like name, age, sex, school name, height, weight, body mass index and haemoglobin level. Haemoglobin level is determined by cyanmethaemoglobin method (type of colorimetric method). Blood was collected by finger prick, 20 microliter of blood sample was mixed with 5 ml of Drabkin's solution at the spot by micro pipette. Haemoglobin in the blood is converted into cyanometh haemoglobin. The absorbance of cyanometh haemoglobin was measured at 540 nm by photoelectric colorimeter on the same day of sample collection. The collected data are then screened to identify the prevalence of anaemia by calculating the number of anaemic cases.

As per WHO recommendations anaemia was diagnosed when Hb <12g/dL in 10-18 years girls 10-14 years boys, and Hb <13g/dL in 15-18 years boys(7). The severity of anaemia was graded as mild(>10g/dL but below age related cutoff for defining anaemia), moderate (7-9.9 g/dL) and severe(<7g/dL) [8].

Results:

A total of 1090 adolescents were approached, of which 45 refused due to fear of prick. The study showed that the overall prevalence of anaemia of rural school going adolescents was 46.9%(490/1045).The prevalence of anaemia was very much higher in girls 58.6% when compared to boys. **[Table I]**

The study results emphasised the high prevalence of anaemia among all age groups of adolescents. The highest prevalence is in the age group of 13 to 14yrs (30.6%) and minimum in the age group of 15-16 (21.2%). **[Table II]**

Majority of adolescents suffered from moderate anaemia 27.8% while 18.7% and 0.5% suffered from mild and severe anaemia respectively. **[Table III]**

Body mass index (BMI) is used as criterion to classify underweight , overweight and obese. The study result showed 18.6% adolescents to be overweight,43.6% underweight and 1% obese. Out of that 35.6% overweight, 62.3% underweight and 42.2% normal BMI and 20% obese adolescents were anaemic.**[Figure I]**

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Discussion:

In the present study, prevalence of anaemia was reported 46.9%, with highest prevalence in girls(58.6%), 13-14yrs (30.6%), and underweight(62.3%) adolescents. A high prevalence in girls is in consistent with the studies conducted by Deshpande etal(4) who reported 60% in adolescents girls. Kaur etal(9), rana etal(10) and sheshadri etal (11) reported similar prevalence of anaemia as 59.8%, 60% and 63% respectively. Goel S(12) observed a low prevalence of(13.3 in Shimla city). Chitra B etal (13) reported 23.69% in 12-14yrs adolescents with severe anaemia in 54.36%. Despande etal (4) observed 31.1% in 14-15 yrs adolescent with moderate anaemia in 41.3%. Sudhagandhi etal (14) reported 55.9% anaemia in underweight adolescents. Anmol Gupta (15) observed BMI did not contribute significantly with anaemia.

Iron deficiency anaemia constitutes the major anaemia during adolescents period. Accelerated development, hormonal changes, malnutrition and starting of menstrual periods in girls are major causes (16). The prevalence of anaemia is disproportionately high in developing countries due to poverty, inadequate diet, certain diseases, poor access to health services(9).

As per WHO, if the prevalance of anaemia is equal to or greater than 40%, it can be considered a severe public health problem; otherwise prevalance in the range of 20% to 39% is to be considered as moderate one(17). We recommend that adolescents be screened periodically for anaemia, and multisectoral community based approach be adopted to combat this serious public health issue.

Funding: None; Competing Interests: None stated.

Tables and figures:

Sex	No	Normal		Total Anaemic	
		No	%	No	%
Boys	540	346	64.1	194	35.9
Girls	505	209	41.4	296	58.6
Total	1045	555	53.1	490	46.9

Table I: Prevalance of anaemia in rural school going adolescents.

Age Distribution in years	Adolescents		Total anaemic adolescents in the given range	Percentage %
	No	%		
12-13	255	24.4	126	25.8
13-14	277	26.5	150	30.6
14-15	264	25.3	110	22.4
15-16	249	23.8	104	21.2
Total	1045	100	490	100

Table II: Age distribution of anaemia adolescents.

Level of haemoglobin gm/dl	No. of cases	Percentage %
Below 7 severe anaemia	05	0.4
7-10 moderate anaemia	290	27.8
10-12 mild anaemia	195	18.7
>12 Normal	555	53.1
Total	1045	100

Table III: Haemoglobin wise distribution in adolescents

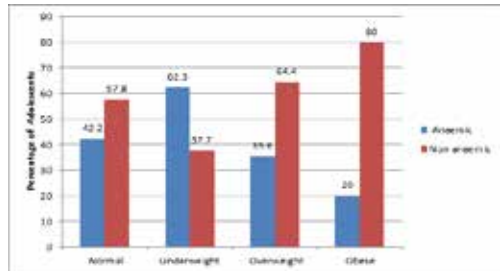

Figure I: Association between BMI and anaemia in adolescents.

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