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To Study the Prevalence of Anaemia in School Children of Age Group 6-10 Years

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Abstract: Anemia is defined as a reduction in the red blood cell volume or hemoglobin concentration below the normal range of values occurring in healthy population with respect to age and sex. Anemia is a common problem throughout the world and iron deficiency is the most prevalent nutritional deficiency in the world. It affects mainly the poorest segment of the population. The purpose of the study is to assess the prevalence of Anemia among Government school going children aged 6-10 years in Delhi. The study was conducted in Government Primary high School in Delhi. A cross sectional study was conducted in which 200 students were included. Hemoglobin was estimated of students. T-test was used to compare the haemoglobin levels of present study with WHO standard haemoglobin values. It was observed that haemoglobin values were low as compared to WHO standard values. It has been seen that 3% children were suffering from severe anaemia, 59% had moderate anaemia while 17% had mild anaemia. Students should be screened periodically and appropriate measures should be taken to bring down the total prevalence of anemia in school children
Keywords: Anemia, haemoglobin, school children, balanced diet.

INTRODUCTION

Anaemia is the most common hematological disease of the pediatric age group. Highest prevalence of anaemia is seen in developing countries. Anaemia is widely prevalent in India and affects both sexes and all age groups [1]. Anemia is defines as reduction in the red blood cell volume or hemoglobin concentration below the normal range of values occurring in healthy population with respect to age and sex.

Anemia was defined according to World Health Organization cut – offs as Hemoglobin level < 11g/dl for girls and < 12 g/dl for boys under 15 years of age, mild anemia was defined as Hemoglobin level of 10 – 12.9 g/dl in males and 10 – 11.9 g/dl in females, moderate anemia as defined as hemoglobin of < 7 – 9.9 g/dl and severe anemia as Hemoglobin < 7 g/dl. Anemia is one of the most prevalent diseases in the world today. It is prevalent not only in infants and pre – school children, but also in adolescent age group. Nutritional anemia is the commonest cause in any age group. Anemia is a nutrition problem worldwide and its prevalence is higher in developing countries when compared to the developed countries [2, 3]. Young children are the most affected, with an estimated global prevalence of 43% [4] Anemia is not a specific disease, but an indication of underlying pathological process or disease of various etiologies. Among all different etiologies, nutritional anemia is the most common in all age groups, Iron deficiency is responsible for most of the nutritional deficiency anemias. Because of the high prevalence and severe consequences of anaemia are long lasting and possibly irreversible in children has led international organizations like WHO, UNICEF, NFHS, Govt. of India and other NGO's agencies to reduce the prevalence of anaemia as major goal. Several strategies were implemented to achieve this goal including iron fortification, use of iron supplements, deworming for school children, Mid-day meal programme and education regarding nutrition, but the goal still needs to be achieved [5]. The present study aims at describing the current prevalence of anemia among school children of age group 6-10 years. Table below shows WHO classification of severity of anemia.

MATERIALS AND METHODS

The present study was undertaken to assess the prevalence of anemia of 6 to 10 years children in government high school Delhi. A total sample of one hundred subjects from Grade 1 to Grade 5 will be chosen. It will include 100 boys and 100 girls from Govt. Primary High School Delhi. 20 boys and 20 girls

respectively for each age group (6-10) will be randomly selected to be the part of sample.

Classification of Anaemia (WHO 2001)

Severity of Anaemia based on Haemoglobin	Haemoglobin level (g/dl)
Normal Haemoglobin	>12
Mild anaemia	10-12
Moderate anaemia	7-10
Severe anaemia	<7

The data pertaining to general profile of the subjects i.e. name, age, sex, family occupation, family income, number of siblings, type of family of the subjects will be collected. Haemoglobin levels of the children were estimated by Sahli's haemoglobin estimation method .Consent was taken from parents of students for inclusion of students in this study. T-test will be used to compare the haemoglobin levels of present study with WHO standards. Percentages will be used to estimate the prevalence of anaemia in children. Statistics will be analysed using SPSS software. p value < 0.05 was considered significant and p value <0.01 highly significant

Inclusion criteria

All children belonging to the age group of 6-10 years

Exclusion criteria

Children belonging to the age outside inclusion age limit. Children suffering from chronic illness.

Study population

200 children aged about 6-10 years including both boys and girls were taken up for the study. Haemoglobin levels of the students are compared with respect to the standards provided by WHO (World health organisation)

RESULTS

The table below shows the mean haemoglobin levels of the students segregated into boys and girls and for age groups 6-10 years.

Table-1: Haemoglobin levels of Students Compared to WHO Standards, 2006

AGE In years	SEX	MEAN (gm%)	SD	p value	WHO (gm%)
6	BOYS	9.3333	1.93649	.003**	12
	GIRLS	7.8889	1.05409	.000**	12
7	BOYS	9.3000	2.00278	.002**	12
	GIRLS	8.6000	1.57762	.000**	12
8	BOYS	9.0000	1.76383	.000**	12
	GIRLS	9.1000	2.18327	.002**	12
9	BOYS	9.7636	1.92212	.003**	12
	GIRLS	9.2000	1.39841	.000**	12
10	BOYS	9.6000	1.83787	.003**	12
	GIRLS	8.5455	1.75292	.020*	12

*significant, ** highly significant

From table 1it shows that mean haemoglobin values is less than the haemoglobin values of WHO standard , and it is statistically significant .Also Hb values is less in boys as compared to girls.

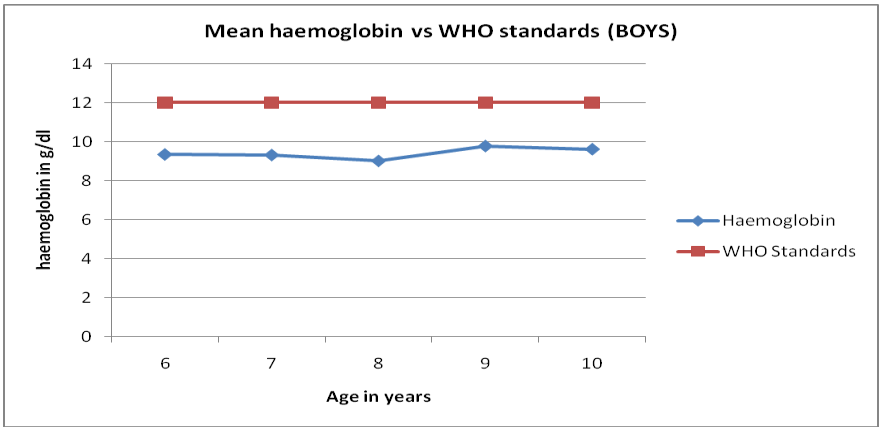

Fig-1: Mean haemoglobin vs WHO standards,2006 (Boys)

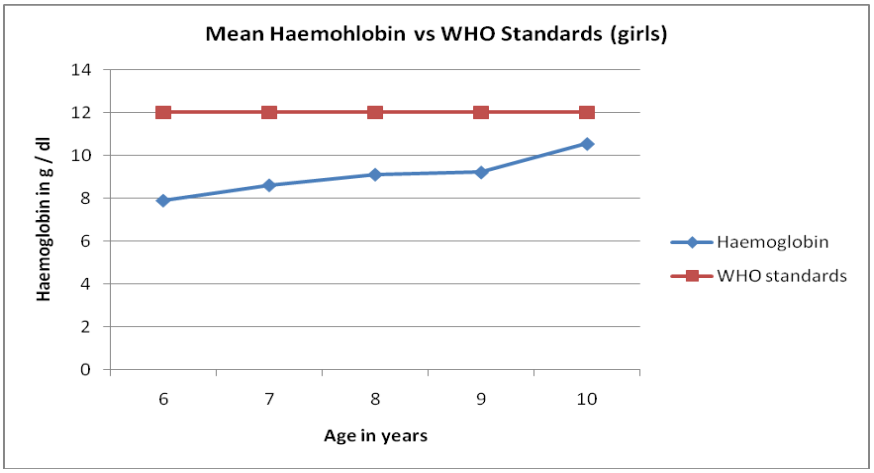

Fig-2: Mean haaemoglobin vs WHO standards,2006 (Girls)

Figure 1&2 shows Haemoglobin levels of both boys and girls were found to be lesser than WHO standards which indicates high prevalence of anaemia.It should be controlled by providing iron rich diet, imparting nutrition education and by spreading awareness to increase the bioavailability of iron. The mean haemoglobin of all the boys and girls (6-10 years) of all age groups was 9.20 g/ dl which was less than WHO standards (12 g/dl). It has been seen that 3% children were suffering from severe anaemia, 59% had moderate anaemia while 17% had mild anaemia.

DISCUSSION

In present study it was observed that, for age group 6 the mean haemoglobin of girls is lesser than that of boys though both sexes show lower values than WHO standards. For age group 7 the mean haemoglobin of girls is lesser than that of boys though both sexes show lower values than WHO standards. For age group 8 the mean haemoglobin of girls is equivalent to that of boys though both sexes show lower values than WHO Standards. For age group 9 the mean haemoglobin of girls is slightly lesser to that of boys though both sexes show lower values than WHO standards. For age group 10 the mean haemoglobin of girls is greater to that of boys though both sexes show lower values than WHO standards. The exact figures for the prevalence of anaemia vary from study to study, but anaemia is an extremely serious public health problem in India .This study was conducted to assess the prevalence of anemia among school children of age 6years to 10 years. The overall prevalence of anaemia was 79 % in students. According to WHO study prevalence of anemia in school children was 33%. The prevalence of anemia in our study is more than the prevalence of anaemia by WHO worldwide study in school children [6]. It is evident from our study that a significant proportion of apparently healthy children suffer from anemia. That may be due to faulty habits of consumption of poor quality diet, worm infestations and rising trend of consuming snack and junk food, which have lack of iron and other micronutrients. Prevalence of anemia is significantly higher in girls when compared to boys. The prevalence of anemia in the developing countries tends to be three to four times higher than in the developed countries [7]. Anemia affects the physical and mental development of an individual leading to decreased working capacity, which in turn affects the development of the country [8]. Nutrition and Health Education sessions should be conducted in schools and in community to inculcate healthy eating habits. Parents of students should be informed about correct dietary practices for increasing iron intake. They should be informed about the causes, symptoms and ill effects of the anemia and importance of prophylactic/curative treatment for anemia. Apart from these, the health messages should include prevention of worm infestation, passing of blood in stools and personal hygiene.

CONCLUSION

Anaemia is still a major health problem in our country. Childhood anaemia still continues to be a significant public health problem in school children between 6-10 years. Our study highlights the fact that, prevalence of Anemia in age group (6-10 year) of was seen in about 79% of anemic children. There should be implementation of Health program for all school children on a regular basis. Students should be advised about improvement in dietary habits, regarding consumption of green leafy vegetables in diet. School teachers should give advice to both children & parents regarding advantages of balanced diet. Government should implement school health programme in conducting hemoglobin estimation for all school children in a regular basis.

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