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 Anaemia 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 and 17% had mild anaemia. Students should be screened periodically and appropriate measures should be taken to bring down the total prevalence of anaemia in school children.

Keywords: Anaemia, 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]. Anaemia is defined 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. 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 anaemia among school children of age group 6-10 years. Table below shows WHO classification of severity of anaemia.

MATERIALS AND METHODS

The present study was undertaken to assess the prevalence of anaemia 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.

Available online: http://saspublisher.com/sjams/
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>
<thead>
<tr>
<th>AGE In years</th>
<th>SEX</th>
<th>MEAN (gm%)</th>
<th>SD</th>
<th>p value</th>
<th>WHO (gm%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>BOYS</td>
<td>9.3333</td>
<td>1.93649</td>
<td>.003**</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>GIRLS</td>
<td>7.8889</td>
<td>1.05409</td>
<td>.000**</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td>BOYS</td>
<td>9.3000</td>
<td>2.00278</td>
<td>.002**</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>GIRLS</td>
<td>8.6000</td>
<td>1.57762</td>
<td>.000**</td>
<td>12</td>
</tr>
<tr>
<td>8</td>
<td>BOYS</td>
<td>9.0000</td>
<td>1.76383</td>
<td>.000**</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>GIRLS</td>
<td>9.1000</td>
<td>2.18327</td>
<td>.002**</td>
<td>12</td>
</tr>
<tr>
<td>9</td>
<td>BOYS</td>
<td>9.7636</td>
<td>1.92212</td>
<td>.003**</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>GIRLS</td>
<td>9.2000</td>
<td>1.39841</td>
<td>.000**</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>BOYS</td>
<td>9.6000</td>
<td>1.83787</td>
<td>.003**</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>GIRLS</td>
<td>8.5455</td>
<td>1.75292</td>
<td>.020*</td>
<td>12</td>
</tr>
</tbody>
</table>

*significant, ** highly significant

From table 1 it 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.

![Mean haemoglobin vs WHO standards (Boys)](image-url)
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 slightly lesser to that of boys though both sexes show lower values than WHO standards. For age group 9 the mean haemoglobin of girls is greater to that of boys though both sexes show lower values than WHO standards. For age group 10 the mean haemoglobin of girls is lesser 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 anaemia among school children of age 6 years to 10 years. The overall prevalence of anaemia was 79% in students. According to WHO study prevalence of anaemia in school children was 33%. The prevalence of anaemia 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 anaemia. 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 anaemia 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 anaemia 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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REFERENCES


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