Prevalence of Anemia among Adolescent Schools Girls of Delhi: A Cross Sectional School Based Study

Monika Singh[1], Om Prakash Rajoura[2], Raghavendra A Honnakamble[1]

Author's Affiliation:
[1]Assistant Professor, Dept. of Community & Medicine, SN Medical College, Bagalkot; [2]Professor, Dept. of Community & Medicine UCMS&GTBH, Delhi

Correspondence
Dr Raghavendra A Honnakamble
ragsmmc@gmail.com

ABSTRACT

Background: Anemia is one of the major public health problems in women of developing countries. Recent studies in India have shown that around 90% of adolescent girls are anemic.

Objectives: To find the prevalence of anemia in adolescent school girls.

Material and methods: It is a school based cross sectional study, in two randomly selected Government Schools of Delhi. Total of 210 adolescent girls were screened from both the schools. Dietary assessment and symptoms of anemia were also assessed.

Results: A total of 210 girls were screened of which 203 (96.7%) were anemic. WHO criteria was used to classify anemia. According to this criteria 93 (44.3%) were suffering from mild anemia, 101 (48.1%) moderate anemia and 9 (4.3%) were suffering from severe anemia. About 2/3rd of the study subjects (68.2%) had a history of skipping meals. History of consuming tea or coffee was very high (94.8%). Almost all (99%) of the adolescent school girls consume tea/coffee with meal or within 1 hour of taking meal.

Conclusions: Anemia is highly prevalent amongst the adolescent school girls.

Keywords: Anemia, adolescent, prevalence, nutrition, school

INTRODUCTION

Iron-deficiency anemia is the most common form of malnutrition in the world. The World Health Organization has estimated that more than two billion people are affected by iron deficiency anaemia.[1] In countries of South East Asia region, at least 40-50% of pregnant and adolescent girls are anemic.[2] As per Indian Council of Medical Research, prevalence of anemia in adolescent girls was 90.1% and 7.1% having severe anemia.[3] Anemia during adolescence reduces growth velocity and in turn increases pregnancy related complications.[4,5]

Present study was conducted to know the prevalence of anemia among the adolescent school girls of Delhi.

MATERIALS AND METHODS

Considering the prevalence of anemia as 88.7%,[6] absolute error 5%, the sample size required for the study came out be 171, it was rounded off to 210. This study was conducted in North-west district of Delhi, which was chosen by simple random sampling method. Two schools were selected in this district by using random number table. In both the schools, XI class was randomly selected by lottery method and students were selected by using random number table.

Hemoglobin estimation was done using Hemocue method.[7]All aseptic precautions were taken and followed during conduct of the study. Anemia was defined as hemoglobin <12.0g/dl and 10.0-11.9g/dl, 7.0-9.9g/dl and <7.0 g/dl as mild, moderate and severe anemia respectively.[8]

Statistical analysis: Data was entered in excel sheet and analysis was done by using SPSS Software Version 17.0.

Ethical Considerations: Written permission from the Director of School Health Service Delhi was taken prior to the study. Principals of the selected schools were contacted, informed about the purpose of the study, and their permission was obtained. Confidentiality was assured and written informed consent was obtained from parents of the students.

RESULTS

Most of the girls belonged to upper lower socio-economic status in both the schools. Mean age of the girls was 16.4 ± 0.8 years. The overall prevalence of anemia among the school girls was 96.7% and 4.3% were suffering from severe anemia (Table 1).[8]

Table 1: Hemoglobin status of adolescent school girls of Delhi

Hemoglobin status	Girls (%)
No anemia	7 (3.3)
Mild anemia (10.0-11.9 gm/dl)	93 (44.3)
Moderate anemia (7.0 – 9.9 g/dl)	101 (48.1)
Severe anemia (<7 g/dl)	9 (4.3)
Total	210 (100)

Table 2: Diet history of adolescent school girls of Delhi

Diet	Girls (%)
Non vegetarian	125 (59.5)
Green leafy Vegetables	201 (95.7)
Eggs	116 (55.2)
Tea/ Coffee Consumption	199 (94.7)
Skipping meals	143 (68.1)
Fasting	57 (27.1)

Table 3: Symptoms of anaemia in adolescent school girls of Delhi

Symptoms	Girls (%)
PICA	71 (33.8)
Worm infestation	54 (25.7)
Anal purities	62 (29.5)
Decreased appetite	123 (58.5)
Fatigue	142 (67.6)
Irritability	127 (60.4)
Breathlessness	130 (61.9)

Descriptive analysis of daily dietary habits of the students enrolled in the study was done (Table 2), it was observed that most of the students had bad food habits and around 68 percent girls skipped their at least one meal in a day. Practice of fasting was observed in 57 (25%) of the students. Symptoms of anemia were assessed in study participants and have been described in Table 3. Significant number of students had symptoms of anemia like Pica, breathlessness, passing of worms in stool and easy fatigability. Since 97% of the girls were suffering from anemia in the current study hence no associations were calculated.

DISCUSSION

The majority of the study adolescent girls were suffering from anemia 96.7 % (mild anemia 44.3%, moderate anemia 48.1%, and 4.3% severe anemia). This reflects the increased requirement for iron in girls which is not met by their regular diet. Study by ICMR in India anemia 7.1 %.[3] Several cross-sectional or prospective studies have shown the similar prevalence of anemia.[9,10,11] In India alone, depending on age and sex, Iron deficiency anaemia has been reported to range between 38-72 percent while majority of them are being women and children.[12]

History of consuming tea or coffee was very high (94.8%) . No association was seen between post meal consumption of tea/coffee with anemia. This may be due to less frequency of consuming tea/coffee as majority of girls consume 1-2 cups a day. Other studies had observed association between the habit of taking tea/coffee after meals and anaemia is due to the interference of the dietary bioavailability of iron by the tannin contents of tea/coffee.[13,14,15]

CONCLUSIONS

Present study observed that most of the girls in the school were suffering anemia. Majority of the adolescent girls even had symptoms anemia. Symptoms like pica and passing worms in stools were also experienced by significant number of students. Hence regular health check up and health education regarding prevention of anemia and prophylactic Iron folic acid supplementation may help reduce burden of anemia among adolescent school girls.

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