

Study of Anaemia in adolescent girls and its co relation with dietary intake in New Delhi/NCR

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Abstract

Background: In India, 80% of children at 1 to 2 years of age, adolescents, pregnant women and lactating mothers suffer from Iron deficiency. Nutritional anaemia is a worldwide problem with prevalence in developing countries (36%) compared to industrialized (8%). Most of the problems are related to dietary habits from initial age of a child. Girls are more at risk because of menstrual Issues and early age marriage.

Methods: The present study was conducted on 300 adolescent girls (10-19 years) by asking their last 24 hours ‘dietary habits.

Results: Among 300 girls 39% were vegetarians and remaining 61% were non-vegetarians. Maximum girls (78%) were in the frequent habit of consumption of junk foods. Mild anemia (34%) was found to be more common than other forms of anaemia. Severity of anaemia was found to be gradually increased from early to late adolescent group.

Conclusions: Among 300 participants, 176 (58.86%) were anaemic, 94 (31%) girls had Mild anaemia (Hb:9-12gm%), 53 (18.3%) had Moderate anaemia (Hb:6-9gm%) and 29 (10.3%) were Severely anaemic (Hb <6gm %) In early and late adolescent group mild anaemic cases were common, while in mid adolescents moderate anaemia was observed commonly.

It is found especially among young children, adolescent girls, women of childbearing age, during pregnancy and lactation. Iron deficiency can arise either due to inadequate intake or poor bio-availability of dietary iron or due to excessive loss of iron from the body.⁷ Girls are more at risk as they lose a considerable amount of iron during menstruation.⁸ Some of the other factors leading to anaemia are malaria and hookworm infestations. Among adolescents, girls constitute a vulnerable group, particularly in developing countries when they are married at an early age and get exposed to a greater risk of reproductive morbidity and mortality. They are deprived of food and education and the added burden of

normal/abnormal menstrual blood loss which precipitates the crisis too often.

Adolescent girls are particularly prone to iron deficiency anaemia because of the increased demands of iron by the body. This anaemia not only affects the present status of health of the adolescent girls, but also shows its deleterious effect when these girls become mothers. A satisfactory haemoglobin status at the time of conception results in safe pregnancy and healthy child birth. This could be attained only when the status of haemoglobin is improved in adolescent girls.

Keywords: Haemoglobin, Adolescent, Pregnancy

Introduction

At present, one fourth of the global population is estimated to be anaemic, with cases increasing rapidly for women, expectant mothers, young girls, and children younger than age 5.

In 2021, 1.92 billion people globally had anaemia. This is an increase of 420 million cases over three decades. Anaemia is the third leading cause of years with lived disability in the world. Iron deficiency is the main cause of anaemia especially in developing countries like India.

Around 30% of world's population suffers from Anaemia. It is a sad fact that about 80% of children at 1 to 2 year of age, adolescent, pregnant women and lactating mothers suffer from iron deficiency in India.^{1,2} Therefore India falls in the category of high prevalence for nutritional anaemia. However, the focus of this discussion is primarily on adolescent girls.³

Anaemia is a blood disorder in which the blood has a reduced ability to carry oxygen. This can be due to a lower than normal number of red blood cells, a reduction in the amount of haemoglobin available for oxygen transport, or abnormalities in haemoglobin that impair its function.^{3,4}

Adolescence is considered as a bridging period from childhood to adulthood. It has also been noted that most of the problems in Anaemia are related to dietary habits from initial age of a child. These Habits lead to micro and macro nutritional deficiencies of all the deficiencies, the iron deficiency are most common causing iron deficiency anaemia and various other health issues. Nurturing a girl child from her infancy to childhood to adolescence is of paramount importance and by intervening at adolescent age of a girl. We could stop the vicious cycle of ill health and contribute towards a healthier nature and society. Nutritional anaemia is a worldwide problem with prevalence in developing countries (36%) compared to industrialized developed countries (8%).

Methods

Target group

300 adolescent girls of age group 10-19 years who were studying in Higher Secondary Schools of Delhi/NCR from period of July 2023 to July 2024 were studied.

Inclusion criteria

The study included adolescent girls

- With apparently normal appearance
- Age group between 10-19 years, and
- were willing to participate in the study

Exclusion criteria

- The study excluded adolescent girls
- Who were associated with other systemic disease
- Who were taking iron or any multi vitamin/mineral in the form of medicine
- The design of this study was analytical cross sectional epidemiological study.

Method of collecting samples and analysis

The information was collected from primary as well as secondary sources. In primary source, questionnaire-cum

interview technique was used. In secondary source, journals, books and related literature were studied. Consent obtained from study participants or her parents after explaining the objectives of study. Pre-designed questionnaires provided to assess age, height, body weight, and the dietary patterns comprising food habits of adolescents, in which the questions were asked on the types of foods consumed in the last 24 hours (recall method), consumption of breakfast, and their habit of skipping meals. Specific foods listed as junk food included: chocolates, potato chips, soft drinks, cookies, cake, brownies, pizza, ice cream, and French fries. The general information about parent's education, parent's occupation, socioeconomic status (using modified kuppuswamy's scale), knowledge about anaemia and status of menstruation recorded. Hematological parameters were obtained using automated haematology cell counter and peripheral blood smears by microscopy. Anemia was diagnosed at hemoglobin level of less than 12gm/dl (WHO).¹⁰

Results

For better correlation and computation of data total number of participants in study were divided into 3 subgroups early adolescent (10 to 12 years), mid adolescent (13 to 15 years) and late adolescent (16 to 19 years). Each sub groups have 100 individuals. Frequency distribution of the participants is depicted in Table 1.

Table 1: Showing frequency distribution.

100 (Early adolescent)

100 (Mid adolescent)

100 (Late adolescent)

Total 300

In present study of 300 girls, 125 were vegetarians and remaining 175 were non-vegetarians. Among 300 participants, 176 (58.86%) were anaemic, 94 (31%) girls

had Mild anaemia (Hb: 9-12gm%), 53 (18.3%) had Moderate anaemia (Hb:6-9gm%) and 29 (10.3%) were Severely anaemic (Hb <6gm %) In early and late adolescent group mild anaemic cases were common, while in mid adolescents moderate anaemia was observed commonly. Severity of anaemia gradually increased from early to late adolescent group.

Discussion

Among 300 participants, 176 (58.86%) were anaemic, 94 (31%) girls had Mild anaemia (Hb:9-12gm%), 53 (18.3%) had Moderate anaemia (Hb:6-9gm%) and 29 (10.3%) were Severely anaemic (Hb <6gm %) In early and late adolescent group mild anaemic cases were common, while in mid adolescents moderate anaemia was observed commonly. Study conducted by Rati et al on 240 adolescent girls of bijapur showed prevalence of mild (48.75%), moderate (42.5%) and severe anemia (8.75%).⁵ Prevalence of mild and moderate anemia was more in that study while severe anemic cases were more in our study. On comparing type of diet anemia was more common in vegetarians as with this study. Kaur IP and Kaur S found 98% Punjabi girl's anemic, with maximum cases of moderate anemia.⁷ Study conducted by Dixit et al on 586 adolescent girls of lucknow revealed 83.3% anemia prevalence which is quite comparable to present study.⁸

Panat et al studied 273 girls of Ahmed nagar, Maharashtra and found more prevalence of mild anemia and anemia was significantly common among girls who were in habit of post meal tea consumption which is comparable to this study.⁹ They also observed a very weak positive correlation between normal BMI and hemoglobin and very weak negative correlation between low and high BMI and hemoglobin but all these were statistically insignificant. In our study anemia was

diagnosed even among girls who had normal BMI. In addition to dietary habits anemia in early adolescent group may be due to parasitic infestation etc, while in mid adolescent girl's menstrual issues may be a significant cause. In many similar studies, it was found that anemia is a common problem in adolescent age group due to improper diet and lack of awareness of nutrition.

It is evident that adolescent girls are at a higher risk for anemia. Very often in India, girls get married and get pregnant even before the growth period is over, deteriorating the situation further.

Conclusion

Thus, this study highlights that adolescent girls are at a higher risk for anemia. Among 300 participants, 176 (58.86%) were anaemic, 94 (31%) girls had Mild anaemia (Hb:9-12gm%), 53 (18.3%) had Moderate anaemia (Hb:6-9gm%) and 29 (10.3%) were Severely anaemic (Hb <6gm %) In early and late adolescent group mild anaemic cases were common, while in mid adolescents moderate anaemia was observed commonly Severity of anemia was found to be gradually increased from early to late adolescent group. Anemia was more common in vegetarians than non-vegetarian.

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