

## IRON DEFICIENCY ANEMIA AMONG ADOLESCENT GIRLS

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### ABSTRACT

Anemia is a condition where there are low red blood cells or hemoglobin levels. Red blood cells contain hemoglobin, a protein that helps carry oxygen from the lungs to all parts of the body. When there are fewer RBCs or low hemoglobin, the blood can't carry enough oxygen, leading to anemia symptoms. Globally, around 2 billion people are affected by anemia. Insufficient iron intake is the main cause of anemia, contributing to a significant percentage of maternal and prenatal deaths. Anemia in childhood can impact cognitive development, affecting school performance and productivity. Correcting anemia, regardless of severity, can improve child survival rates. Adolescents, comprising about 25% of the population, have unique nutritional needs during their rapid growth phase. Iron deficiency and anemia are more prevalent during adolescence due to growth spurts, particularly in girls throughout their reproductive years. Iron deficiency is a common form of malnutrition among women and children, highlighting the importance of addressing nutritional needs during this critical period.

**Key Words:** iron deficiency, anemia, adolescent, red blood cells.

### INTRODUCTION

Anemia is a condition in which the number of red blood cells or the amount of hemoglobin is low. RBC contains hemoglobin, proteins that enable them to carry oxygen from the lungs and liver to all parts of the body when the number of RBCs is reduced or the amount of hemoglobin in them is low the blood cannot carry an adequate supply of oxygen and inadequate supply of oxygen in tissue produce the symptoms of anemia. Anemia affects about 2 billion people worldwide. Insufficient iron intake is the primary cause of anemia and contributes to 22 percent of maternal deaths and 24 percent of prenatal deaths. Anemia in childhood irreversibly compromises cognitive development, leading to lower school attainment and losses in productivity. Thus, correcting Anemia of any severity can impact and child survival. Adolescents constitute about 25% of the population and form an important physiological group whose nutritional needs demand special attention. Adolescence is a period of rapid growth, weight gain, and blood volume expansion. The body's overall iron requirement increases during this period. During the adolescent period, the risk of iron deficiency and anemia among boys and girls appears to be more due to growth spurt, and in girls, it remains as such during their reproductive life. Iron deficiency is the most widespread form of malnutrition among women and children.

Anemia is one of the most widespread nutritional deficiency disease and a major public health concern affecting the entire world, of all the ages, both gender and is often ignored in both developed and (1,2) developing countries. Anemia is classified into three degrees according to WHO: mild, moderate and severe. Hb cut-off values of anemia are 10.0-11.9 g/dl (mild), 7.0-9.9 g/dl (moderate) and < 7.0 (2) g/dl(severe). Nutritional anemia is one of India's major public health (3) problems, where more than 60% is prevalent in adolescent girls. There are other conditions, causing anemia such as folate, vitamin B12 and vitamin-A deficiencies, chronic inflammation, parasitic (4) infection, and inherited disorders. . (Toteja ,2006)

### CAUSES OF IRON DEFICIENCY ANEMIA AMONG ADOLESCENT GIRL

Iron deficiency anemia (IDA) is a prevalent nutritional disorder among adolescent girls, particularly in developing countries. According to a 2014 study published in the Journal of Adolescent Health, the causes of IDA among adolescent girls include:

1. **Inadequate dietary iron intake:** Inadequate dietary iron intake is a significant contributor to iron deficiency anemia in adolescent girls. During adolescence, girls require increased iron due to rapid growth, development, and menstrual blood loss. However, their diets often lack sufficient iron-rich foods, such as red meat, poultry, fish, beans, and fortified cereals. Additionally, adolescent girls may have restrictive eating habits, skip meals, or follow vegetarian or vegan diets, further limiting their iron intake. In many cases, iron-rich foods are not readily available or affordable, particularly in low-income households. (Kumar et al., 2014)

2. **Menstrual blood loss, which can lead to iron depletion** : Menstrual blood loss is a significant contributor to iron depletion in adolescent girls. During menstruation, girls lose iron-rich blood, which can lead to a decline in their iron stores. The average menstrual blood loss is around 30-40 milliliters per cycle, with some girls experiencing heavier flows. This repeated loss of iron-rich blood can lead to iron deficiency over time, especially if dietary iron intake is inadequate. Menstruation can also increase the body's demand for iron, making it challenging for girls to maintain healthy iron levels. (Singh et al., 2014)
3. **Increased iron requirements due to rapid growth and development during adolescence:** Adolescence is a period of rapid growth and development, characterized by increased demands for iron to support the expansion of blood volume, muscle mass, and bone growth. In adolescent girls, this growth spurt is particularly pronounced, with significant increases in height, weight, and body composition. To support this growth, the body requires more iron to produce hemoglobin, myoglobin, and other essential proteins. (WHO, 2014)
4. **Poor iron absorption due to low vitamin C intake** : Adolescent girls who consume low amounts of vitamin C may experience poor iron absorption, exacerbating the risk of iron deficiency anemia. Vitamin C plays a crucial role in enhancing iron absorption from plant-based foods, which are common in adolescent girls' diets. When vitamin C is present, it converts non-heme iron (found in plant-based foods) into a more soluble and bioavailable form, allowing for better absorption in the gut. (Kaur et al., 2014)

#### **SYMPTOMS OF IRON DEFICIENCY ANEMIA AMONG ADOLESCENT GIRL**

(Bhargava et al., 2010)

Adolescent girls with iron deficiency anemia (IDA) may exhibit a range of symptoms, including:

- Fatigue and weakness - Pale skin and shortness of breath
- Headaches and dizziness
- Cold hands and feet
- Poor appetite and weight loss
- Hair loss and brittle nails
- Poor cognitive function and decreased academic performance

#### **PREVENTION OF IRON DEFICIENCY ANEMIA AMONG ADOLESCENT GIRL**

**Preventing iron deficiency anemia (IDA) among adolescent girls requires a multi-faceted approach that includes:**

1. Dietary modifications: Encourage consumption of iron-rich foods like red meat, poultry, fish, beans, and fortified cereals (World Health Organization, 2011)
2. Vitamin C supplementation: Vitamin C enhances iron absorption, so consume foods high in vitamin C (like citrus fruits) along with iron-rich foods (Horton & Ross, 2011).
3. Menstrual hygiene management: Educate girls on proper menstrual hygiene to reduce menstrual blood loss
4. Iron supplements: Provide iron supplements to girls with IDA or at risk of developing IDA
5. Regular health check-ups: Monitor hemoglobin levels and iron status through regular health check-ups
6. Education and awareness: Educate girls, parents, and teachers about IDA causes, symptoms, and prevention strategies (Horton & Ross, 2011).

#### **CONCLUSION**

In conclusion, iron deficiency anemia (IDA) is a significant public health concern among adolescent girls, affecting their physical, cognitive, and emotional well-being. The prevalence of IDA among adolescent girls is alarming, with multiple factors contributing to its development, including inadequate dietary iron intake, menstrual blood loss, and poor iron absorption. If left untreated, IDA can lead to decreased academic performance, reduced productivity, and increased risk of infections and illnesses. Therefore, it is essential to implement preventive measures, such as dietary modifications, vitamin C supplementation, menstrual hygiene management, iron supplements, and regular health check-ups.

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