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# IRON DEFICIENCY ANAEMIA IN INDIAN ADOLESCENT GIRLS: IT'S CAUSES & REMEDIES

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## Abstract

Adolescent years are a period of intense growth. During this time 20% of final adult height and 50% of adult weight are attained. Adolescents are the true assets of any nation, as in their hands lie the overall development of any country. They are the potential builders of the nation .Alarming rise in the global figure of the prevalence of iron deficiency anaemia (IDA) among young children, pregnant women and adolescent girls is undoubtedly a serious health concern .During the adolescent period 20% of final adult height and 50% of adult weight are attained. Because of this rapid growth adolescents are especially vulnerable to anaemia. Studies have shown that Iron deficiency is widespread in developing countries. More than 40% adolescents are anaemic in Asian countries. In India >70% adolescent girls had low haemoglobin levels. (Kurz 1996). The issue of concern here is that these adolescent girls are our potential mothers. Anaemia deprives both the present and the future generations of their right to health, development and safe mother hood. More incidences of low birth babies, miscarriages, maternal mortality and unhealthy children born to anaemic adolescent mothers. In India,>70% adolescent girls had low haemoglobin levels. Reasons for iron deficiency anaemia among adolescent girls may be their lifestyles, poor economic conditions, poor nutrition and negligence about intake of iron rich diet etc .Any health program or intervention strategy needs to target these vulnerable groups .The paper ,thus, focuses on the different approaches that need to be implemented for managing anaemia , especially in adolescent girls. Some measures to ensure healthy implementation of these approaches are also suggested like dietary intervention, iron and folic acid supplements and improvement in their lifestyle also

**Keywords**: anaemia, adolescence, iron deficiency, IDA, lifestyle, diet and nutrition, mortality.

## Introduction

Anemia is currently one of the most common nutritional problems at global level. It has come out to be a global public health problem that affects both developing and developed countries with major consequences for human health as well as social and economic development. WHO estimates the number of anemic people worldwide to be a staggering two billion with approximately 50% of all anemia due to deficiency of iron. India continues to be one of the countries with the highest prevalence of anemia. Iron deficiency anemia occurs at all stages of life, but is more prevalent in pregnant women, adolescents and children. National Family Health Survey (NFHS 3) estimates reveal the prevalence of anemia to be 70-80% in children, 70% in pregnant women and 56% in adolescents. Adolescence is 'coming of age', as children grow in to adults. These teen years are a period of intense growth, not only physically but also mentally and socially. During this time, 20% of final adult height and 50% of adult weight are attained. The world is home to1.2 billion adolescents and India has the largest population of adolescents in the world ie.253 million. Over 50% of India's adolescents suffer from IDA says Hindustan times 2015. IDA is a widespread deficiency in adolescents of developing countries. In an 11 countries study>40% of adolescents were anemic in Asian countries including Nepal and India (Kurz1996). A review of Indian studies on anemia in adolescent girls revealed that >70% of adolescent girls in low income communities had Hb levels <110g/L when the WHO cut off of 120g/L was applied the prevalence was even higher that is 80-90 %(Kanani & Ghanekar 1997). An adolescent girl is 10 times more likely to develop anemia than a boy. It has been estimated by Centre for Disease Control and Prevention that about 75% of teenage girls don't get enough iron in their diet as compared to only 17% of teenage boys. The effects of iron deficiency range from mild to severe. Among girls, however, the menstruation increases the risk for iron deficiency anemia throughout their adolescent and child bearing years. An adolescent in lower income homes are also at higher risk. However, children from all backgrounds can develop iron deficiency and iron deficiency anemia. Iron deficiency anemia is a deficiency of hemoglobin in red blood cells. Hemoglobin is an iron rich protein that transports oxygen from the lungs to the rest of the body when a body does not get enough iron, hemoglobin production is reduced, which in turn reduces the supply of oxygen to the body, which in turn makes people pale, weak and tired. According to daily recommendations, the teen girls between ages of 14-18 years should get 15 mg of iron a day .

**Review of Literature**

With increasing affluence and socio-economic changes, India like the rest of the world, is witnessing an obesity epidemic, especially in children and adolescents. . I.P Kaur & S. Kaur (2011) has conducted a study in Patiala to access the prevalence of anemia among rural girls and boys. The results were quite alarming Hb levels of girls were found alarmingly low. 98% of female and 56% of male's subjects was anemic. During the puberty, the body requires high calories and nutrients like protein, calcium, iron foliate and zinc. Erratic eating behavior had resulted in the consumption of more chips, snacks, chocolates and soft drinks, where as fewer green leafy vegetables and less brown bread breakfast cereal (Booraet.al 2003).

Dr. (Mrs.) Meenal Kumar, Senior Gynecologist, Chandigarh (2003) the unsatisfactory growth, malnutrition and reproductive health problems constitute the major issues of adolescent girls that need attention. The poor maternal nutrition results in low birth weight which in turn affects nutrition and health of adolescent girls who are "Mothers to be" malnutrition and nutritional deficiency problems lead to chronic energy deficiency, iodine and iron deficiency disorders in the adolescent girls.

Dr. Anoop Mishra and team (AIIMS), Dr. Mishra says, "If pizzas, burger and ice-creams figure in your child's daily diet, then there is reason to worry." Fat females may complain menstrual irregularities.

Brache **et**. al. (2003) stated that the reasons for malnutrition of the adolescent girls are misinformation about food values, eating in fast food joints, skipping meals, consuming snacks and food high in sugar and going on dieting which may lead to IDA.

Hematologist Dr. Abhay Avinash Bhave visiting doctor at Lilavati Hospital, Mumbai reported, "I get 25 to 30 patients per week all of whom are youngsters, with anemia. Out of these, around 40-60% are anemic owing to improper diet, junk food consumption and badly timed low nutritious meals. Deficiency of B12 and iron is the leading cause for anemia in Mumbai."

Nutritionist Carry Ruxton (2012) urged girls to eat healthily because the current diets are effecting their health. It may be boring now but it is really important to lay door for the balanced diet you are going to follow the rest of your life.

India's current National Family Health Survey indicates that in Punjab 40% of the women are overweight or obese and more than 20% of Indians are obese. Obesity is now considered an independent factor contributing to Iron deficiency (M.C. Chung et.al. 2009).

In fact, in urban India, one out of three children is obese by overeating on junk food or having the wrong type of diet.

Dr. Sidhu, R Kaur and N Kaur, Department of Genetics, Guru Nanak Dev University, Amritsar, found in a sample survey of 1000 children (410 boys and 590 girls) that the prevalence of obesity is higher in Punjab than the western countries (Tribune 2012). This finding reflected the growing trend and it was the bed for future problems ad diseases.

The level of anemia in Haryana state is over 60%. Public Health Department (2006) asked all the flour mills in the state to add iron content to flour so that the people get this nutrient in the basic food.

Kumari R et.al in 2015 did a cross sectional study at IGMC, Patna on 200 adolescent girls. 50% of them were found to be anemic of the total, 43.3% were mildly, 3.3% were moderately and 3.3% were severely affected by anemia.

**Signs & Symptoms of Iron Deficiency Anemia (IDA)**

- Pale skin due to loss of blood.
- Discoloration of nails and lips.
- Fatigue which inhibits from performing for long hours.
- Insomnia is also a symptom of anaemia in some cases.
- Decreased appetite, Indigestion, Constipation, Flatulence and other such digestion related problems.
- Breathlessness and feeling dizzy and lack of vitality.
- Hand and feet of patient feel cold.
- Rapid heartbeats. Even minor activities can raise the heartbeat excessively.
- In the particular type of anaemia known as pica, the girls suffering from anaemia crave for eating substances other than food; such as coal, dirt, starch or hair.

**Causes of Iron Deficiency**

Lifestyle and physical factors put teens at a risk of Iron deficiency anaemia. The teen years are the growth spurt years. Increased Iron intake is needed to feed the body's demand for increased red blood cell production. Teen girls lose iron through menstruation. Teens with heavy periods are at greater risk for anaemia.

Endurance sports and intense physical training puts teen athletes at risk. Sometimes in order to lose weight, to have a size zero figure, girls may be eating less and probably puking what she consumes.

Fast food temptations, hectic schedule and negative body image all contribute to Iron deficiency in teens. Iron rich foods such as meat and green leafy vegetables are overlooked as teens grab fried, chips, or candy for a quick hunger fix and they also overlook three well balanced meals per day.

Frequent dieting is an anaemia risk. Teens choosing a vegetarian or other meatless diet don't get the iron benefit of red meat, poultry and fish.

Deficiency of vitamins like foliate, Vit.C, Vit. B12, Folic acid or copper etc.

Lack of HCl required for digestion of iron and proteins may cause anaemia.

Presence of intestinal parasites that feed on nutrients may cause deficiency of certain nutrients leading to anaemia also.

If not treated anaemia can worsen and become an underlying cause of chronic ill health, such as impaired fetal development during pregnancy, delayed cognitive development and risk of infection in young children, and reduced physical capacity in all people (Sabbatini, 2000, Allen, 2000, Haas and Brownlie, 2001).

**Remedies for Anemia through Proper Diet**

According to Gillespie (1998) Iron and folic acid supplementation is one of the most important nutritional interventions for adolescent girls.

In Kenya lawless et al (1994) supplemented 87 primary school children with 55 mg elemental Iron per day for 14 weeks and reported a positive effect on growth and appetite that was significantly better than other children. To confirm these results in India a study was conducted by Kanani & Poojara in 2000 in urban areas of Vadodara to investigate the effect of IFA supplements on Hb levels, hunger and growth in adolescent girls. Results show that there was an increment of 17.3 gm/L Hb in the group of girls receiving IFA supplements. Their hunger and growth was also improved as being told by their parents. So a diet rich in Iron and vitamins is the basic regime for anaemia cure. Whole grain cereals, legumes, nuts, dry dates, beet root, red meat, pulses, eggs, fish organ meats and milk products such as cheese, yoghurt etc. are essential for keeping the production of haemoglobin. Green leafy vegetables and food grains counter the deficiency of folic acid.

Natural sources of Vit C such as Amla, capsicum, guava etc. should be added in diets. Eating apple on regular basis is a good remedy for anaemia.

Since it is difficult to influence dietary behaviour due to social reasons and poverty, it is proposed jointly by UNICEF and WHO that in countries where anaemia prevalence exceeds 40% in pregnant women, the provision of universal iron supplements for adolescent girls and women of child bearing age is necessary. The iron and folic acid programme (IFA) introduced by the government in 80's has been under way for more than three decades. Various state governments of India have initiated the programmes like Kishori Shakti Yojna, Janani Suraksha Yojna etc. to target the most vulnerable groups. Still there need to be more such comprehensive programmes for various other target groups as well.

**Some Dietary Interventions and Suggestions**

- .Parsley, lettuce, spinach are all good for higher production of RBC's.
- Ash gourd is a large fruit vegetable like pumpkin. It is a useful remedy for anaemia. Traditionally a sweet called 'petha' is prepared from ash gourd. Juice of raw ash gourd taken on empty stomach in the morning is also beneficial in anaemia.
- Celery is also very beneficial for anaemia. It can be combined with chicory and parsley to be a very useful herbal remedy for anaemia.
- Dill or soya is effective in anaemia. About 60gm of dill taken with a teaspoonful of parsley juice helps in anaemia during menstrual period.
- Fenugreek (Methi) leaves are good for blood formation. Its seeds also help to maintain the content of Iron in the body.
- Gokulakanta herb purifies blood and is useful in anaemia treatment.

Onion have a good amount of Iron content and helps to cure anaemia.

- Barley greens and alfalfa are also good sources of vitamins and minerals and helps in treating anaemia.
- Beans, beet greens, almonds and green leafy vegetables contain not Iron and folic acid to cure anaemia.
- Citrus fruits and juices, tomatoes, broccoli, cauliflower are rich in Vit. C, which helps the body to absorb from Iron and helps in curing anaemia.

- Some other foods containing Iron as asparagns, bananas, beets, raisins, parsley, peas, plums, squash, prunes, purple grapes and jams.
- Fresh organic juice of carrots, beets and beet greens increases the RBC count in the body.
- Liver, meat, eggs, tuna fish and cheese are rich in B 12 and helps in curing pernicious anaemia.
- Spirulina or blue green algae, may treat some anaemia's. Dose is 1 heaping teaspoon per day. One should consult doctor before taking spirulina.
- Some homeopathic medicines can be used to cure anaemia. Ferrous phosphoricum for iron deficiency. Calcarea phosporica particularly for night time bone aches, cool hands and feet, lack of energy or poor digestion.
- Foods fortified with iron can be used like cereals, rice, oat meals etc.
- To boost iron prescribed supplements can be taken under the guidance of doctors.
- Caffeine and tannins (tea) and Calcium inhibit Iron absorption. So avoid coffee and tea.
- Avoid beer, candy bars, and soft drinks. Additives in these foods interfere with absorption of Iron.
- Eat only moderate amounts of almonds, cashews, chocolate, cocoa, soda and most nuts and beans.

## Conclusion

Iron deficiency and iron deficiency anemia are serious and widespread public health problems. Their global scale and magnitude, combined with their damaging physiological socio- economic effect, require the urgent adoption of effective measures to tackle this critical problem. Adolescent is a unique intervention point in the life circle, which decides the health status of future generations. Thus, increasing awareness and knowledge among adolescent girls will improve anemia in long run and the potential of applying this strategy through schools, colleges and other organizations reaching adolescent girls provides an exciting and feasible opportunity. Hence, Nutrition Education and Supplementation should be a part of education system to improve iron status of adolescents, so that after marriage, they can enter pregnancy with no serious iron deficiency handicaps. Let us reach all children especially girls, who are the most vulnerable and victims of multiple deprivations.

Let us reach them to break an intergenerational cycle of under nutrition including anemia and gender discrimination.

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