

Iron Deficiency Anemia: Preventive Strategies and Controversies

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Iron deficiency is the most common micronutrient deficiency affecting approximately 50% of the world population.¹ Iron deficiency anemia during childhood is associated with impaired work performance and also with impaired development in behavior, cognition, psychomotor skills, stunted growth, decrease appetite, poor performance of the immune system and this together has a negative impact on social and economic development.² Mild to moderate anemia is one of the factors for women who are at risk of dying from one of the five major causes of maternal mortality, namely, haemorrhage, eclampsia, abortion, obstructed labor and sepsis.³ Iron deficiency is mainly prevalent in pre school children, school children, adolescent females and pregnant women. What should be the strategies to prevent these groups from the consequences of iron deficiency? Enrichment and fortification of food, dietary modification, and iron supplementation are the well-established modalities for the prevention of iron deficiency. Fortification of infant formulas and consumption of fortified and iron rich products by lactating women and young infants have dramatically reduced the prevalence in the developed countries but the overall picture is dismal because of poverty, illiteracy and poor health care system.⁴ Another emerging field is the manipulation of micronutrients by genetically deleting iron absorption inhibitors e.g. removal of phytic acid from maize and beans and thereby increasing the bioavailability of micronutrient.⁴ Iron supplementation is one of the most effective way to prevent and treat iron deficiency however, there are controversies regarding frequency of administration of oral iron and the dosage formulation.⁵ Daily oral iron supplements are effective at reducing the prevalence of anemia but at the cost of variable gastrointestinal side effects leading to poor compliance. An alternate approach to daily versus weekly iron supplementation has been suggested based on the mucosal block in rats. It has been noted that iron absorption is reduced in rats in the days immediately after the initial administration of iron and this introduced the mucosal block theory. However, the studies in humans have clearly revealed that there is no such mucosal block during iron supplementation that is responsible for a reduction in iron absorption in rats. One of the main indications for iron supplementation is pregnancy and with weekly administration the total iron deficit in the body will be substantial and can seriously harm both mother and fetus.⁶ As far as the dose is concerned, a daily dose of 60 mg of ferrous iron throughout the second half of the pregnancy should be sufficient to prevent iron deficiency. A dose of 120mg daily will be required for non pregnant iron deficient females or in females who were unable to start supplementation therapy in second trimester.⁷ Adolescent females is another group which should be targeted because adolescent pregnancies are not uncommon in our country and the objective should be the preparation of potential mother's nutritional status in anticipation of pregnancy that will reduce the likelihood of complications and would increase the overall survival of mothers and infants.²

The third group that should be targeted is preschool and school children. Recently, Human Nutrition Unit of the All India Institute of Medical Sciences published the recommendations on strategies for prevention and control of iron deficiency anemia amongst children below the age of three years. Issues like the age group for iron supplementation, type of iron compounds, dosage, daily versus weekly administration and duration of iron supplementation have been discussed. The recommendations for children of group of up to three years include the use of Ferrous sulphate 20mg once daily in the form of drops that should be administered for at least hundred days in the first year of life and the same schedule should be repeated in second year.⁸ Keeping in view the comparable social status of our country we can benefit from these guidelines that can be incorporated in our health care system. A large number of doctors are employed in school health scheme that can play an important role in their implementation to the targeted groups. Similarly iron supplementation can be inducted in extended programme of immunization.

References

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