

High Prevalence of Anemia in Indian Women: Causes and Remedies

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INTRODUCTION

- Over 800 million women are affected by anemia globally¹.
- The poorest nations of the world suffer 60% of the morbidity and 95% of the mortality due to iron deficiency¹.
- South Asia and sub-Saharan Africa bear about 70% of the global iron-deficiency anemia mortality burden¹.
- Anemia takes up 12.8% of maternal deaths during pregnancy and childbirth in Asia¹.
- In India, anemia stands as a major public health problem, since about 52% of nonpregnant women of reproductive age are anemic¹.

CAUSES OF ANEMIA

- The primary cause of anemia remains iron deficiency but it is rarely found alone¹.
- It coexists with various other causes like malaria, parasitic infection, nutritional deficiencies, and hemoglobinopathies¹.
- The influence of iron deficiency as a cause of anemia differs with the region.
- Nearly 50% of anemia in sub-Saharan Africa is because of iron deficiency due to the high prevalence of HIV, hookworm, malaria, and other infectious diseases¹.
- Over 70% of premenopausal women in India suffer from anemia caused by iron deficiency¹.

CONSEQUENCES OF ANEMIA

- Iron deficiency anemia increases the risk for preterm labor, low birth weight, infant mortality, and predicts iron deficiency in infants after 4 months of age¹.

- It also causes cognitive deficits and reduced intellectual performance among school children¹.
- In regions with a high prevalence of iron deficiency, successful iron supplementation causes dissolution of anemia as a public health problem (except where malaria and HIV or hookworm infection rates are high)¹.
- Moderate-to-severe anemia (hemoglobin level below 10 g/dL) are related to significant public health implications¹.

SOLICITUDES

- Although there has been increased national and international awareness and recent governmental intervention programs, the prevalence of anemia among Indian women is constantly higher than 45% since 1990, and anemia trends remain strongly correlated with iron deficiency¹.
- The main causes of iron deficiency anemia in India are low dietary intake, poor availability of iron, chronic blood loss due to hookworm infestation and malaria¹.

INDIAN DIETARY PATTERN IS A CONCERN FOR ANEMIA

- Vegetarianism, defined as the exclusive consumption of plant-based diets, is a common dietary pattern in India, for at least 2500 years. In India, vegetarianism is due to ethical teachings of “nonviolence” inherent in Hinduism, Buddhism, and Jainism¹.
- Indians constitute about 70% of the world’s population who adhere to vegetarian-style diets¹.
- Seventy-five percent of Indian vegetarians are lactovegetarians, who do not consume meat or eggs, with no prohibition for milk or other dairy products¹.
- Twenty-five percent of Indian vegetarians are lacto-ovo vegetarians, who do not eat meat, with no prohibition on eggs and dairy products¹.

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- Further, the popular and affordable foodstuffs in India like wheat bread contain high levels of phytates. Also, tea a popular beverage in India is high in tannic acid content. Phytates and tannins further inhibit iron absorption¹.
- Less than 1% of Indians are vegans, who do not consume any animal products at all¹.

DIETARY RECOMMENDATIONS

- Nutritionists recommend vegetarians to increase dietary iron by 80% to compensate for a lower iron availability of 10% from a vegetarian diet compared with 18% from an omnivorous diet¹.
- This recommendation is challenging for Indians where the majority of vegetarians sustain on inadequate quantities of iron - poor staples like lentils, wheat bread, green peppers, and rice¹.
- A modified food guide pyramid for vegetarians recommends including 32-36 mg of iron daily in a 2,000 calorie diet comprising 8 servings of grains, 3 of vegetables, 2.5 of green leafy vegetables, 1.5 of fruit, 2.5 of beans and protein foods, 3 of dairy or nonfortified dairy, 1.5 of nuts and seed, and 2.5 of oils¹.

STRATEGIES TO PREVENT ANEMIA AMONG INDIAN WOMEN

Advocate

Consuming meat, fish, chicken, or egg daily or several times weekly can significantly lower the level of anemia¹.

Educate

Spreading knowledge about the importance of iron-rich foods in diet and iron fortification of vegetarian diets will help Indian women fight anemia¹.

Food-based Strategies

Food-based strategies to educate Indian women should include:

- Consumer education to promote diversification of the diet including iron-rich foods¹
- Popularizing and making accessible the foods and fruits containing vitamin C, which enhances iron absorption¹

- Behavior modification should be done to encourage women to avoid consuming tea with meals since tea interferes with iron absorption¹.

Promote

Iron-rich food sources like millet (*Ragi ganji*), should be promoted to be consumed either as roti bread or as malt beverage. *Ragi ganji* is higher in iron and contains less iron-inhibiting phytates than rice, wheat and maize¹.

Regional Strategies

Mass food fortification with iron, iron supplementation programs for women and children, implementing effective programs for the prevention of malaria and hookworm, and effective public education about iron-rich sources of plant-based and animal-based foods will serve as effective strategies for reducing the incidence and prevalence of iron deficiency anemia among Indian women¹.

WHO Guideline: Daily Iron Supplementation in Adult Women and Adolescent Girls²

Target Group	Menstruating adult women and adolescent girls (nonpregnant females in the reproductive age group)
Supplement composition	30-60 mg elemental iron ^a
Supplement form	Tablets
Frequency	Daily
Duration	Three consecutive months in a year
Settings	Where the prevalence of anemia in menstruating adult women and adolescent girls is 40% or higher ^b

^a30-60 mg of elemental iron equals 150-300 mg of ferrous sulfate heptahydrate, 90-180 mg of ferrous fumarate or 250-500 mg of ferrous gluconate.

^bIn the absence of prevalence data in this group, consider proxies for high risk of anemia. For the most recent estimates, visit the WHO - hosted Vitamin and Mineral Nutrition Information System (VMNIS).

REFERENCES

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2. Guideline: Daily iron supplementation in adult women and adolescent girls. Geneva: World Health Organization; 2016. Available from: https://apps.who.int/iris/bitstream/handle/10665/204761/9789241510196_eng.pdf?sequence=1&isAllowed=y

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