

## Anaemia in Pregnancy: Need and Importance of Iron Supplementation

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### ABSTRACT

*Today's world iron deficiency (ID) is the most frequent nutritional deficiency and it is being considered as an epidemic public health crisis. Because of physiological vulnerability women are the most susceptible to iron deficiency, among all the populations. Women of reproductive age and infants are at particular risk of iron deficiency, especially in underdeveloped and developing countries. During pregnancy, iron deficiency anemia is a specific risk factor associated with negative maternal and perinatal outcomes. Most women begin their pregnancy with partially or completely depleted iron reserve. Many countries have iron supplementation programs for children, adolescent girls and pregnant women which are more susceptible to anemia, moreover this, there is a great need to increase literacy level. Reducing iron deficiency (anemia) could be an important instrument, first, because among women, it should improve the iron stores of babies. The main purpose of this manuscript is to give the right concern for anemia and iron supplementation in pregnancy*

**Key words:** Pregnancy, Anemia, Iron, Fetus, UNICEF

### INTRODUCTION

Nutrition and pregnancy refers to the nutrient intake, and dietary planning that is undertaken before, during and after pregnancy. Nutrition of the fetus begins at conception. For this reason, the nutrition of the mother is important from before conception (probably several months before) as well as throughout pregnancy and breast feeding. Disproportionate amount of some nutrients may cause malformations or medical problems in the fetus, and neurological disorders and

handicaps are a risk that is run by mothers who are malnourished<sup>1</sup>.

Iron is a vital element. The human body needs iron for a lot of reasons. Most of the iron in our bodies is found in our blood. Iron helps in carry oxygen to body as a part of red pigments in blood. Iron deficiency anemia is defined as anemia with biochemical evidence of iron deficiency. Serum ferritin, transferrin saturation, transferrin receptor, and erythrocyte protoporphyrin are indicators used as biochemical evidence of iron deficiency<sup>15</sup>.

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More severe cases of iron deficiency are often associated with feeling tired, weakness, shortness of breath, or poor ability to exercise. Anemia that comes on quickly often has greater symptoms, including: confusion, feeling like one is going to pass out, and increased thirst. People who eat a balanced diet can normally get enough iron that way. Most foods have (usually very small amounts of) iron in them, contributing to our overall iron intake<sup>5</sup>. Women need about twice as much iron when they are pregnant. It can be particularly difficult for vegetarians to get that amount of iron in their diet alone.

Anaemia is a global public health problem affecting both developing and developed countries with major consequences for human health. Anemia occurs when iron stores are exhausted and the supply of iron to the tissues is compromised. Iron deficiency anemia is a severe stage of iron deficiency in which haemoglobin (or hematocrit) falls below the cut-offs. During pregnancy, the need of iron for mother and fetus gradually increases and will reach to its highest level at the end of pregnancy. The reason for this high demand is mother's blood volume increases up to about 35%, fetus growth, placenta and other mother tissues which increase the need of iron up to three to five times in the second and third trimesters<sup>16</sup>. The high physiological requirement for iron in pregnancy is difficult to meet with most diets. Therefore, pregnant women should routinely receive iron supplements in almost all contexts. Where the prevalence of anemia in pregnant women is high (40% or more), supplementation should continue into the postpartum period to enable women to acquire adequate iron stores<sup>14</sup>.

Iron supplements are essential for the rapid treatment of severe iron deficiency anemia in all sex and age groups specially pregnant women. With proper training, health workers can assess very low haemoglobin levels or extreme pallor with reasonable sensitivity and high specificity. Where severe anemia is relatively common (prevalence 2 % or more of a population group), its detection and treatment in primary care facilities is necessary to prevent morbidity and mortality

from severe anemia. There are a wide variety of iron supplements in use around the world and their quality varies. The quality of a supplement and its attractiveness to users is a major key to success. Iron supplementation programs to pregnant women typically use tablets, which are relatively inexpensive and easy to transport and store. UNICEF has supported the production of a tablet that contains 60 mg iron (as ferrous sulfate) and 250 µg folic acid but is now changing to a tablet that contains 60 mg iron plus 400 µg folic acid<sup>10</sup>.

#### **Why it is important to do this review**

Consequences of iron-deficiency anaemia are serious and can include diminished intellectual and productive capacity<sup>7</sup>, and possibly increased susceptibility to infections<sup>13</sup>. The lowest rates of low birth-weight and premature birth appear to occur when maternal Hb (Haemoglobin) levels are between 95 and 105 g/L during the second trimester of gestation<sup>17</sup> and between 95 and 125 g of Hb/ L at term<sup>8</sup>. However, the results of several studies suggest that near-term Hb (Haemoglobin) levels below 95 g/L or even below 110 g/L may be associated with low birth-weight.

There is evidence that maternal Hb levels below 95 g/L before or during the second trimester of gestation are associated with increased risk of giving birth to a low birth-weight infant and with premature delivery. During pregnancy, low Hb levels, indicative of moderate (between 70 and 90 g/L) or severe (less than 70 g/L) anaemia, are associated with increased risk of maternal and child mortality and infectious diseases<sup>10</sup>. Favourable pregnancy outcomes occur 30% to 45% less often in anaemic mothers<sup>4</sup> and it has been estimated that their infants have less than one-half of normal iron reserves<sup>11</sup>.

International organisations have been advocating routine iron and folic acid supplementation for every pregnant woman in areas where anaemia is highly prevalent (Beard, 2000). While iron supplementation with or without folic acid has been used in a variety of doses and regimens, some current recommendations for pregnant women include

the provision of a standard daily dose of 60 mg of elemental iron and 400 µg of folic acid starting as soon as possible after gestation begins, if any case there may some issues then it could given then it should not be later than third month and continuing for the rest of the pregnancy. When this duration of six months of intervention cannot be achieved during pregnancy, either continued supplementation during the postpartum period or an increased dosage to 120 mg elemental iron daily during pregnancy is recommended<sup>19</sup>.

Anaemia prevention programme is recently strengthened by Government of India with Iron plus guidelines with gains from NRHM (National Rural Health Mission) and MOFHW (Ministry of Health and Family Welfare) and support of workers like ASHA (Accredited Social Health Activist), FHW (Female Health Worker) and ANM (Auxiliary Nurse Midwife). Pregnant women can get IFA tablets free of cost at all Government hospitals or through distribution by these workers during house to house visits. In spite of these efforts anaemia in pregnancy still stands as a major health problem<sup>16</sup>. POSHAN Abhiyaan (National Nutrition Mission) is a flagship programme. It also aims to bring down anaemia among young children, women and adolescent girls by three per cent per year. The NNM is a comprehensive approach towards raising nutrition level in the country on a war footing. It will comprise mapping of various Schemes contributing towards addressing malnutrition, including a very robust convergence mechanism, ICT (Information and communication technology) based Real Time Monitoring system, incentivizing States/UTs for meeting the targets, incentivizing Anganwadi Workers (AWWs) for using IT based tools, eliminating registers used by AWWs, introducing measurement of height of children at the Anganwadi Centres (AWCs), Social Audits, setting-up Nutrition Resource Centres, involving masses through Jan Andolan for their participation on nutrition through various activities, among others.

Several studies have shown that iron supplementation, with or without folic acid during pregnancy, helps cover the iron intake gap and results in a substantial reduction in women's risk of anaemia in late pregnancy, at delivery and six weeks postpartum<sup>12,18</sup>.

The effectiveness of iron supplementation for pregnant women has been evaluated mostly in terms of improvement in Hb concentration, rather than improvements in maternal or infant health<sup>3</sup>. This narrow scope may have been an important omission in most studies addressing the efficacy, effectiveness and safety of iron and iron with folic acid supplementation during pregnancy.

### **Food-based Interventions**

Fortification of suitable food vehicles with absorbable forms of iron is a highly desirable approach to controlling iron deficiency. If a fortifiable food exists that is consumed by many people at risk of iron deficiency, fortification is likely to be the most cost-effective component of its control. Therefore, some fortification activity, either planning or implementation, is a recommended part of programs in all contexts. There are many possible strategies for iron fortification. One approach is to fortify a staple food that is consumed in significant quantities by most of the population. Fortification of wheat flour with iron is technically relatively simple and this has been successfully implemented in several countries in the Caribbean, South America, North America, and Great Britain. Another approach is to fortify a widely consumed condiment<sup>10</sup>.

The composition of diet affect the amount of iron absorbed from the diet is highly, namely, the quantities of substances that enhance or inhibit dietary iron absorption. Tea and coffee inhibit iron absorption when consumed with a meal or shortly after a meal. Heme food sources promote the absorption of iron from other less bio-available food sources. Vitamin C (ascorbic acid) is also a powerful enhancer of iron absorption from nonmeat foods when consumed with a meal. The size of the vitamin C effect on iron absorption increases with the quantity of

vitamin C in the meal. Unfortunately, foods rich in vitamin C tend to be seasonally available, and both meat and vitamin C rich foods tend to be expensive in less developed countries, furthermore had a very poor level of knowledge about anaemia. Germination and fermentation of cereals and legumes improve

the bioavailability of iron by reducing the content of phytate, a substance in food that inhibits iron absorption. When treating anemia, considerations of the proper treatment methods are done in light of the "cause and severity" of the condition in priority.



Iron Rich and absorption Enhancing Food Source : <http://mercagranada.es/alimentos-ayudan-retrasar-envejecimiento/>

### Conclusion and Future Thrust:

Anemia in pregnant women has high prevalence worldwide, with possible serious fetal-maternal sequelae. Iron supplementation given through the best route of administration. More often, oral ferrous iron formulations are used, due to their effectiveness and low cost. Research in the near future, and international organizations, should perform the task to improve management of anemia worldwide, lowering costs of diagnostic tools in developing countries, finding new markers for iron states and revealing other relations between iron deficiency states and fetal-maternal complications.

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