

Iron deficiency
is a serious
health issue
that is not being
taken seriously
enough

A 'non-glamorous' blood disorder

Dr Mohammad Irfan & Dr Yousuf Hasan

ANAEMIA is a decrease in haemoglobin level or RBC count in blood. It is a common cause of morbidity. It severely undermines the capacity to do physical and manual work and leads to poor work performance. In the initial stages it is asymptomatic and presents a challenge for the physician. The most common cause of anaemia is nutritional deficiency. This includes deficiency of Iron, vitamin B12, folic acid etc. Among these nutritional deficiencies, the most prevalent one is anaemia caused through Iron deficiency. Today approximately four to five billion people in world suffer from Iron deficiency.

IMPORTANCE OF IRON: Iron plays an important role in several processes of the body. The most important of these processes is the production of haemoglobin which is a carrier of oxygen and carbon dioxide. Iron acts as a co-factor for cholesterol and lipid biosynthesis. It is also involved in the production of myelin sheath, which is a covering around the nerves in our body and help in passage of uninterrupted nerve impulses.

IRON REQUIREMENTS AND LOSSES:

An average adult contains about 3-5 grams of Iron in the body. Of this, two-thirds is present in the form of haemoglobin. This means that any deficiency in Iron would hamper the transport of oxygen. An average adult human loses about 1mg of Iron per day via urine, feces, sweat and by shedding cells of the skin and epithelial lining of the gastrointestinal tract.

Apart from these losses, there are several other factors that can lead to Iron deficiency. These include:

According to an estimate approximately 58 per cent of all pregnant women suffer from Iron deficiency anaemia. During vaginal delivery, females lose a little more than 500ml of blood. In C-section, approximately 1000ml of blood is lost. If the woman is suffering from Iron deficiency anaemia, her blood count would probably be low. If that is the case then she might go into hypovolumic shock and that can add to high maternal mortality. Another risk factor in the South Asian community is malnutrition. In old age chronic blood loss in stool and urine are the major factors.

DIAGNOSIS AND FINDINGS: Symptoms of Iron deficiency anaemia depend upon the development and duration of the disease. Three stages have been defined; the first is in which Iron depletion occurs as Iron-stores in the bone marrow start to diminish due to inadequate supply. In the second stage, Iron-stores become substantially reduced and now haemoglobin levels will be affected. In the final stage Iron deficiency anaemia develops and the body is unable to maintain sufficient haemoglobin.

Risk factors for Iron deficiency

Dietary Risks

Cow's milk consumption prior to 12 months age
Excessive cow's milk consumption (i.e., > 24 oz./day)
Formula fed low-iron formula
Lack of iron supplementation after 6 months in breastfed infants
Excessive weight gain

Prenatal/Perinatal/Neonatal Risks

Anemia during pregnancy
Poorly controlled diabetes during pregnancy
Prematurity
Low birth weight
Multiple gestation

Infancy/Childhood Risks

Chronic infection or inflammation
Chronic or acute blood loss
Restricted diets
Use of medications that interfere with iron absorption (e.g., antacids)

Social/Economic Risks

Low socioeconomic status
Recent immigration from developing country

Iron and Vitamin C rich foods

Iron-Rich Foods

Meat and Seafoods:	Lean beef, veal, pork, lamb, poultry, liver Shellfish (clams, shrimp, oysters)
Vegetables:	Spinach, okra, sweet potatoes, winter squash, white potatoes
Grains and Legumes:	Dried peas, dried beans, legumes Whole grain breads and fortified cereals, brown rice, enriched pasta, tofu, soybeans
Fruits:	Dried fruits (prunes, raisins, figs) Tomato juice, prune juice
Miscellaneous:	Molasses, egg yolk, nutritional yeast

Vitamin C-Rich Foods

Fruits:	Citrus (fruit and juice), strawberries, cantaloupe
Vegetables:	Brussel sprouts, broccoli, cabbage, tomatoes, asparagus, bell pepper, cauliflower, potatoes, spinach, turnips
Miscellaneous:	Green chili sauce and salsa

the depleted Iron-stores. The child in the mother's womb will become starved of oxygen due to the low haemoglobin count. His brain development would be slow. Thus when he is born he will be underweight and underdeveloped. The risk of miscarriage or premature birth is also higher in anaemic mothers. The child will be less inquisitive; rather he will remain attached to the mother. An underdeveloped

with Iron absorption thus supplements should not be administered with milk.

ANAEMIA AND PAKISTAN'S PERSPECTIVE: In Pakistan Iron deficiency anaemia remains a highly prevalent but very neglected disorder. According to the World Health Organization (Who), approximately 44 per cent non-pregnant and 57 per cent pregnant women in Pakistan suffer from Iron deficiency anaemia. It is largely responsible for the high child mortality rate (110 out of 1000 before 5 years of age) and high infant mortality rate (83.3 out of 1000).

According to Who nine million children in Pakistan, under the age of five years, are anaemic. This is because in Pakistan people have absolute-

Apart from these losses,

women lose approximately 20mg of Iron every month as a result of menstrual losses.

HIGH-RISK FACTORS: Infants and women who have reached their reproductive age (especially pregnant women) are at the greatest risk of developing Iron deficiency anaemia.

For the first six months of life, the infant is solely dependent upon the mother's milk for his/her nutrition. Therefore it has to have a huge amount of Iron stored in the body so that it can produce haemoglobin and other important substances vital for the body. Women who have reached their reproductive age, especially pregnant women. Their daily Iron requirement is 2-3mg, which increase to 6.6mg/day in the last trimester.

production.

When the patient is examined, the skin and the sclera of the eye (white part) appear grossly pale. He is easily fatigable and irritable. He may also complain of headaches and tachycardia (increase pulse). Other less common anomalies may be oilonychias (spoon shaped nails), and gastrointestinal problems.

Laboratory investigation shows that the red blood cells appear to be smaller in size (microcytic) and lighter in colour (hypochromic).

In pregnant women Iron deficiency anaemia can cause several degenerative effects on the woman and her child. The woman finds it difficult to bear a child, as her body is itself finding it difficult to cope with

brain means he will have less intellectual qualities, thus he will always be a burden on the society and will eventually become a non-productive member of the society.

MANAGEMENT AND TREATMENT: In mild to moderate anaemia, Iron supplementation with careful follow up is sufficient treatment. Supplementation should be followed by haemoglobin evaluation every month for six months. Iron supplements are given orally, only if compliance is poor, by intramuscular or intravenous injection. The former is the preferred method as it is not painful and only has minor side effects of nausea and constipation. Supplementation can be supported by vitamin C. Conversely calcium interferes

ous,

whole family. This clearly indicates that malnutrition is the primary cause of Iron deficiency anaemia in our country.

Another study was conducted at the Jinnah Postgraduate Medical Centre in June 2003. According to this study, out of 681 OPD patients, 29.5 per cent patients were found anaemic. In the IPD, out of 408 patients, 41.2 per cent were found anaemic. In IPD 13.7 per cent males and 41.4 per cent females were found to be anaemic. Whereas in the OPD 28.2 per cent males and 55.4 per cent females were found to be anaemic.

WHO IS RESPONSIBLE:

Iron deficiency anaemia has remained a non-glamorous disorder. NGOs endlessly talk about controversial issues, uncommon diseases and treatment that is non-affordable to the general population. They should understand that by eliminating Iron deficiency anaemia they can eliminate a lot of concomitant diseases that occur due to complications of Iron deficiency anaemia. The government has made no effort whatsoever to eradicate a disease that has existed for a long time and affects more than 40 per cent of the population of Pakistan. The irony is that treatment of Iron deficiency anaemia is very cost effective. Oral supplementation for about six months would cost Rs120-per-person and he/she is cured. Anaemia itself is badly handled by doctors all around the world.

PREVENTION: Breast-feeding of infants should be encouraged through the first year. This only provides a small amount of Iron but almost 50 per cent of Iron from breast-milk is absorbed and is sufficient for the first six months of life. After six months the infant should be given Iron rich foods with Iron-formula. To enhance absorption, foods rich in vitamin C can be included in the diet.

rather he will remain attached to the mother. An underdeveloped brain means he

will have less intellectual qualities, thus he will always be a burden on the society and will eventually become a non-productive member of the society.

MANAGEMENT AND

TREATMENT: In mid to moderate anaemia, Iron supplementation with careful follow up is sufficient treatment. Supplementation should be followed by haemoglobin evaluation every month for six months. Iron supplements are given orally, only if compliance is poor, by intramuscular or intravenous injection. The former is the preferred method as it is not painful and only has minor side effects of nausea and constipation.

Supplementation can be supported by vitamin C. Conversely calcium interferes

lion children in Pakistan, under the age of five years, are anaemic. This is because in Pakistan people have absolutely no regard for personal hygiene and potable water is available to only about 50 per cent of the total population.

According to a study conducted at the Fauji Foundation Hospital, Rawalpindi from June 1999 to June 2001, the occurrence of Iron deficiency anaemia was 93 out of 205 subjects examined. The subjects were mainly young adults, middle-aged men and non-pregnant females. During history taking it was noted that the average household income for the subjects was Rs700/- per month (which is way below the Rs1800 per month defined by Who as being poor). Further investigation revealed that each family had at an average six dependents. Meat was available once every three months and that too only 0.5oz for the

For women planning a pregnancy, they should try to eat healthy and take as many vitamin and mineral supplements as possible or as recommended by their doctor. Women should realize that when they are pregnant they are actually eating for two rather than themselves alone.

Iron deficiency anaemia poses a great threat to our coming generations. Treatment of IDA is very cheap. It is a problem that can be solved. In Pakistan we have a very good network of lady health workers. The 70,000 lady health workers working in different parts of the country can be supplied with Iron supplements and given information in the form of pamphlets. Lady health workers should be told to encourage the women in the villages to take care of their health as their health means the health and well-being of our future generations. ■