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**EDITORIAL**

# Anemia - a curse for the pregnant women of developing countries

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Anemia is an under recognized and under treated chronic state, adversely impacting more than 2 billion individuals worldwide, predominantly women [1]. Over one fifth of the world population (more than 1.7 billion individual), half a billion women aged 15-49 years are affected by anemia [2]. In 65th World Health Assembly (WHA) of 2012, it was pledged to halve the prevalence of anemia in women of reproductive age (15-49 years) by 2025 [3]. Globally 37% of pregnant women (32 millions) and 30% of reproductive age group (15-49 years old) women i.e 539 million are affected by anemia. In 2010, anemia was responsible for more than 60,000 fatalities and 3.4% of Global Disability adjusted Life Years (DALYs) among women aged 15-49 years. Out of these 5.7% cases of DALY's occurred in South Asia. Anemia prevalence is an important indicator of public health. A 2011 study showed that anemia is more common in developing countries (43%) than in developed countries (9%).

**Impact of anemia**

Anemia throughout adolescence can lead to developmental problems, cognition impairments, low immunity, irregular menstrual cycles and poor pregnancy outcomes. Anemia is associated with essential hypertension, coronary artery disease, congestive heart failure, hypothyroidism and rheumatoid arthiritis. Most consequences can be avoided by treating the anemia promptly. Anemia inhibits mental and psychomotor developments, lower work performance and increases maternal and infant mortality. Iron deficiency anemia during pregnancy might affect birth outcomes and early cognitive developments. Significant amounts of public money are lost for anemia due to reduced productivity.

**Causes of anemia**

Dietary factors: e.g. (1) inadequate intake,

(2) Malabsorption of micronutrients (e.g. IDA: 25-50%)

Non-Nutritional factors:

1. Zoonotic diseases (e.g. Malaria, Helminthic infections, Schisotosomiasis)
2. Chronic inflammatory disorders.
3. Genetic disorders
4. Combination of above factors.

**Clinical features**

Anemia of pregnancy may be asymptomatic. Common symptoms are: fatigue, irritability, shortness of breath, headache, hair loss, lack of concentration, pica, restless legs syndrome, decreased physical activity etc.

Complications: Preterm birth, eclampsia, increased caesarean section, maternal shock, increase maternal ICU admission, hysterectomy, maternal infection before and after birth, need of blood transfusion, poor wound healing, heart failure and maternal death.

**Anemia control in India**

At different times different initiatives are taken by the Govt. of India to control Anemia as follows -

1972-1997: National Nutritional Anemia Prophylaxis Progress (NNAPP), National Anemia Control Program (NACP) and NACP became a part of Reproductive Child Health Programme (RCH).

2013 onwards: National Iron Plus Initiative – 2013.

2017: Unified multi-pronged strategy in a mission mode rather than multiple programmes.

Towards 2025: Anemia Mukt Bharat Strategy (2018) with multi sectoral collaborations. 6×6×6 strategy is the operation guidelines for this programme. This includes six

age groups, 6 interventions and 6 institutional mechanisms for all stakeholders to implement the strategy.

'6' Interventions are:

1. Prophylactic iron and folic acid supplementation.

For pregnant ladies - 1 tab daily for 180 days in antenatal period and 180 days postpartum.

2. Deworming - Albendazole tab 400 mg once after 1st trimester is completed.
3. Intensified year round behavioural change communication campaign: Iron rich food (locally available) - Good food habit; Delayed cord clamping.
4. Testing and treatments of anemia - digital haemoglobinometer at antenatal clinic and point of care.
5. Mandatory provisions of fortified foods (with Iron and Folic Acid) in Govt. funded Public Health Programmes e.g. ICDS, Mid-Day Meal Programme, wheat, rice are fortified with iron and folic acid and vitamin B 12. Salt is double fortified (with Iodine and Iron), oil with vitamin A and vitamin D as per standard of FSSAI.
6. Intensifying awareness, screening and treatments of non-nutritional causes.

'6' Age groups are infants, children, adolescents, women of reproductive age (15-45 years), pregnant women and lactating women.

'6' Institutional mechanisms are interministerial coordination, convergence with other ministries/ departments, supply chain and logistics, capacity building, monitoring and data use, community mobilisation and engagements.

**Treatment**

Conventional treatment of anemia includes supplementation of iron (for iron deficiency anemia) and other nutrients and protein as required depending on the cause of anemia. In an effort to resolve the problems of anemia, numerous research activities have shown some hope of success in near future. A few of them are mentioned here -

Lactoferrin, is a cationic iron binding glycoprotein naturally found in human milk as well as bovine milk. It plays a key role in iron homeostasis and immunity. It can be a break through treatment for anemia due to inflammatory disorders (immune mediated) e.g. Chrohn's disease, Ulcerative colitis, Systemic Lupus Erythematosus (SLE) [4].

Personalised medicine is the key to the treatment of anemia in difficult and special situation. Precision medicine also includes risk stratification. For example, a hematopoietic stem cell transplant is preferred over gene therapy in younger patient. Conversely, a gene therapy is the only curative option in older patients with Beta thalassemia major [5].

Heme iron polypeptide may be a better iron supplement than nonheme supplements due to better tolerability, decreased side effects, better absorption and better regulation in the body. It lacks any dietary and drug interactions. So, it can be taken irrespective of meal times and be co-administered with other medications as well [6].

**Conclusions**

Anemia leads to significant maternal morbidities and mortalities amongst the women of developing countries. It can be prevented by creating health awareness among the population in general and by treating the cases of anemia by proper diagnosis at the earliest opportunity. Good antenatal care with facilities of detection of anemia at point of care is a crucial need. Implementation of '6×6×6' strategy according to Anemia Mukt Bharat Programme is another step forward in this regard. Innovative and evidence based treatment is the ultimate answer for the complicated and resistant cases. Further research and wide scale validation for the newer approaches is a must for future success.

**Conflict of interest:** None. **Disclaimer:** Nil.

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