



EDITORIAL

Conquering anemia: where have we failed?

Anemia has emerged as a number one public health problem especially in developing countries. Even though mankind has marched into 21st century, conquering the disease has still remained incomplete. World Health Organization (WHO) has estimated that prevalence of anemia in pregnant women in developed countries is 14% and in developing countries is 51%. In South Asian Countries, prevalence of anemia is highest in the world, i.e. 65 to 75%. It affects 1.62 billion people globally out of which about 293 million are children of preschool age, 56 million are pregnant women and 468 million are non-pregnant women. World Health Organization estimates that amongst the South Asian countries, India has the highest prevalence of anemia. Anemia is the second leading cause of maternal deaths. India contributes to about 80% of the maternal deaths due to anemia in South Asia.

Five major surveys by National Family Health Survey (NFHS) 2 and 3, District Level Household Survey 2 (DLHS 2), Indian Council of Medical Research (ICMR) Micronutrient Survey, Micronutrient Survey conducted by National Nutrition Monitoring Bureau (NNMB) reported that 70% of preschool children, pregnant women and adolescent girls were anemic. Hence, anemia begins in childhood, worsens during adolescence in girls and gets aggravated during pregnancy.

According to WHO, anemia in pregnant women is defined as hemoglobin (Hb) concentration less than 11 g/dl and hematocrit under 33%. The Center for Disease Control and Prevention (CDC) defined anemia as Hb concentration less than 11 g/dl during the first and third trimesters and less than 10.5 g/dl in the second trimester (to allow for the physiological fall due to hemodilution in second trimester) as anemia in pregnancy. The Federation of Obstetric and Gynaecological Societies of India (FOGSI) has a cutoff of Hb concentration of 10 g/dl for anemia in India. Classification of anemia is based on severity of the disease. Indian Council of Medical Research defines mild, moderate, severe and very severe anemia as 10 to 11 g%, 7 to 10 g%, 4 to 7 g% and less than 4 g% respectively. World Health Organization defines mild, moderate, severe anemia as 9 to 11 g%, 7 to 9 g% and less than 7 g% respectively. Most common is nutritional and iron deficiency anemia, contributes about 75 to 95% followed by folic acid, vitamin B 12 and zinc deficiencies. UNICEF has reported deaths of an estimated 50,000 young women per year globally during pregnancy and childbirth due to severe iron deficiency anemia.

Factors responsible for high prevalence of anemia in India are low dietary intake of iron (less than 20 mg/day) and folic acid (less than 70 µg/day); poor bioavailability of iron (3-4% only) in phytate and fibre-rich Indian diet; chronic blood loss due to infections, such as malaria and hookworm infestations; poor iron stores at birth, low iron content of breast milk and low dietary iron intake through infancy and childhood, aggravated by increased requirements during adolescence and during pregnancy; high parity with poor birth spacing, vitamin B12 deficiency, low body mass index (BMI), infection, teenage pregnancy and low socioeconomic status, education, poor compliance.

Anemia doubles the risk of infection when Hb is below 8 g%. Data from both the developed and the developing countries have documented the association between asymptomatic bacteriuria and anemia, often refractory to treatment, poor intrauterine growth, prematurity and low birth weight (LBW) due to infection on the outcome of pregnancy. Women with severe anemia, immunosuppression renders them more susceptible to infection, and increases morbidity when the concentration of Hb is less than 5 g% and packed cell volume (PCV) is below 14, cardiac failure occurs in every third case, blood loss of even 200 ml can cause postpartum hemorrhage (PPH), shock and death and causes 8 to 10 fold increase in measles, mumps and rubella (MMR). In India, anemia is directly or indirectly responsible for 40% of maternal deaths. Prematurity, LBW, intrauterine growth restriction (IUGR), intrauterine fetal death (IUFD), fetal distress, low Apgar score and increased perinatal mortality occurs significantly in women with mild maternal anemia, 2 to 3 folds with moderate maternal anemia and 8 to 10 folds with Hb less than 5 g%. Iron deficiency anemia due to lower iron stores can cause poor mental performance or behavioral abnormalities in later life.

The first choice in the prophylaxis of iron deficiency anemia for almost all women is oral iron replacement because of its effectiveness, safety, and low cost. Oral iron, either as iron sulfate or fumarate, is the most commonly used preventive treatment for iron deficiency and iron deficiency anemia in pregnant women. Iron supplements have always been given in combination with folic acid to meet increased folic acid requirements in pregnant women which is brought by the rapidly dividing cells in the fetus and elevated urinary losses. A randomized controlled trial among pregnant women in Switzerland showed that the parenteral route of iron prophylaxis of anemia has no clinically significant benefit over oral route as there was no significant difference in maternal outcomes and serious adverse events between the two groups. In 2013, Kriplani A et al reported that intravenous (IV) iron sucrose injections were given to 100 pregnant women with Hb concentration less than 9 g% and the response in terms of improvement in serum iron, ferritin and Hb levels was satisfactory. There were minor side effects and one case of thrombophlebitis was reported. Intramuscular iron sorbitol citric acid is safe as no deaths or severe adverse drug reactions have been reported with this drug which has been in use for over five decades. Guidelines for prevention of anemia, Ministry of Health, India, recommends Hb estimation at 14 to 16 weeks, 20 to 24 weeks, 26 to 30 weeks and 30 to 34 weeks of pregnancy, deworming at 14

to 16 weeks of gestation; prophylactic dose of iron (100 mg of elemental iron with 0.5 mg of folic acid) till delivery. In mild anemia double oral iron therapy; in moderate anemia double oral iron therapy till 24 weeks of pregnancy, parenteral iron therapy till 24 to 34 weeks, 34 weeks onwards blood transfusion and management at higher centre are recommended.

Programs for prevention and management of anemia

India was the first developing country to take up a National Program to prevent anemia among pregnant women and children in 1972. The National Anaemia Prophylaxis Programme had two major components, one where preschool children receive 20 mg elemental iron with 100 µg of folic acid and second where pregnant women receive 60 mg elemental iron with 500 µg of folic acid.

Why have we failed?

The coverage under the component for children was very poor, antenatal care coverage under rural primary health services was very low, no provision was made for screening pregnant women for anemia, attempted to identify all pregnant women and gave them 100 tablets containing 60 mg of iron with 500 µg of folic acid. All the national surveys also reported that coverage under all these programmes was very low and no change was observed either in the prevalence of anemia or reduction in maternal and perinatal mortality and morbidity. Two decades after the initiation the National Anaemia Prophylaxis Programme, an ICMR study (1989) confirmed that most women received 90 tablets without Hb screening, many did not take tablets regularly. Coverage under the National Anaemia Pregnancy Programme was low and that intake of 60 mg of ferrous sulfate tablets daily was perhaps inadequate to treat anemia. There was a failure to monitor and evaluate the supplementation of program. The program was revised and renamed as National Anaemia Control Programme (NACP). The Program envisaged that all pregnant women to be screened for anemia. Non anemic women would get iron (100 mg) and folate (500 µg) and those with anemia should get two tablets daily. In 1987, Safe Motherhood Initiative, was launched by World International agencies and leaders from 45 countries. The goal was to reduce maternal morbidity (MM) to half by 2000. However, MM due to PPH remained leading factor and anemia remained major challenge.

There was little attention at global and country levels. Maternal anemia control programs were primarily maternal nutrition programs which was not well funded, hence failed. Problems in implementation of anemia prevention and control programs: The DLHS (1998-99) and NNMB surveys showed that pregnant women were not being screened for anemia and were not given appropriate therapy. District Level Household Survey 2 (2006) showed that there was some improvement in the coverage and content of antenatal care a significant increase in consumption of iron folic acid (IFA) tablets. About 40% women had Hb estimation. Tenth five year plan (2002-07) strategy for combating anemia in pregnant women had multipronged strategies. Reproductive and Child Health Programme under the umbrella of the National Rural Health Mission (NRHM) included IFA supplementation of 100 mg of elemental iron with 0.5 mg of folic acid for at least 100 days to pregnant and lactating women; the weekly iron-folic acid supplementation scheme (WIFS) to adolescent girls; identification and tracking of severely anemic pregnant women at all the subcentres and PHCs for their timely management; deworming; malaria control program and introduction of Safe Motherhood booklet and mother and child protection (MCP) card which are tools to enhance awareness and easy access to antenatal, intranatal and postnatal quality care services. A pilot programme of weekly IFA supplementation for adolescent girls (10-19 years) was piloted in 52 districts of 13 states. Reduction of prevalence of anemia by 24% within 1 year of implementation was observed. In 2013, the government of India introduced national implementation of weekly IFA supplementation to approximately 120 million adolescent girls.

There is need to use multiple interventions, comprehensive approaches for reducing preventable anemia. Effective implementation of national and international programs can tremendously help to reduce maternal and perinatal mortality and morbidity and may help in conquering anemia.

Professor Chittaranjan Narahari Purandare, FIGO President (2015-18), in his presidential address "The unfinished agenda of women's reproductive health" has scientifically elaborated the strategies to alleviate the sufferings of women, adolescents, and newborns. He also believes that empowering women, not only socially, but in education and personal health, and bringing in behavioral change will be key factors in achieving the SDGs. Rena Ohara et al in their study concluded that hyperemesis gravidarum affects the positive GDM screening rate in the first trimester which will help in initiating early treatment for good maternal and fetal outcomes. There are many other interesting articles in this issue which I am sure that all of you will enjoy reading them.

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