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## An Innovative Method For Boosting Nutrition

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**(The editorial is based on the article “An innovative method for boosting nutrition” which appeared in Livemint on 22nd October 2018. It analyses the problem of hidden hunger in India.)**

Almost every country in the world now faces a stern nutrition-related challenge, whether arising from under-nutrition or obesity. India is also striving hard to fight the problem of hidden hunger.

### Hidden Hunger

Hidden hunger is a lack of vitamins and minerals. Hidden hunger occurs when the quality of food people eat does not meet the nutrient requirements, so the food is deficient in micronutrients such as the vitamins and minerals that need for their growth and development.

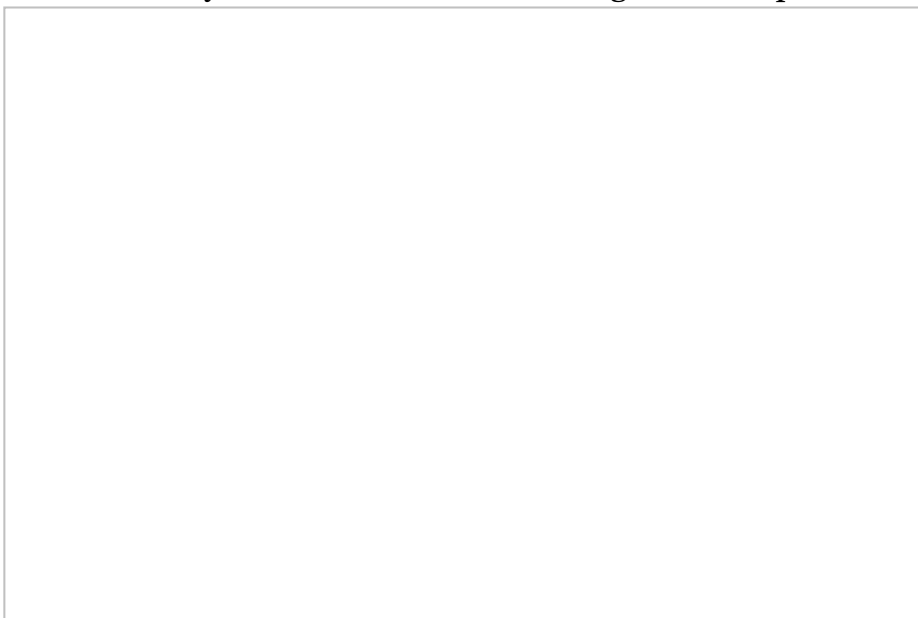
### Importance of Nutrition

- Essential nutrients are compounds that the body can't make or can't make in sufficient quantity. According to the World Health Organization, these nutrients must come from food, and they're vital for disease prevention, growth, and good health.
- Despite this there is a decline in the percentage of the number of women and children suffering from anaemia in the past few years, the high absolute numbers are worrying. Incidentally, anaemia accounts for 20% of the maternal deaths that take place in the country.

### Status of Nutrition in India

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- Iron deficiency and anaemia are well-recognized and persistent problems in India.



- Poor dietary habits during adolescence, (which is a period of rapid growth) leads to undernutrition.
- A 2016 survey of around 8,000 adolescents, conducted by the Population Council in two Indian states of Bihar and Uttar Pradesh, found that 55% of younger girls (10-14 years), 65% of older girls (15-19 years), 34% of younger boys, and 29% of older boys were anemic.
- Iron deficiency is thought to be the most common cause of anaemia globally, accounting for between 25-50% of anaemia cases.
- Global Nutrition Report 2017 (by World Health Organisation) also shows that India is facing a serious burden of undernutrition, that more than half the women of reproductive age in the country suffer from anaemia. Latest figures show that 38% of children under five are affected by stunting – (children too short for their age due to lack of nutrients), suffering irreversible damage to brain capacity. About 21% of children under 5 are defined as ‘wasted’ or ‘severely wasted’. And 16% of adult men and 22% of adult women are overweight.

## Change in nutrition practices

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While the calorific value of the food distribution to reduce poverty and manage hunger is being taken care of by various measures, a shift can be seen in the focus on nutrition intake. It has shifted from quantity to quality. Biofortification can be one of the measures to address the problem of ‘hidden hunger’.

## What is Biofortification?

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- Biofortification is the process by which the nutritional quality of food crops is improved through agronomic practices, conventional plant breeding, or modern biotechnology.

- Biofortification can be done using non-genetically-modified methods as well. Biofortification using traditional method involves crossing varieties over successive generations to eventually yield a plant with high nutrient content along with other favorable traits.
- Examples of biofortification projects include:
  - Iron-biofortification of rice, beans, sweet potato, cassava, and legumes.
  - Zinc-biofortification of wheat, rice, beans, sweet potato, and maize.
  - Provitamin A carotenoid-biofortification of sweet potato, maize and cassava.
  - Amino acid and protein-biofortification of sorghum and cassava.

## **Importance of Biofortification**

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- Biofortified crops are rich in iron and have the potential to improve iron status and cognition. That helps in improving the overall health of human.
- Biofortified crops are also often more resilient to pests, diseases, higher temperatures, drought and provide a high yield.
- Biofortification fills an important gap as it provides a food-based, sustainable and low-dose alternative to iron supplementation. It does not require behavior change, can reach the poorest sections of the society, and supports local farmers.
- After the initial investment to develop the biofortified seed, it can be replicated and distributed without any reduction in the micronutrient concentration. This makes it highly cost-effective and sustainable.
- Considering the various implementation barriers faced by genetically modified crops in India, biofortification which can be done through non-genetically-modified methods as well can be a better alternative.

## **Challenges for Biofortification in India**

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- Lack of consumer acceptance due to color changes (e.g. golden rice) and last mile reach of fortified food remains a big challenge.
- Adoption of farmers and cost involved in the process of fortification also poses a challenge for biofortification in India.
- Though biofortification can be done using non-genetically-modified methods it is a slower process than genetic modification.
- The existence of an effective seed and rural extension system for multiplication and dissemination of new varieties will also pose a challenge.

## **Way Forward**

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- Because of the prevalence of diverse food practices in the country, biofortification will need to achieve high rates of adoption and consumption in geographically distinct areas.

- Strategies for delivery of biofortified crops must be tailored to the local context for each crop–nutrient pair.
- Biofortification needs to identify more cost-effective delivery strategies in order to offer an alternative to supplementation and commercial fortification.
- Increasing Maternal Health Literacy, ending societal discrimination faced by women and adolescent girls, making healthcare and proper sanitation accessible will also help in eradicating malnutrition.
- The government should facilitate public-private partnerships. Private sector engagement can leverage technological solutions for scaling up food fortification initiatives, and complement the government’s outreach efforts through mass awareness and education campaigns in communities.
- The lack of nutrition is not only a denial of a fundamental human right, but it is also poor economics. Biofortification is a partial solution, which must go hand in hand with efforts to reduce poverty, food insecurity, disease, poor sanitation, social and gender inequality.

### **Government Measures**

- Integrated Child Development Services (ICDS) by Women and Child Development Ministry which provides a package of six services namely supplementary nutrition, pre-school non-formal education, nutrition & health education, immunization, health check-up and referral services.
- National Health Mission (NHM), Mid-Day Meal Scheme, Rajiv Gandhi Schemes for Empowerment of Adolescent Girls (RGSEAG) namely SABLA, Indira Gandhi Matritva Sahyog Yojana (IGMSY) for direct targeted interventions.

- Under National Health Mission of Ministry of Health & Family Welfare, the remedial steps taken are:
  - Promotion of appropriate infant and young child feeding practices that include early initiation of breastfeeding, exclusive breastfeeding till 6 months of age and appropriate complementary feeding after 6 months of age.
  - Management of malnutrition and common neonatal and childhood illnesses at community and facility level by training service providers in IMCI (Integrated Management of Neonatal and Childhood Illnesses) training.
  - Treatment of children with severe acute malnutrition at special units called the Nutrition Rehabilitation Centres (NRCs), set up at public health facilities. Presently 875 such centres are functional all over the country.
  - Specific program to prevent and combat micronutrient deficiencies of Vitamin A and Iron & Folic Acid (IFA) in under-five children, children of 5 to 10 years of age, and adolescents.
  - Village Health and Nutrition Days and Mother and Child Protection Card are the joint initiatives of the Ministries of Health & Family Welfare and the Ministry of Woman and Child for addressing the nutrition concerns in children, pregnant women, and lactating mothers.
- Kishori Shakti Yojana aimed at breaking the intergenerational life-cycle of nutritional and gender disadvantage and providing a supportive environment for self-development.
- The Ministry of Health and Family Welfare has rolled out the Weekly Iron and Folic Acid Supplementation (WIFS) Program in 2012-13 to meet the challenge of high prevalence and incidence of Iron Deficiency Anemia among adolescent girls and boys.