

# FORTIFYING FOOD, FORTIFYING INDIA

Hidden hunger. A phrase that seems incongruous and a concept that seems impossible. How can hunger be hidden? Would one not feel the gnawing of hunger pangs, the vastness of an empty stomach?

Apparently, no.

Then, how is this hunger? How is this hidden?

When we lack micronutrients such as vitamins and minerals like Iron, Vitamin B 12, Folic Acid in our diet, even if we are eating enough food, it can lead to devastating effects— from mental impairment, poor health, low productivity and a poor quality of life. We may not feel hungry but our bodies feel this hidden hunger and our health suffers regardless.

The World Health Organisation defines 'hidden hunger' as a lack of vitamins and minerals. This occurs when the quality of food eaten does not meet nutrient requirements. As a result, the diet is deficient in micronutrients such as the vitamins and minerals needed for growth and development.

Globally, more than 2 billion individuals, or one in three people, are affected – or rather, afflicted - by hidden hunger (FAO 2013). Also known as micronutrient malnutrition, the effects range from nutrient-deficiency diseases, compromised immune systems, higher mortality rates in pregnant and lactating women and infants, mental and physical retardation in children, and so on and so forth.

Child health and survival are particularly adversely affected, especially within the first

1,000 days of a child's life. This can result in serious physical and cognitive consequences. Even mild to moderate deficiencies can affect a person's well-being and health and curtail socio-economic development.

## THE DEFICIENCY DIVIDE

*So, what causes micronutrient deficiencies?*

Poor diet, increased micronutrient needs during certain life stages (pregnancy and lactation), and health problems such as diseases, infections, or parasites all contribute to such deficiencies.

The most commonly recognized micronutrient deficiencies across all ages are caused by a lack of Iodine, Iron, and Zinc. Though less common, Vitamin A deficiency is very significant from a public health perspective. Low intake of other essential micronutrients, such as Calcium, Vitamin D, and B Vitamins, such as Folate are also common. While pregnant women, children, and adolescents are definitely the populations affected the most by hidden hunger, the health of people throughout the life cycle is adversely impacted by this.

Quite naturally, a common cause is poor diet.

Staple crop-based diets, such as those centring around maize, wheat, rice, and cassava, frequently result in hidden hunger. This is because these staples provide a large share of energy but low amounts of essential vitamins and minerals.

Diets depend on many factors, including prices. Dietary habits and preferences are shaped by culture, geographical, environmental, and seasonal factors and even peer pressure. Those who suffer from hidden hunger may not understand the

## UNDERSTANDING HUNGER

- **Hunger:** distress related to lack of food
- **Malnutrition:** an abnormal physiological condition, typically due to eating the wrong amount and/or kinds of foods; encompasses undernutrition and overnutrition
- **Undernutrition:** deficiencies in energy, protein, and/or micronutrients
- **Micronutrient deficiency** (also known as hidden hunger): a form of undernutrition that occurs when intake or absorption of vitamins and minerals is too low to sustain good health and development in children and normal physical and mental function in adults. Causes include poor diet, disease, or increased micronutrient needs not met during pregnancy and lactation
- **Undernourishment:** chronic calorie deficiency, with consumption of less than 1,800 kilocalories a day, the minimum most people need to live a healthy, productive life >
- **Overnutrition:** excess intake of energy or micronutrients

Sources: FAO (2013); and von Grebmer et al. (2013).



importance of a balanced, nutritious diet. Also, they may not be able to afford or access a wide range of nutritious foods such as animal-source foods (meat, eggs, fish, and dairy), fruits, or vegetables. This is especially true in developing countries such as ours.

Poverty is a major factor that limits access to adequate nutritious foods. When food prices rise, people continue to eat staple foods while decreasing their intake of non-staple foods that are usually richer in micronutrients.

## DIET AND DIVERSITY

*How do individuals and nations address hidden hunger?*

One of the most effective ways to prevent hidden hunger sustainably is to increase dietary diversity. Research has proved that a diverse diet has a significant association with better child nutritional outcomes, even when factoring in socio-economics. Long-term, this ensures a healthy diet with a

## UPPING DIETARY DIVERSITY

*So, what do these terms mean?*

**Supplementation** refers to the intervention where vitamins and other nutrients are used in medicine or tablet form to supplement regular diet. Supplementation requires high monetary investment. Therefore, while programmes for supplementation are often integrated into national health policies, fluctuations in funding from aid agencies cause coverage to vary widely from year to year in many priority countries. This is often the case in India. Moreover, there are evidences to suggest that since supplementation requires an additional step such as taking a tablet before or after meals, there is low compliance resulting in not taking supplements for the required amount of time and hampering nutrient delivery.

**Biofortification** is a new intervention that involves breeding food crops, to increase their micronutrient content. While biofortified foods can provide a steady and safe source of certain micronutrients for people not reached by other interventions, this is not available in developing countries like ours. Also, biofortified staple foods cannot deliver as high a level nor as wide a range of minerals and vitamins as supplements or industrially fortified foods can. So, they are not the best approach to clinical deficiencies.

**Staple food fortification** adds trace amounts of micronutrients to staple or commonly consumed foods or condiments during processing and thus, helps increase intake towards recommended micronutrient levels. Food fortification is a simple, scalable, sustainable, and cost-effective public health strategy. Fortification has been particularly successful for iodized salt: 71 percent of the world's population has access to iodized salt and the number of Iodine-deficient countries has decreased from 54 to 32 since 2003 (Andersson, Karumbunathan, and Zimmermann 2012).

Other common examples of fortification include adding B Vitamins, Iron, and/or Zinc to wheat flour and adding Vitamin A to cooking oil and sugar. Fortification is usually particularly effective for the urban consumer who buys commercially processed and fortified foods. Rural consumers, with less access to commercially produced foods, are less benefitted. As part of national health policies, nations are looking at subsidizing or making fortification mandatory to lessen the chance of people buying cheaper non-fortified alternatives.

## THE ROAD AHEAD

*Mapping the Direction*

In this scenario, the approach of fortification is the most viable in terms of increased access of the population as

well. And this is fortification of staple foods.

This truth has been recognised by the Government of India. This is the reason that Standards for five fortified staples- wheat flour, rice, edible oil, milk and Double Fortified Salt have been released along with a logo (+F) to identify fortified foods. More recently, standards for processed foods such as breakfast cereals, buns, rusk, pasta, noodles, processed foods etc. have also been released. In addition, the Food Fortification Resource Centre (FFRC) has been at FSSAI under the Ministry of Health and Family Welfare, in partnership with Tata Trusts.

## THE INVISIBLE ARMY

*At the fortification frontline*

That the hunger of a large section of its population is a problem India faces, is known. What the general population – even the educated elite – may not be aware of is this unknown threat to health – of the individual, community, and the economy.

The Government, though, is fighting this on all possible fronts. The **Eat Right India** campaign is the spearhead. Food fortification is a part of this broader campaign to nudge citizens to **Eat Right**.

The Food Safety and Standards Authority of India (FSSAI), the apex food regulatory body, is expected to ensure safe and wholesome food for the people of India as per the preamble to the Food Safety and Standards Act, 2006. As part of its mandate, FSSAI has embarked on a large-scale effort to transform the country's food system, one meal at a time.

The objective is to ensure safe, healthy and sustainable food for all Indians through the 'Eat Right India' movement. The tagline '**Sahi Bhojan. Behtar Jeevan**', is the foundation of this movement.

The approach **Eat Right India** has adopted is a mix of regulatory, capacity building, collaborative and empowerment to ensure that our food is good both for the people and the planet. It builds on the collective action of all stakeholders - the Government, food businesses, civil society



balanced and adequate combination of macronutrients (carbohydrates, fats, and protein); essential micronutrients; and other food-based substances such as dietary fibre. A variety of cereals, legumes, fruits, vegetables, and animal-source foods provide adequate nutrition for most people. However, certain populations, such as pregnant women, may need supplements.

From the public health standpoint, effective ways to promulgate dietary diversity involve food-based strategies. Home gardening and educating people on better infant and young child feeding practices, food preparation, and storage/preservation methods to prevent nutrient loss are some approaches that have been adopted by nations around the world.

Other identified ways of increasing dietary diversity are supplementation, bio-fortification and fortifying staple foods.





organizations, experts and professionals, development agencies and citizens at large.

A 'Whole-of-Government Approach' is essential - since the movement brings together food-related mandates of the agriculture, health, environment and other ministries. Since foodborne illnesses and various diet-related diseases cut across all age groups and all sections of the society it also adopts a 'whole-of-society' approach, bringing all stakeholders together on a common platform.

**Eat Right India** is aligned to the National Health Policy 2017 with its focus on preventive and promotive healthcare and flagship programmes like Ayushman Bharat, POSHAN Abhiyaan, Anemia Mukh Bharat and Swachh Bharat Mission.

And as part of its army to achieve the **Eat Right India** goals, the FSSAI has set up bodies like the FFRC as an integral part of its invisible army fighting this threat of hidden hunger.

#### BUILDING FORTIFICATIONS

##### What is the Food Fortification Resource Centre (FFRC)?

FFRC has been created as a resource hub to function as a common platform to bring all key actors in food, nutrition and health to work together towards reducing hidden hunger. These actors include, Government departments, development agencies, academia, food industry, consumer organizations and citizens. This centre provides technical support for advocacy at



the centre and state level, training and capacity building of Food Safety Officers, lab personnel, food industry for quality control and quality assurance of fortified foods and regulatory support to the industry. It provides information through various resources such as technical manuals and awareness material for all stakeholders such as information about premix suppliers, equipment manufacturers, methods for testing fortificants and health benefits of fortified foods. Last but not the least, actively

conducts mass awareness activities for citizens to nudge them to choose fortified foods.

This initiative follows the Joint Declaration by all stakeholders to fight micronutrient malnutrition through fortification of food at the National Summit for Fortification of Food, held on October 16-17, 2016 at Vigyan Bhawan, New Delhi after which 5 national level workshops were held to build consensus within the country.

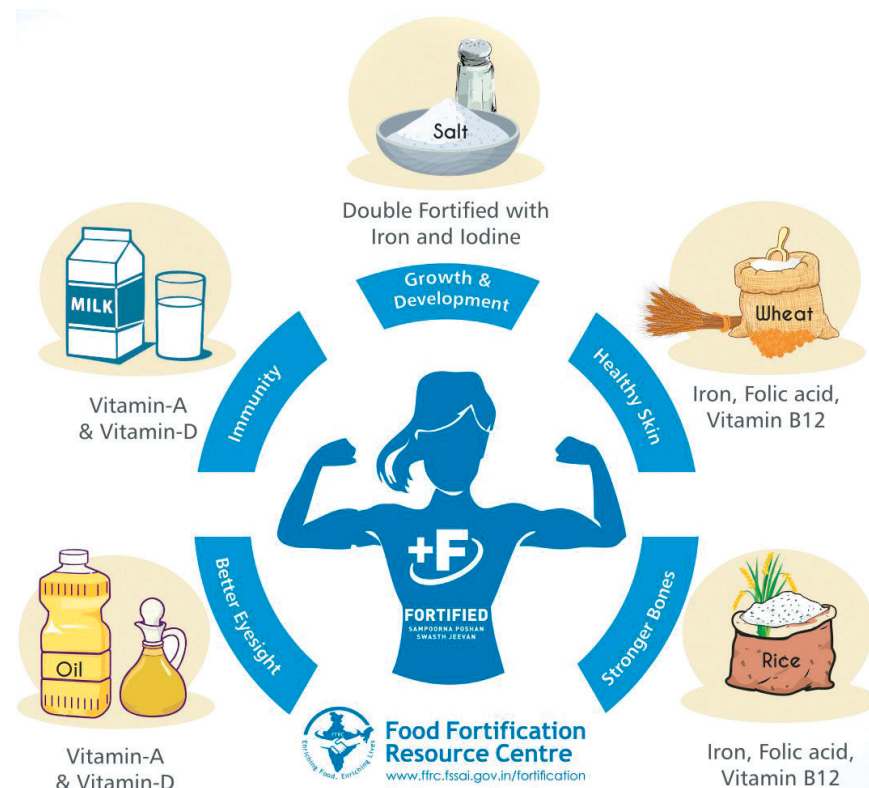
#### UNDERSTANDING FORTIFICATION

##### What is food fortification in simple terms?

Fortification is the addition of key vitamins and minerals such as Iron, Iodine, Zinc, Vitamins A & D to staple foods such as rice, wheat, oil, milk and salt to improve their nutritional content. These nutrients may or may not have been originally present in the food before processing or may have been lost during processing.

Fortification is necessary to address the deficiency of micronutrients or micronutrient malnutrition, which is a serious health risk. Access to safe and nutritious food is a must and sometimes due to lack of a balanced diet, lack of variety in the diet or unavailability of food, one does not get adequate micronutrients. Often, there is considerable loss of nutrients during

**"Food fortification is a promising strategy to reduce hidden hunger that has been proven effective historically. It is time for us to scale up it so that no Indian suffers as a result of this hidden hunger."**



the processing of food as well.

- India has a very high burden of micronutrient deficiencies caused by Vitamin A, Iodine, Iron and Folic Acid leading to Night Blindness, Goitre, Anemia and various birth defects. According to the National Family Health Survey (NFHS-4):
- 58.4% of children (6-59 months) are anemic
- 53.1% women in the reproductive age group are anemic
- 35.7% of children under 5 are underweight

Fortification is a globally proven intervention to address the much prevalent micronutrient deficiencies in the population.

#### THE FORTIFICATION BENEFIT

##### What are the benefits of fortification?

Food fortification has a high benefit-to-cost ratio. The Copenhagen Consensus estimates that every 1 Rupee spent on fortification results in 9 Rupees in benefits to the economy.

While an initial investment to purchase both the equipment and the vitamin and mineral premix is required, the overall costs of fortification are extremely low. Even when all programme costs are passed on to consumers, the price increase is approximately by 1-2%, which is less than the normal price variation.

#### Listing the benefits of fortification of foods makes this clear

- Nutrients are added to staple foods since they are widely consumed - an excellent method to improve the health of a large section of the population, all at once.
- It is a safe method of improving nutrition among people - addition of micronutrients to food does not pose health risks
- It is a cost-effective intervention and does not require any changes in eating patterns

or food habits of people

- It is a socio-culturally acceptable way to deliver nutrients to people and does not require any change in eating habits or behaviour
- It does not alter the characteristics of the food like the taste, aroma or the texture of the food

#### THE GOALPOST

##### What are the objectives of the Food Fortification Resource Centre (FFRC)?

The primary goal of FFRC is to address the deficiency of vitamins and minerals in order to build up a healthy nation. To achieve this, a two-pronged strategy has been adopted by scaling up fortification both in the safety net programmes and making it available in the open market for all. Towards this end, the FFRC is working to align the demand and supply of fortified food in the country at the earliest.

#### THE CONS OF THE QUESTION

##### What are some challenges of food fortification?



**Eat Right India, led by FSSAI, has been declared one of the Top Visionaries for the Food Systems Vision Prize 2050.**

**This Prize has been instituted by the US-based Rockefeller Foundation in association with SecondMuse and Open Ideo.**

Fortification does present a number of challenges. An ingrained wariness - bordering on suspicion - among the population about 'chemicals' being added to food, poses a challenge to easy adoption. Also, perceived changes to food tastes remains a significant barrier.

One of the biggest challenges of food fortification is that people are unaware of their own micronutrient deficiencies and the seriousness of their consequences, as they may not present themselves in typical forms and are equally unaware of the benefits of eating fortified foods. Many people believe that they do not need vitamins and minerals or that eating a lot of food means that they are consuming all the nutrients they need. By the time they develop health issues as a result of these deficiencies, it is too late.

Even among people who are aware of food fortification, resistance may be due to misconceptions about fortified foods. Many believe that eating fortified foods may result in a overdose of vitamins and minerals and harm their health. They do not realise that this is why Standards have been set carefully to limit the amount of fortificants in food so that neither too much nor too little of micronutrients are delivered to people. Resistance to using fortified foods can also be present because of misperceptions of change in appearance, cooking properties, taste or flavour.

Food fortification requires some initial investment to be scaled up, however, this often does not happen without evidence from large-scale programmes. This results in a chicken and egg situation wherein large scale programmes do not take off due to lack of investment. Similarly, unless there is demand from consumers, the food industry cannot step up. On the other hand, consumers do not demand unless there is availability in the market with strong advertising.

Food fortification is on the national agenda and is likely to take centre-stage, given persistently poor health statistics year after year. However, it requires the coordinated action from the Government, food industry and citizens supported by development agencies and civil society organizations and academia.