

About us

Fortify Health is an NGO, based in Mumbai, focusing on wheat flour fortification. We are funded by a GiveWell Incubation Grant. Our donor, GiveWell, is a foundation in the USA that focuses on the most effective, evidence-based public health interventions.

Fortify Health aims to scale up evidence-based fortification programmes to prevent anaemia and birth defects through strategic partnerships with open market producers, academic experts, and government policy makers.

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What is fortification

According to the World Health Organization (WHO), fortification refers to "the practice of deliberately increasing the content of an essential micronutrient, ie. vitamins and minerals in a food irrespective of whether the nutrients were originally in the food before processing or not, so as to improve the nutritional quality of the food supply and to provide a public

health benefit with minimal risk to health".

For example; anaemia is a non-communicable disease caused by vitamin and mineral deficiencies, and adding iron, folic acid and vitamin B12 to wheat flour during the milling process has been shown to reduce the risk of nutritional anaemia.



- ◆ India comprises of one sixth of the world's population. Of the two billion people who lack adequate quantities of vitamins and micronutrients in their bodies globally, one third are in India.

- ◆ Over 70% of the Indian population consumes micronutrients less than 50% RDA in their daily diet which is far from satisfactory threshold. (National Nutrition Monitoring Bureau. Hyderabad: National Institute of Nutrition; 2002)

- ◆ Inadequate intake of iron rich foods results in anaemia (low haemoglobin count), which is linked to feeling weak and/or exhausted, cognitive impairment, exacerbation of mental health issues, impacting daily life, productivity at work and in studies of those affected.

- ◆ Deficiency of folate in women affects their reproductive health and may cause child birth defects during pregnancy.

Public health concerns our project aims to resolve:

- ◆ Anaemia disproportionately affects 53.1% of women ages 15-49 and 59.5% of children (Source: NFHS 4)
- ◆ Nearly 1 lakh children are born with neural tube defects in India. The most common form is spina bifida, where the spine does not close in the fourth of pregnancy and the nerve tissue is exposed leading to physical and mental impairment. Most cases are due to inadequate intake of folate and folic acid.
- ◆ The loss due to micronutrient deficiency costs India 1% of its GDP. This amounts to a loss of Rs. 27,720 crore per annum in terms of productivity, illness, increased health care costs and death (Kotecha, 2008).



Why is fortification an effective intervention?

While there are multiple strategies to address this issue, including dietary diversification, supplementation etc., food fortification is regarded as an effective complementary strategy which can bring positive outcomes at a larger scale. Unlike some of the other interventions, fortification does not require any behavioural change vis-a-vis people's dietary habits as the micronutrients are added to staples that are normally consumed by the people. Several food vehicles are used for fortification, including addition of vitamin D to milk, iodised salt or wheat with iron and essential vitamins.

with iron and essential vitamins. 85 countries have made wheat flour fortification mandatory. Along with developed nations like United Kingdom and United States of America, developing Asian countries: Sri Lanka, Vietnam, Philippines and Nepal have already made wheat flour fortification mandatory for all manufacturers. Studies from across the world have shown that in countries which adopted mandatory fortification, there has been a considerable decrease in the prevalence of micronutrient deficiencies and illnesses like anaemia and neural tube defects.

India's efforts to advance fortification:

India is not new to fortification; salt iodisation dates back to the early 1960s. This intervention has been largely responsible for the reduction in prevalence of goitre in the country and has had a tremendous impact on the developing brains of children.

Realising its importance, the Government of India has included food fortification as one of the key strategies in the National Nutrition Mission. Furthermore, fortification is among the approaches to improved nutrition in NITI Aayog's Strategy for New India. The central food regulatory body, the Food Safety and Standards Authority of India (FSSAI) has set up a

dedicated Food Fortification Resource Centre (FFRC) which has developed a detailed set of guidelines on food fortification. Additionally, the ministries of **Women and Child Development, Ministry of Consumer Affairs, Food and Public Distribution and Human Resource Development** have given directives through gazette notifications fortify food provided through the safety net programmes: Public Distribution System (PDS), Integrated Child Development Services (ICDS) and Mid-Day-Meal (MDM).

Subsequently, several states have started or are in the process of mainstreaming fortification in the various food security programmes. At Fortify Health, we aim to support state governments implementing fortification efforts through these schemes.

States	Districts	Implemented/ In pipeline	Fortified staples				Programmes		
			Wheat flour	Edible oil	Salt (DFS)	Rice	MDM	ICDS	PDS
Andaman & Nicobar	All districts	Implemented	✓						✓
Gujarat	All districts	Implemented		✓					✓
Haryana	Ambala	Implemented			✓			✓	
	All districts	In pipeline	✓	✓	✓	✓	✓	✓	✓
Himachal Pradesh	All districts	Implemented		✓					✓
Karnataka	3	Implemented				✓	✓		
	4	In pipeline				✓	✓		
Kerala	All districts	In pipeline	✓						✓
Madhya Pradesh	89 blocks	In pipeline			✓				✓
Maharashtra	3	Implemented	✓				✓		✓
	1	In pipeline	✓						
Odisha	2	Implemented				✓	✓		
	14 tribal blocks	In pipeline				✓	✓		
	1 (Deogarh)	In pipeline				✓			✓
Tamil Nadu	All	Implemented			✓		✓		✓
	10	In pipeline				✓	✓	✓	
Tripura	All districts	Implemented			✓		✓		✓
Uttar Pradesh	10	In pipeline			✓				✓
	1 (Varanasi)	In pipeline				✓	✓		
West Bengal	All (Except Kolkata)	Implemented	✓						✓

Our plan

1

Step 1: Establish the process

Work with millers/brands, and provide them with premix and machines to remove the cost-barrier to fortify atta sold in the open market.

2

Step 2: Generate evidence

Work with the government to provide fortified wheat flour in severely malnourished populations.

Run an RCT to evaluate the impact of the intervention.

Present the evidence to the government.

3

Step 3: Support the system

Support state governments, develop strategies for the government safety net institutions and programs to adopt fortification in accordance with directives of the central government, help build capacity of government safety net institutions.

Scale up state by state in India.





1. Is food fortification a replacement to dietary diversification?

Food fortification not a replacement for balanced, diversified diets, which are necessary to fully address malnutrition. As we work towards the accessibility of balanced diets, a complementary approach is necessary to urgently approach malnutrition. Fortification, supplementation, deworming, food accessibility, and dietary diversification are each important components of such a strategy. The 68th Round of Household Consumer Expenditure survey conducted by NSSO, Government of India, indicates that the current consumption of fruits and vegetables, as well as meat, fish and eggs, is very low despite having the highest concentration of micronutrients. Food fortification is a highly scalable and easily actionable strategy to begin improving health even while current food consumption does not deliver adequate levels of vitamins and minerals.

2. Is food fortification a scientifically proven intervention strategy?

As per years of scientific evidence, fortification is a proven strategy to address micronutrient deficiencies. Studies conducted globally and in India show improved health conditions after fortification interventions. Multiple studies have been conducted in India, keeping in mind the prevalence and environmental conditions, with significant sample size to assess the fortification as an intervention. Properly implemented fortification programs lead to improved haemoglobin concentration, improved iron stores, better immunity, lowered incidence of diarrhoea and improved cognitive performance in children and other individuals.

3. Will regular intake of fortified staples cause any adverse effects if entire meal is fortified?

The dosages added to the staples are adjusted to provide only 30-50 percent of an individuals' daily nutrient requirement. To take care of any concerns, the standards of fortification have been developed based on detailed analysis of consumption pattern, RDA requirements, dietary diversification, and compliance to supplementation intake. The premix containing added vitamins and minerals make up less than 0.05% of the fortified atta, corresponding to a dosing well below the Tolerable Upper Limits defined by FAO/WHO Guidelines. FSSAI fortification standards have been developed by the Scientific Panel on Fortification and Nutrition which include eminent public health experts from premier academic and medical institutes.

4. How is food fortification cost-effective?

The incremental cost of food fortification is minimal (Rs. 0.02/ litre of milk, Rs. 0.10/ Kg of wheat flour and Rs. 0.10/ Kg of edible oil, according to the Food Fortification Resource Center of FSSAI). By incurring these minimal costs, the disease burden of widely prevalent problems like anaemia can be reduced. It is a well-established fact that micronutrient malnutrition can impose significant costs on economic development in terms of reduced labour productivity, increased healthcare costs and overall growth and development of the nation. As per Copenhagen Consensus (2008), one rupee spent on fortification will yield nine rupees' benefits to the economy.

5. Are there any existing government guidelines/directives on fortification in India?

India's 9th, 11th and 12th Plan documents recommend fortification of staples with micronutrients. In order to achieve targeted outcomes over the next five years (2022), envisioned by the National Nutrition Strategy on "Kuposhan Mukh Bharat", food fortification has been identified as one of the strategies for implementation. Additionally, Ministry of Women and Child Development and Department of School Education and Literacy have issued directives for mandatory use of fortified staples (Wheat Flour, Oil and DFS) in ICDS and MDM, respectively in 2017. The implementation of these directives will ensure that the nutritional benefit of fortification reaches the masses, especially the vulnerable segments of society. FSSAI encourages staple food fortification and appropriate labeling.

6. What is our incentive for fortification?

We do not have any personal incentive for taking up fortification. Our aim is to address the debilitating issue of micronutrient deficiencies and birth defects and contribute to the wider public health cause. We are inspired by the values of altruism and doing maximum good for the maximum number of people.

7. How does fortification address the sentiments of vegetarians?

The fortificants that are used are of plant origin, and hence good for all, without conflicting with religious / cultural beliefs of people. In particular, for Vitamin D, the Food Safety and Standards (Fortification of Foods) Regulations, 2018, clearly mentions the source of nutrient as "only from plant source."

8. Why should millers fortify?

The Food Safety and Standards Authority of India (FSSAI) has already released a directive encouraging the fortification of wheat flour. Therefore by agreeing to fortify their atta, the millers will be able to align their products with the national objectives. They will also be able to sell a product which is healthier. Since Fortify Health will be providing the premix and the equipment, there will not be any additional cost incurred on the production of wheat flour.

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Fortifying flour to fortify health

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