



Food Fortification – A way to alleviate Malnutrition

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Introduction:

Hunger and malnutrition affect 65 million people, including refugees and displaced populations. Ensuring access to a balanced diet can reduce long-term health issues, alleviate poverty, and increase resilience to future crises. A practical and sustainable solution to this global challenge is food fortification. The World Health Organization (WHO) defines fortification as the addition of one or more essential nutrients to a food, whether or not they are naturally present, to prevent or correct nutrient deficiencies in the general or specific population groups.

The goal of food fortification or enrichment is to enhance the nutritional quality of food, prevent specific nutrient deficiencies, and provide health benefits. In India, especially iron deficiency is more relevance among the women and children. Moreover, functional foods are only considered fortified if the added component is sufficient to produce a scientifically proven health benefit, such as reducing disease risk.

Important aspects of food fortification

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Food fortification encompasses several key aspects, including:

- 1. Risk Reduction:** It helps minimize and prevent health risks associated with micronutrient deficiencies in the general public and specific population groups.
- 2. Health Improvement:** By fortifying commonly consumed foods, overall nutrition and health improve, reducing the prevalence of nutrient deficiencies.
- 3. Affordable:** Fortifying food is often a more affordable method for providing essential nutrients and combating micronutrient malnutrition.
- 4. Targeted Goals:** It allows for precise targeting of populations at risk of specific nutrient deficiencies by fortifying foods they regularly consume.
- 5. Facilitate:** Fortified foods are simple to consume and typically require no extra effort or education from the consumer.
- 6. Reach:** Fortification can efficiently reach a

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broader and more diverse population compared to direct supplementation.

7. Indication: Fortified foods are discrete and generally do not visibly indicate that they have been fortified. The food security during the COVID pandemic. This programme is also said to be the game changer in the food security in India.

Types of fortification

- Market basis fortification - In market-driven fortification, food producers voluntarily add or fortify their products with specific micronutrients for commercial purposes. This type of fortification is more common in industrialized countries.
- Mass fortification - Mass fortification is considered the best option when a significant portion of the population faces an unacceptably high risk of nutritional insufficiency affecting public health. Examples include fortifying foods like milk, cereals etc.
- Specific fortification - In targeted fortification, only foods intended for specific subgroups of the population are fortified. Examples include complementary foods for infants and young children, as well as foods provided through school lunch programs.

Fortification Programs

- In 2006, the WHO released guidelines for effective fortification, addressing key elements such as selecting appropriate food vehicles and fortificants, determining the correct fortification levels, and establishing sustainable food fortification programs.
- To advance food fortification, GAIN (Global Alliance for Improved Nutrition) introduced a 10-year strategy in 2006 that incorporated WHO/FAO guidelines on micronutrient fortification. This was followed by the launch of the Universal Salt Iodization program in 2008 and the Scaling Up Nutrition framework in 2009.
- The Fortification Assessment Coverage Toolkit (FACT) enabled comprehensive evaluations, including equity considerations, across 18 large-scale fortification programs in eight different countries, conducted between 2013 and 2015.
- According to the Global Fortification Data Exchange (2021), as of 2020, fortification is mandatory for wheat flour in 85 countries, maize flour in 17 countries, rice in 7 countries, oil in 27 countries, and salt in 124 countries.

Fortification in Society

The COVID-19 pandemic has significantly increased food insecurity and malnutrition due to lockdowns and economic downturns. Consequently, food fortification emerges as a critical tool to combat malnutrition before, during, and after the crisis.

The global goal of eradicating hunger and malnutrition, outlined in the Sustainable Development Goals, aligns with the importance of food fortification. Achieving these objectives requires collaboration between various sectors. Food fortification is a key strategy to foster such partnerships and positively impact society.

Fortification of foods in India

In India, Food safety and standards of India (FSSAI) is the governing body for food regulations. The Table 1 depicts the micronutrients, food carrier and its regulatory.

decrease the risk of micronutrient deficiencies within a population. Food Safety and Standards Authority (FSSAI) in India is actively working to reduce malnutrition by creating, enforcing, and tracking laws that require essential nutrients to be added to salt, oils, flour, and milk. The knowledge gained from these efforts can be invaluable to other nations aiming to improve their populations' nutrition. Ultimately, this can lead to stronger economies and increased global trade in fortified foods.



Table 1. Micronutrients involved in fortification of foods in India

Nutrient	Fortified Food	Mandatory/Voluntary	Regulatory Body
Iron and Folic Acid	Wheat flour	Mandatory	FSSAI
Iron and Folic Acid	Rice	Mandatory (fortified rice kernels)	FSSAI
Vitamin A	Milk and milk products	Voluntary	FSSAI
Iodine	Salt	Mandatory	FSSAI
Vitamin D	Milk and milk products	Voluntary	FSSAI
Calcium	Milk and milk products	Voluntary	FSSAI

Conclusion

Enriching staple foods with essential vitamins and minerals can significantly