



Balalatha's

CSB IAS ACADEMY

The Road Map to Mussoorie...



Mains iMPACT – 14/10/2024

FOOD FORTIFICATION

SYLLABUS:

GS 2 > Social justice > Poverty and Hunger > Nutrition

IN NEWS:

- Recently, the Union Cabinet announced the extension of the universal supply of fortified rice across all central government schemes under the National Food Security Act, 2011, until December 2028.

MORE ON NEWS:

- The Cabinet Committee on Economic Affairs (CCEA) had previously set a phased implementation plan for **nationwide rice fortification**, aimed to be **completed by March 2024**. This initiative, designed as part of India's broader strategy to **combat malnutrition**, has successfully achieved universal coverage in three planned phases:
 - **Phase 1:** Covered Integrated Child Development Services and PM POSHAN by March 2022.
 - **Phase 2:** Extended to the Public Distribution System (PDS) and other welfare schemes across more than 400 districts by March 2023.
 - **Phase 3:** Achieved nationwide coverage by March 2024.
- Approximately **406 lakh metric tonnes (LMT)** of fortified rice have been distributed since the 2019-20 fiscal year through March 2024. The total investment by the Centre for developing this fortified rice supply chain amounts to Rs 11,000 crore.

WHAT IS FOOD FORTIFICATION?

- The Food Safety and Standards Authority of India (FSSAI) defines fortification as **“deliberately increasing the content of essential micronutrients in a food so as to improve the nutritional quality of food and to provide public health benefit with minimal risk to health”**.
- Food fortification can be categorized according to the stage of addition:
 - **Commercial/industrial fortification**
 - **Biofortification:** breeding crops to increase their nutritional value, through conventional selective breeding and genetic engineering.
 - **Home fortification** (Eg: Adding vitamin D drops)
- Fortification is an evidence-informed intervention **that contributes to the prevention, reduction and control of micronutrient deficiencies**.
- It can be **used to correct a demonstrated micronutrient deficiency in the general population** (mass or large-scale fortification) or in **specific population groups** (targeted fortification) **such as children, pregnant women** and the beneficiaries of social protection programmes.

- In India, **food fortification began in the 1950s** with vegetable oil fortification and salt iodization. In the 2000s, the government introduced fortification of other commodities such as rice and wheat.
- **In 2016, FSSAI established standards for fortification of rice, wheat flour, edible oil, double fortified salt (DFS), and milk.**
- The '+F' logo has been notified to identify fortified foods.
- In January, 2021, **the FSSAI had issued draft regulations on mandatory fortification of edible oil and milk with vitamin A and D.**

Examples:

- **Iodised salt:** Salt that contains small amounts of sodium iodide or potassium iodide; used for boosting thyroid function.
- **DRR Dhan 45:** High zinc variety of rice, developed by the Indian Institute of Rice Research (IIR).
- **MACS 4028:** Biofortified, high protein wheat variety developed by Agharkar Research Institute (ARI), Pune.
- **Madhuban Gajar:** Biofortified carrot developed by Vallabhhai Vasrambhai Maryaniya, a farmer scientist from Junagadh district, Gujarat.

Rice fortification:

- Rice fortification is a process of adding micronutrients to regular rice.
- It is a cost effective, culturally appropriate strategy to address micronutrient deficiency in countries like India with high per capita rice consumption.
- Various technologies are available for rice fortification, such as coating, dusting, and extrusion.
- The latter, involving an extruder machine to produce **Fortified Rice Kernels (FRKs)**, is considered the most suitable for India, and is **currently being used to produce fortified rice across the country.**
- This involves the production of fortified rice kernels (FRKs) from a mixture using an extruder machine.
- The **fortified rice kernels are then blended with regular rice** to produce fortified rice.
- **As per guidelines** issued by the Ministry of Consumer Affairs, Food and Public Distribution, **the shape and size of the fortified rice kernel should “resemble the normal milled rice as closely as possible”.**
- **Standards for fortification:** Under the Ministry’s guidelines, **10 g of FRK must be blended with 1 kg of regular rice.**
- **According to FSSAI norms, fortified rice includes:**
 - Iron: 28 mg-42.5 mg
 - Folic acid: 75-125 micrograms
 - Vitamin B-12: 0.75-1.25 micrograms
 - Additional nutrients such as zinc, vitamin A, and other B vitamins are also added per kg of rice.

SIGNIFICANCE OF FORTIFICATION:

- **Reduce ‘hidden hunger’:**
 - In India, **over 80% adolescents suffer from hidden hunger, according to UNICEF’s 2019 report.** Fortification can help reduce this deficiency and promote nutritional security in the country.

Hidden hunger is a form of under nutrition that occurs when **intake or absorption of vitamins and minerals is too low** to sustain good health and development, despite having sufficient food.

- **Address nutritional imbalance:**
 - According to NFHS 4, over **70% of the population consumes less than half the daily recommended dietary allowance of micronutrients a day**. One key reason for this is the monotonous cereal-based diets with low consumption of vegetables and protein.
- **Enhance maternal & child health:**
 - India holds the **highest rate of child wasting** globally at 18.7%, as highlighted in the **2023 Global Hunger Index**.
 - Also, women in India also have the **highest prevalence of anemia globally**. This contributes to high levels of maternal and infant mortality in India. Fortification can address this issue.
- **Cost-Effective intervention:**
 - **Fortification adds only 3-7% to the retail price of food**. Hence, for the end consumers, the affordability of fortified foods is not a significant barrier.
 - Also, the cost of rice fortification is approximately Rs 2,700 crore per annum, representing **less than 2% of India's total annual food subsidy bill**.
- **No behavioural change is needed:**
 - Fortification can make frequently consumed foods or daily staples more nutritious without any change in the dietary habits of the consumers.
- **Natural or near natural ingredients:**
 - Fortification generally aims to supply micronutrients in amounts that approximate to those provided by a good, well-balanced diet. Hence, fortified staple foods will contain natural or near natural levels of micronutrients.

GOVERNMENT INITIATIVES:

- **Food Safety and Standards (Fortification of Foods) Regulations, 2016**
 - ★ In October 2016, FSSAI operationalized the Food Safety and Standards (Fortification of Foods) Regulations, 2016 for fortifying staples namely **Wheat Flour and Rice (with Iron, Vitamin B12 and Folic Acid), Milk and Edible Oil (with Vitamins A and D) and Double Fortified Salt (with Iodine and Iron)** to reduce the high burden of micronutrient malnutrition in India.
 - **The '+F' logo has been notified to identify fortified foods.**
- **NAFED's Fortified Rice Bran Oil:**
 - Rice Bran oil from Nafed will be fortified and it will be ensured that it will contain additional nutrients and vitamins.
 - According to the FSSAI, **fortified oil can help a person fulfil 25-30% of the recommended dietary intake for vitamins A and D.**

CONCERNS:

- **Not a substitute to good nutrition:**
 - Adding a few micronutrients is **only a short-term solution to the larger issue of malnutrition**. Dietary diversity and higher protein consumption are key to solving undernutrition in India.
- **Unreliable studies:**
 - **Many of the studies** which FSSAI relies on to promote fortification are **sponsored by food companies** who would benefit from it, leading to conflicts of interest.
- **Possibility of toxicity:**
 - Nutrients usually do not work in isolation, but need each other for optimal absorption. Adding one or two vitamins and minerals (like synthetic nutrients)

will not solve the larger problem, and in an undernourished population like India's, it may lead to toxicity.

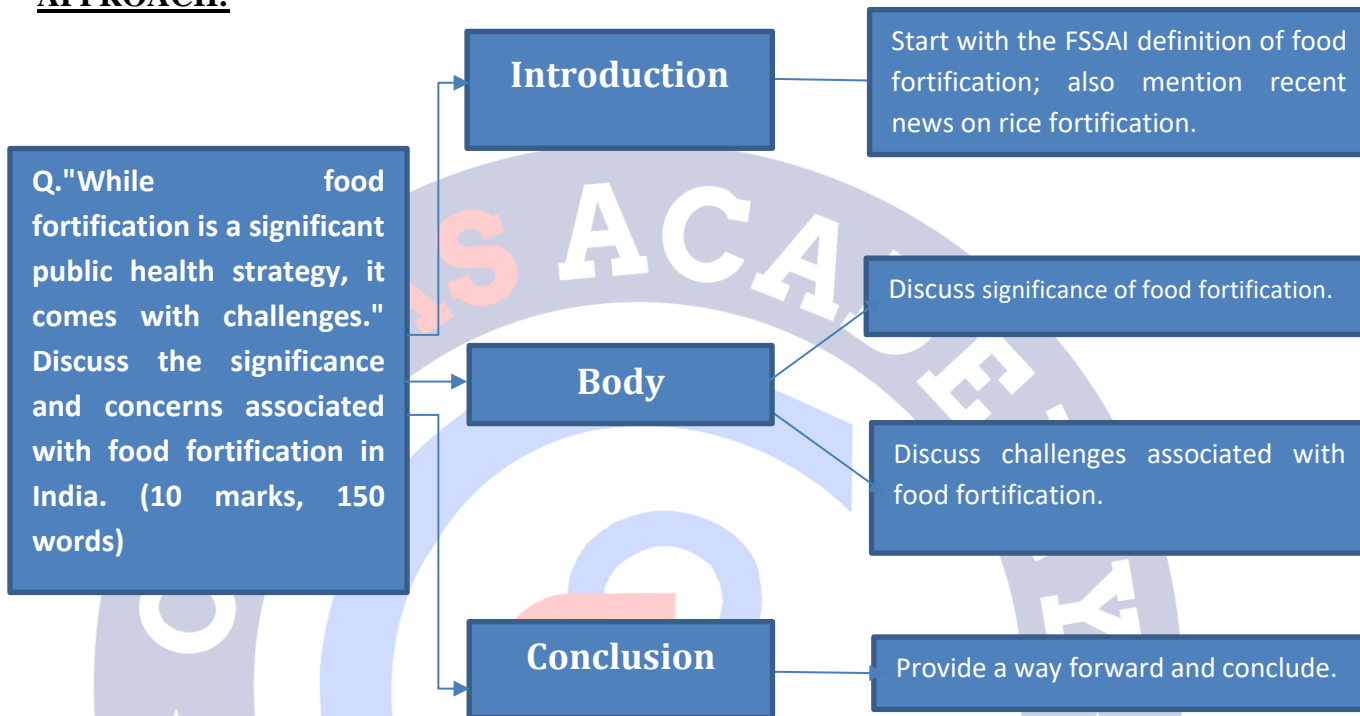
- **Fortified rice leading to side effects:**
 - Recently, a multidisciplinary fact-finding team of NGOs, after visiting a **tribal belt in Jharkhand, where fortified rice is being given in a pilot project**, has found that **Iron-fortified rice distribution has shown adverse health impact among Adivasi populations suffering from sickle-cell anaemia and thalassemia.**
- **Accessibility for poor:**
 - Poorest segments of the general population have restricted access to fortified foods in the open markets due to **low purchasing power and an underdeveloped distribution channel.**
- **Affects food MSMEs:**
 - Mandatory fortification would **harm the vast informal economy** of Indian farmers and food processors including local oil and rice mills. This is because **they will have to spend on machinery necessary for food fortification, such as blending machinery.**
- **Issue in production and distribution:**
 - While the oil and salt industries are relatively consolidated with large players accounting for 40-90% of production, cereal industries are characterized by a vast number of small-scale informal producers. This makes dissemination, coordination, and capacity building very challenging.
- **Fear of cartelization:**
 - Just five corporations have derived most of the benefits of global fortification trends and these companies have historically engaged in cartelising behaviour leading to price hikes. This can happen in India as well.

WAY FORWARD:

- **Improve public perception:** Large scale food fortification (LSFF) is a powerful way to tackle micronutrient malnutrition. But the **common man needs to be brought on-board** for the efforts to be successful. Hence, awareness measures are essential.
- **Independent research:** The FSSAI should take initiatives to generate unbiased independent research supporting fortification before major national policies are rolled out.
- **Support for MSMEs:** Government needs to ensure that MSMEs are supported with subsidized loans and facilities for upgrading to food fortification. FSSAI should ensure that there is no cartelization in fortified food market.
- **Promote dietary diversity, healthy and sustainable food:** Dietary diversity along with healthy and sustainable food system is the healthier and more sustainable way to fight malnutrition. For this, existing measures like the public distribution system and mid-day meal scheme in India should provide diverse food choices **such as nutri-cereals**. Eg. FSSAI has embarked on a large-scale **effort to transform the country's food system** in order to ensure **safe, healthy and sustainable food** for all Indians through the **'Eat Right India' movement**.

PRACTICE QUESTION:

Q. "While food fortification is a significant public health strategy, it comes with challenges." Discuss the significance and concerns associated with food fortification in India. (10 marks, 150 words)

APPROACH:**MODEL ANSWER:**

Food fortification is defined by the Food Safety and Standards Authority of India (FSSAI) as “deliberately increasing the content of essential micronutrients in a food so as to improve the nutritional quality of food and to provide public health benefit with minimal risk to health.” This strategy is recently highlighted by the Union Cabinet’s decision to extend the distribution of fortified rice until December 2028 under the National Food Security Act, 2011, emphasizing its role in India’s nutritional enhancement plans.

Significance of Food Fortification:

1. **Combatting Hidden Hunger:** According to UNICEF's 2019 report, over 80% of Indian adolescents are affected by micronutrient deficiencies. Fortification directly addresses these deficiencies, enhancing the nutrient intake across various population segments.
2. **Economic and Nutritional Benefits:** The fortification process adds a small cost but provides substantial health benefits. Fortified foods are enriched with nutrients like iron, folic acid, and vitamins, essential for public health, especially in a country where over 70% of the population consumes less than half the daily recommended micronutrient intake (NFHS-4).
3. **Scalable Public Health Strategy:** Fortification has been effectively scaled through phases to cover the entire nation, with approximately 406 lakh metric tonnes of fortified rice distributed since the 2019-20 fiscal year at a cost of Rs 11,000 crore, signifying a major governmental investment in nutrition.

4. **Enhanced Maternal and Child Health:** Fortification is critical in reducing the rates of child wasting, which stands at 18.7% in India—the highest globally (Global Hunger Index, 2023). It also addresses high anemia rates among women, which contribute to maternal and infant mortality.
5. **Accessibility and Compliance:** By enhancing frequently consumed staples like rice, fortification ensures that essential nutrients reach the entire population without requiring significant changes in consumer behavior.

Challenges Associated with Food Fortification

1. **Risk of Over-Fortification:** Monitoring and controlling the levels of nutrients in fortified foods is essential to avoid potential health risks, such as toxicity, especially in sensitive populations.
2. **Economic Burdens on Small Producers:** Mandatory fortification standards can impose financial and operational challenges on small-scale producers, impacting their economic viability.
3. **Implementation Hurdles:** Ensuring uniform implementation across India's diverse and segmented food production sectors remains a significant challenge.
4. **Potential Health Risks:** Instances of adverse health impacts, such as those seen in tribal populations in Jharkhand suffering from conditions like sickle-cell anaemia and thalassemia, highlight the complexities of implementing a one-size-fits-all fortification strategy.
5. **Market Dynamics and Consumer Acceptance:** The success of fortification depends heavily on consumer acceptance and market dynamics, which can be influenced by misinformation and the economic interests of large food corporations.

Way Forward

- **Strengthened Oversight and Regulation:** Enhanced monitoring and quality control mechanisms are necessary to ensure the safety and efficacy of fortified foods.
- **Public Awareness and Education:** Robust campaigns to educate the public on the benefits and safety of fortified foods will help improve acceptance and correct usage.
- **Support for Diverse Diets:** While fortification addresses specific nutrient deficiencies, promoting dietary diversity remains crucial for overall nutritional health.
- **Research and Independent Verification:** Ongoing research and independent studies are essential to assess the long-term impacts of fortification and adapt strategies as needed.

Food fortification is a pivotal element of India's strategy to combat malnutrition and improve public health outcomes. While it brings significant benefits in terms of addressing micronutrient deficiencies, it also presents challenges that need careful management. A holistic approach, integrating fortification with broader nutritional policies and public health measures, is essential to achieve the desired health outcomes for India's diverse population.