



Food Fortification Initiative (FFI)

Vision: Smarter, stronger, healthier people worldwide by improving vitamin and mineral nutrition.

Mission: Support fortification of industrially milled cereal grains by collaborating with multi-sector partners.

Progress: Measured against a five-year strategic plan and annual work plans.

Staff: 13 people worldwide.

Global Secretariat: At Emory University with support from the US Centers for Disease Control and Prevention (CDC), Atlanta, Georgia, USA.

Oversight: 10-member [Executive Management Team](#) representing global leaders in public health and grain industries plus observers from the CDC and World Health Organization.

Opportunity at a Glance

Reach: Improve nutrition for 400 million people via fortified wheat flour and/or rice

Cost: US\$ 12,000,000

Time: Five years

Challenges in India

Anemia - Twenty-four Indian states report anemia prevalence between 26 and 65% among married women; the average is 50%.¹ Anemia prevalence over 40% is a severe public health concern² as it causes debilitating fatigue, lowers productivity, limits cognitive development in children, and contributes to maternal deaths.

Anemia can be caused by many things, including deficiencies of iron, vitamin B9, and vitamin B12. The typical vegetarian diet in India provides very little iron and vitamin B12, which are most commonly found in animal-based food sources.

Birth defects – In India, 45 of every 10,000 births (live births and stillbirths) have a birth defect of the brain or spine³. With 25.6 million annual births,⁴ this equates to 115,390 birth defects of the brain or spine every year. This is an alarming rate even for countries with similar economic and demographic profiles. Adequate intake of folic acid (a form of vitamin B9) could lower the prevalence to 6 per 10,000 live births.⁵

Spina bifida is an example of these birth defects. It has varying degrees of severity and can cause lifelong disability. Another example is anencephaly, which is always fatal. Of all infants born with a birth defect of the brain or spine, 75% die before their fifth birthday.⁶

Although vitamin B9 is found in many green leafy vegetables, it is difficult for adults to reach the recommended daily intake of this essential vitamin from unfortified food alone.



Debilitating fatigue and lowered productivity are symptoms of anemia. India photo by Meena Kadri on Flickr.

¹ Demographic Health Surveys [2015-16](#) ²World Health Organization [2015](#)

³Allagh [2015](#) ⁴UNICEF [2012](#) ⁵Marchetta [2015](#) ⁶Blencowe [2018](#)

Proposal to Replicate FFI's Haryana Model

Since 2015, FFI has provided technical support to the Government of Haryana. FFI analyzed the wheat supply chain and found that the big opportunity was for the Public Distribution System (PDS) to provide fortified *atta* flour instead of wheat to beneficiaries.

FFI also calculated government costs to supply fortified wheat flour and established quality parameters and distribution options. In the initial stages, FFI evaluated consumer reaction to the fortified wheat flour, and quality parameters were adjusted. As a result, all wheat flour in the PDS system in Haryana is expected to be fortified in 2019, reaching 14 million people.

FFI has identified the 17 states at right as having potential to effectively fortify rice or wheat flour, similar to the Haryana model, to produce a meaningful impact on nutritional status.

For these states, FFI proposes identifying which have political leadership willing to support grain fortification with at least iron, vitamin B12, and folic acid. In these states, FFI would assess:

- Industry capacity to fortify flour and / or rice using published reports, personal interviews, and mill visits.
- Current wheat flour and rice consumption patterns based on existing survey data.
- Potential distribution channels such as the PDS and open market to determine channels that would provide the greatest reach and impact.

Following each state assessment, FFI would present results to state leaders and, building on the successful Haryana state model, collaboratively develop practical, operational plans to fortify grains in each state. Activities and technical assistance provided will include:

- *Mandatory legislation* - Promote the adoption of mandatory fortification so that costs and health benefits are shared equally.
- *Demand creation* - Create awareness about nutritional deficiencies, their consequences, and benefits of fortification.
- *Political will and industry leadership* - Generate commitment among influential multi-sector leaders to support fortification.
- *Technical capacity* - Train millers to fortify their wheat flour or rice according to national standards.
- *Effectively monitor* - Develop sustainable procedures for internal and external monitoring to ensure compliance with India's fortification standards.
- *Disseminate findings* - Share the strategy with other nutrition groups in India to avoid duplication of efforts.

FFI's goal in India is for mandatory grain fortification to be successfully implemented and effectively monitored in each of the identified 17 states.

Andhra Pradesh
Bihar
Chhattisgarh
Gujarat
Himachal Pradesh
Jammu & Kashmir
Jharkhand
Karnataka
Kerala
Madhya Pradesh
Maharashtra
Odisha / Orissa
Punjab
Rajasthan
Tamil Nadu
Uttar Pradesh
West Bengal

Learn More

The Food Fortification Initiative (FFI) helps countries promote, plan, implement, and monitor sustainable grain fortification programs. To learn more, e-mail info@ffinetwork.org or visit www.FFInetwork.org.

Donations can be made via [GiveWell](http://GiveWell.org), which ranks FFI as one of seven "standout charities" or the [CDC Foundation](http://CDC Foundation.org), a US based 501(c)(3) public charity which serves as FFI's grant administrator.