

Strengthening Nutrition through Food fortification

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**Eat Right
India**

सही भोजन. बेहतर जीवन.



Food defines our Health

- It is important to understand what are we consuming on a regular daily basis.

Global scenario of food consumption and food pricing

The Global scenario of food consumption and food pricing is changing drastically.

The upsurge in the food prices across the Globe is affecting all countries and all populations.

The impact on the food and nutrient security would have an adverse effect in more than one way.

These have an impact on the most vulnerable populations affecting them adversely and silently.



Food and Nutrition Security Analysis , India 2019

Three core dimensions of food security are-**Food Availability, Food Access and Food Utilization & outcome**

Enhanced attention to food basket, emphasis on diversification and fortification-one of the ways to ensure food accessibility.

Mass awareness campaigns for consumption of nutritious food and ensuring market availability

Improving dietary intake and health services by focusing on 1000 days with timely food and health interventions.

Promotion of supplementation, fortification and diversification for immediate and sustainable impact

The cost of malnutrition

- It is estimated that one third of the world's population is undernourished, caused by a physical or financial lack of access to a balanced, healthy and nutritious diet.
- Inadequate nutrition can have a major, long- lasting impact on human physical health and development, but also places a heavy burden on societies across the world.
- This can seriously challenge a country's economic growth.

The realities are not very encouraging!!!!

- **Vitamins and minerals are required everyday** to ensure good health and to enable the body to fight diseases.
- **India has a very high burden** of anaemia, vitamin A and D deficiencies, iodine deficiency disorders etc.

Simple diets based on staple foods, with low consumption of fruits and vegetables, exacerbate micronutrient deficiencies.

***Food fortification of staples will improve both:
‘Food and Nutrition Security’***

Food Fortification

Also known as **food enrichment** – is when nutrients are added to food at higher levels than what the original food provides. This is done **to address** micronutrient deficiencies across populations, countries and regions.

Governments working with industry, international agencies and NGOs have used this method to help reduce and eliminate micronutrient deficiencies in their populations.

Fortification of centrally-processed staple foods is a simple, affordable and viable approach to reach large sections of a country's population with iron, folic acid, and other essential micronutrients.

Staple food fortification



- Adding micronutrients to common staple foods can **significantly improve the nutritional quality of the food supply and improve public health with minimal risk.**
- In India, the foods most commonly fortified are salt, wheat, rice, milk & oil
- Fortifying commonly consumed staples is among the easiest and least expensive ways to prevent disease, strengthen immune systems and nurture a healthy and productive next generation.

Enough
quantity but
not enough
quality



Black tape line on wall =
Normal projected height for a
12-year-old child



Juhora
12 years old

Asma
12 years old

Micronutrient
deficiencies
cause
irreversible
damage like
Stunting

Every second child
is under-nourished
and will not reach
her/his full potential

Food fortification- Govt Initiatives



Approaches for arriving at fortification levels for Iron

National Recommended Dietary Allowances by ICMR-NIN (2010) for reference adult man (Iron- 17mg/d)

Prevalence of nutrient deficiency – Anaemia as per National Family Health Survey 4 (2015-16)

Per capita consumption of foods : Average consumptions based on NNMB (National Nutrition Monitoring Board) 2006

Single vehicle : cereals

Staples Identified & Health Claims



Double Fortified Salt
Iron & Iodine



Edible Oil
Vitamin A and Vitamin D (*Plant Source)



Milk
Vitamin A and Vitamin D (*Plant Source)



Wheat Flour
Iron , Folic Acid,
Vitamin B12
6 other nutrients as
voluntary addition



Rice
Iron , Folic Acid,
Vitamin B12
6 other nutrients as
voluntary addition



Processed Foods
• Breakfast cereals, Bakery –
Buns, Breads, biscuits, rusks,
buns etc. Pasta and Noodles
(Iron, B12 and Folic Acid)
and Juices (Vit C)

• Awaiting Gazette for
standards

Vitamin A



Prevents Night Blindness

Vitamin D



Support Strong Bones

Iron



Fights Anaemia

Iodine



Required for Normal Growth

Folic Acid



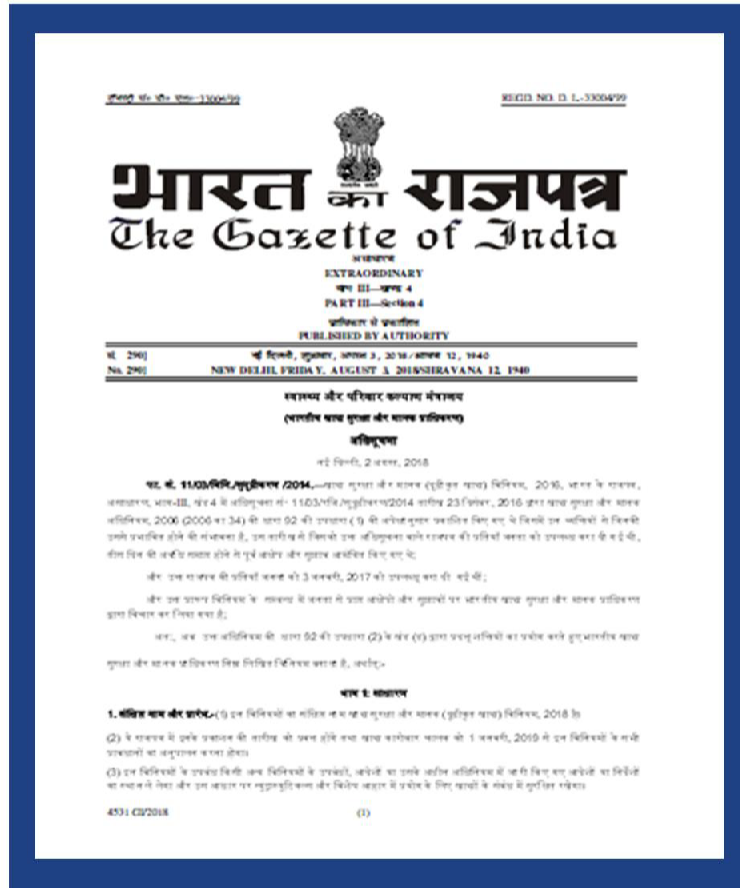
Important for Foetal Development

Vitamin B12



Good for Nervous System

Regulations on Food Fortification



- ▶ Range (minimum – maximum) for micronutrient dosage with + - 10% range
- ▶ Levels have been adjusted to provide 30-50% of RDA
- ▶ Bioavailable sources of nutrients added for Iron fortification
- ▶ Only plant sources to be used for vitamin D
- ▶ Vanaspati fortification removed
- ▶ Transition time till 1st July, 2019 and enforcement has begun

Food Safety and Standards (Fortification of Foods) Regulations, 2018 are now Gazetted dated 2nd August, 2018

ADVANTAGES OF FOOD FORTIFICATION



Consistent Delivery Maximizes Benefit



Safety in Low Daily Doses



Minimal Behavior Change



Enhances Health & Nutrition Strategies



Transfers Costs of Protecting Health to sectors otherwise not involved



Cost Effective

Indian Policy Support



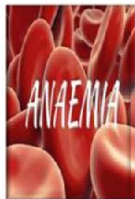
1953 - Fortification of Vanaspati with Vitamin A



1962- Iodization of Salt - National Goitre control programme



1970 - National Prophylaxis Programme Against Nutritional Blindness



1970- National Anaemia Prophylaxis Programme



9th (1997 – 2002) 5 year Plan



11th (2007 – 2012) 5 year Plan



12th (2012- 2017) 5 year Plan



2016 – Operational Standards on Food Fortification (Gazette 2018)



2017- National Nutrition Strategy (2017)



2018- POSHAN Abhiyaan



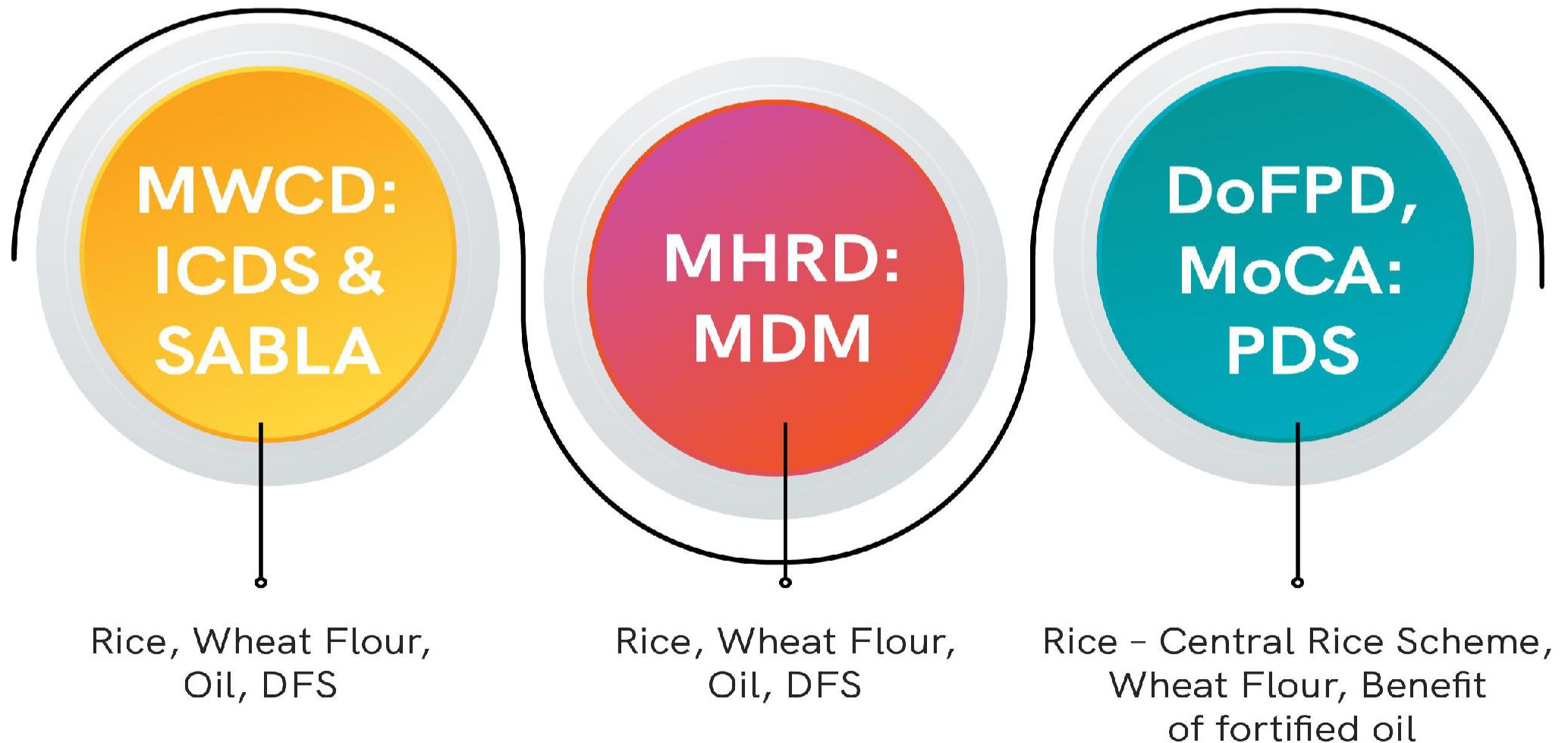
2018- Anaemia Mukta Bharat



2019 – Central Rice Scheme by DoFPD

Food Fortification : Government Overview And Demand

MoHFW has been appointed as the nodal Ministry for fortification by PMO



Aligning The Supply Chain



Demand-side

Creating Consumer
Awareness



Supply-side

Producers, Distributors
and Food Retailers -
Voluntary and
Mandatory measures

Communication & Connectivity

Enjoy the dual benefits of Iron and Iodine
with Double Fortified Salt

8 Brands
of Double Fortified Salt are now available in stores near you.

Don't forget to look for the  logo!

To know more, visit
www.ffrc.fssai.gov.in





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Goodness of Health in
Fortified Edible Oil!

29 companies, 80 brands
of fortified edible oil are now
available in stores near you.

Don't forget to look for the  logo!

To know more, visit
www.ffrc.fssai.gov.in





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Fortified Milk
with Vitamin A & D



AVAILABLE
across India

Look for  Logo



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Make every bite more nutritious with
Fortified Wheat Flour!

12 Brands
of Fortified Wheat Flour are now
available in stores near you.

Don't forget to look for the  logo!

To know more, visit
www.ffrc.fssai.gov.in





 @ffrc_fssai  FFRC Food Fortification Resource Centre  @ffrc_fssai  @ffrc_fssai

 
Set up by FSSAI with Support from IATA, WHO

NOW AVAILABLE

**Shri Lohitha Nutri
Rice Fortified with**

with Iron, Folic Acid, Vitamin - A, B1,
B3, B6, B12 Available in Andhra Pradesh

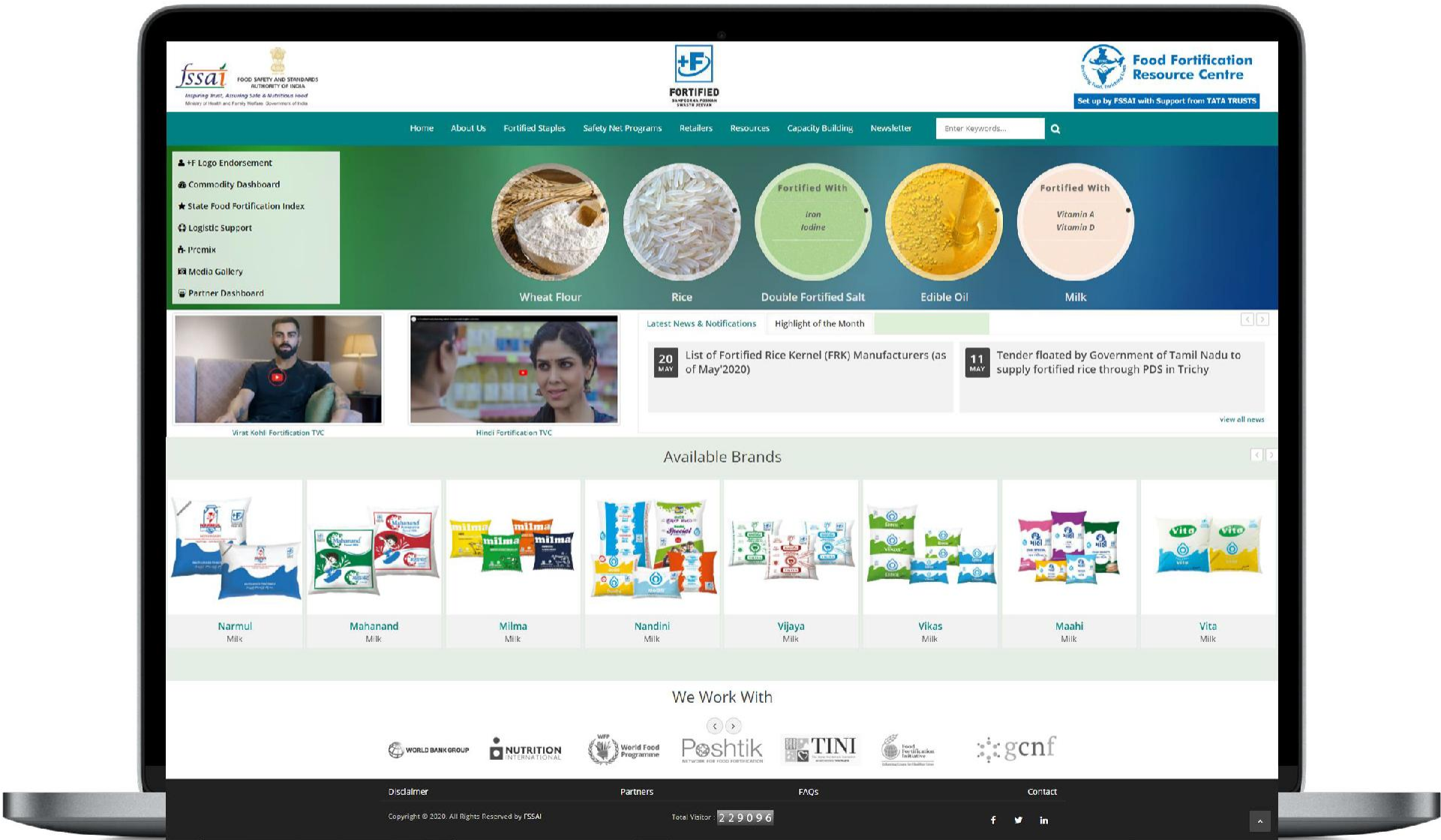
Look for the  Logo





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Food Fortification Resource Centre



Support To The Industry And States

01

172 FSSAI notified NABL Labs (State Referral & Private) – **70 labs equipped** for fortificant testing

02

Strengthening of NABL Labs – testing of micronutrients

03

SOP for Premix and FRK Suppliers

Information on Licensing/ Labelling/ Audits

04

On-ground **technical support to build capacity** of States/ Uts

05

FSOs, FBOs and MSMEs **training to ensure quality**

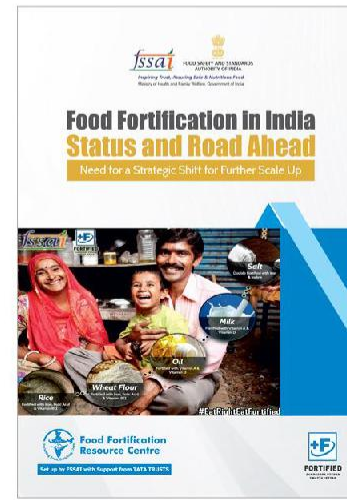
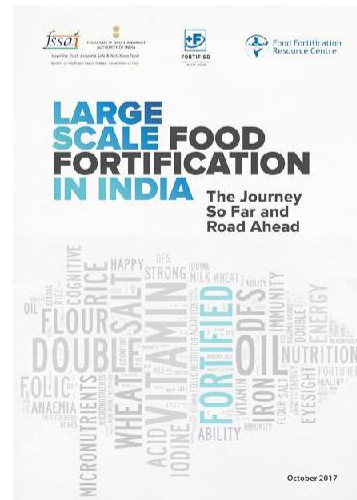
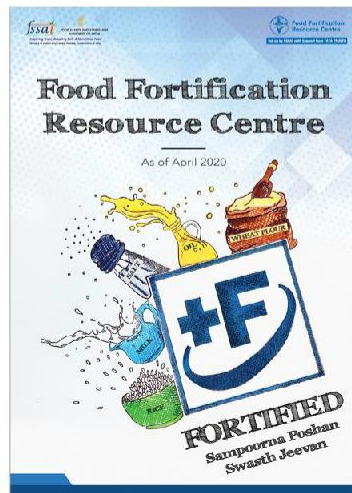
06

Monitoring and **Surveillance by FSOs and self-compliance by FBOs**

Technical Support

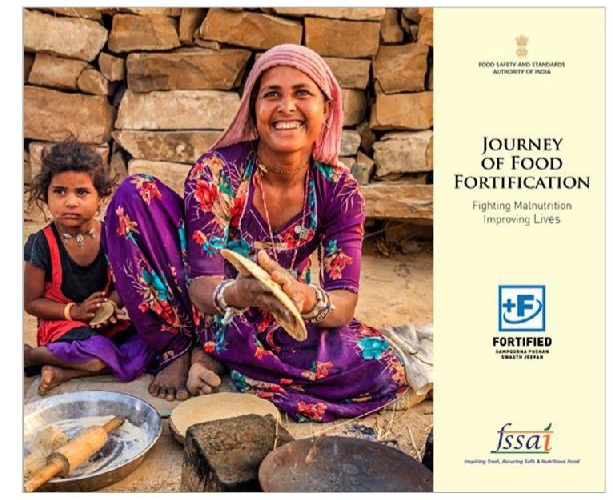
Technical Handbooks

- A Handbook for Fortification of Whole Wheat Flour (Atta) & Refined Wheat Flour (Maida)
- Technical Handbook on Edible Oil Fortification
- Technical Handbook on Fortified Rice
- Technical Handbook on Fortification of Milk
- Technical Handbook on Double Fortified Salt (under progress)



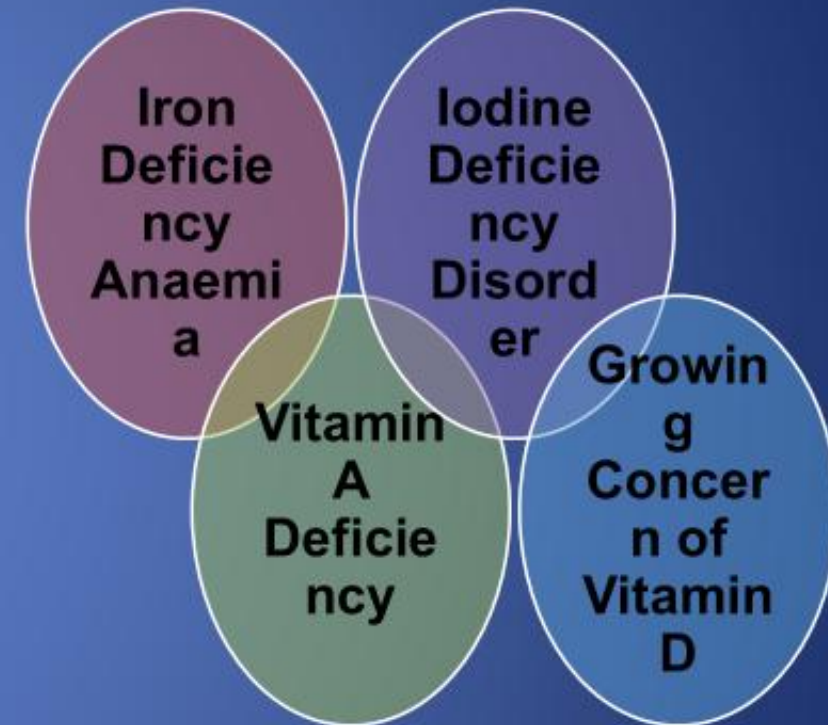
Others

- Journey of Food Fortification
- Fortification in News
- Handbook for Retailers



WHAT IS FOOD FORTIFICATION?

- ✓ Addition of key micronutrients (Vitamins & Minerals) in staple foods.
- ✓ A Cost Effective, Scalable and Sustainable Solution.
- ✓ A preventive measure.



Wheat Flour and its TDS & its Essential Minerals

		9 micronurients 31.01.06	8 micronurients 24.02.09
Particulars	Unit	Per 50 grams	Per 50 grams
Calcium	milligram	225.00	250.00
Iron	milligram	7.50	7.50
Iodine	micro gram	50.00	
Zinc	milligram	5.00	
Vitamin A	micro gram	200.00	150.00
Ribo flavin	milligram	0.50	0.33
Ascorbic Acid/ Vit.C	milligram	20.00	10.00
Folic acid	micro gram	20.00	50.00
Vitamin B 12	micro gram	0.50	
Thayamin	miligram		0.30
Niyacin	miligram		3.50

IN GUJARAT

Under the 'Tribal Sub-Plan' of the State Govt., GSCSC purchases Iodised Salt and distributes through FPS (and Hospital/ Student Hostels) at subsidised rate to ration card holders in 12 tribal districts namely Banaskantha, Sabarkantha, Dangs, Vadodara, Panchmahals, Dahod, Bharuch, Narmada, Surat, Tapi, Valsad and Navsari

The supply (for ITDP & PDS) is at subsidized rate of Rs 1.00 per kg, involving a subsidy of Rs 1.46 per kg which is borne entirely by the State Govt. The supply under PDS has been started from Oct-09.

Distribution of Iodised salt for Nutritional Security – ITDP, PDS & ICDS

- This programme is expected to address the **problem of iodine deficiency**, *which would lead to*
 - reduction in still births and abortions,
 - low birth weight babies and
 - most importantly, prevention of irreversible damage to nervous tissues which leads to deaf and dumb children at birth and mental retardation in pregnant women and in children
 - Improves work and scholastic performance

- **Iron:** 850-1100 mg
- **Iodine:** 15 mg

Double Fortified Salt (/kg)



- **Vitamin A:** 6µgRE-9.9µgRE
- **Vitamin D (*Plant Source):**

Edible Oil (/gm)



- **Vitamin A:** 270 µgRE-450µgRE
- **Vitamin D (*Plant Source):** 5µg-7.5µg

Milk (ltr)



- **Iron:** 14mg-21.25 mg
- **Folic Acid:** 75µg-125 µg
- **Vitamin B12:**

Wheat Flour (/kg)



- **Iron:** 14mg-21.25 mg
- **Folic Acid:** 75 µg-125 µg
- **Vitamin B12:** 0.75 µg-1.25µg

Rice (/kg)



Optional Micronutrients for Rice and Wheat Flour

- Zinc: 10 mg- 15 mg
- Vitamin A : 500 µg RE- 750 µg RE
- Thiamine (Vitamin B1): 1 mg - 1.5 mg
- Riboflavin (Vitamin B2) : 1.25



भारत का राजपत्र
The Gazette of India

REFERENCES

EXTRAORDINARY

पृष्ठ 111—शृङ्खला 4

PART III—Section 4

अभिलेखन से अभिलेखन

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(भारतीय भाषा सुखा और मानव इतिहास)

अविनायक

४६ सितम्बर, २ अक्टोबर, २०१८

[illegible]

नोट: इस पत्रिका के प्रतिष्ठित संस्करण को 3 जनवरी, 2017 को प्रकाशित करा दी गई थी।

और उन अपने विनिर्माण के सम्बन्ध में अपना से प्राप्त करोंको और सुधारों पर अर्जागीय प्राप्त सुधार और अपने उद्देश्य पर प्राप्त कर विचार कर लिया गया है;

अतः, जब उप-उपनिषदों की प्रथा 32-वीं प्रस्ताव (2) के तहत (1) द्वारा प्रस्तुत जटिलों का प्रयोग करने शुरू किया गया था।

আমি এ. এ. আল-হুজুফি

1. **संविदाद वयस होर झालेले** - (१) पुनर्विलिपयें वा संविदाद न व झालेले मुळावे होर झालेले (पुर्विलिपयें वयस) विलिपयें, 2018 ते.

(2) ने दावा में उनके प्रकाश की शक्ति को जल द्वारा बर्फ काटने के बाद कारोबार साल से 1 जनवरी, 2019 से इन स्थितियों के सभी प्रकाशों को अनुमान लगा दिया।

(3) इन विधियों के अन्तर्गत किसी अन्य विधियों के अन्तर्गत, अर्जेंटो या उसके अतिरिक्त अतिरिक्त में जारी किए गए अर्जेंटो या निर्देशों का अन्तर्गत में ऐसा और उन अर्जेंटो या अनुमतिपत्रों और निर्देशों अर्जेंटो के अन्तर्गत में जारी करने के अन्तर्गत में सुविधा प्रदान।

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(13)

FORTIFICATION

Range (minimum – maximum) for micronutrient dosage

Levels have been adjusted to provide 30-50% of RDA

Bioavailable sources of nutrients added for Iron fortification

Only plant sources to be used for vitamin D

Vanaspati fortification removed

FORTIFICATION LOGO



FORTIFIED

**SAMPOORNA POSHAN
SWASTH JEEVAN**



फोर्टिफाइड

**सम्पूर्ण पोषण
स्वस्थ जीवन**

MHRD

2017

- Order issued by Ministry of Human Resource Development (D.O. No. 14-10/2016/ MDM 1-2 (EE.5) directing States for mandatory use of Fortified Wheat Flour, Fortified Edible Oil and Double Fortified Salt under MDM, dated August 2nd, 2017.

2011

- Order issued by Ministry of Human Resource Development (DO. No. 5-5/2011-MDM-1-1 (EE.5)) directing States to only use Double Fortified Salt in the preparation of Mid Day Meals, dated July 1st, 2011.

MWCD

2019

Order issued by Ministry of Women & Child Development (D.O. No. 25/16/2015-Nutrition Desk) directing States for mandatory use of Fortified Rice in addition to Fortified Wheat Flour, Fortified Edible Oil and Double Fortified Salt under ICDS & SABLA, dated February 28th, 2019.

2017

- Order issued by Ministry of Women & Child Development (D.O. No. 25/16/2015-Nutrition Desk) directing States for mandatory use of Fortified Wheat Flour, Fortified Edible Oil and Double Fortified Salt under ICDS, dated July 10th, 2017.

2011

- Order issued by Ministry of Women and Child Development (DO. No. 5-4/ 2011 ND/Tech) directing States for mandatory use of Double Fortified Salt in ICDS , dated June 21st, 2011.

PDS

2018

- Order issued by Ministry of Consumer Affairs, Food and Public Distribution (D.O. No. 14-VP(1)/2008) urging states to promote fortified oil and (No 15-1/2017-BP-II) urging states to provide fortified wheat flour through PDS as per FSSAI standards.

2016

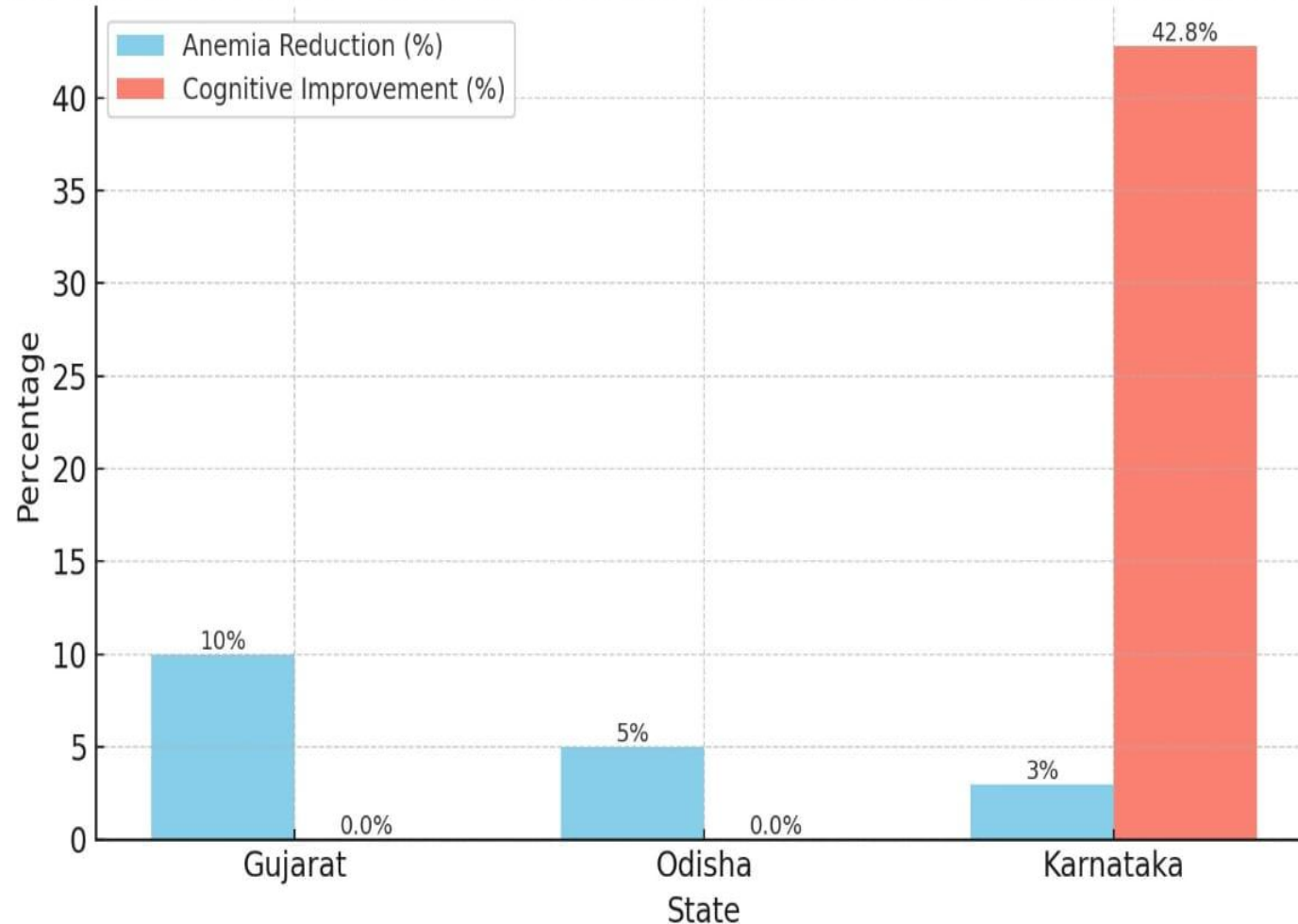
- Circular issued by Ministry of Consumer Affairs, Food & Public Distribution (Circular No. 13-4/2016-bp-II) directing States to only use Fortified Atta for distribution under PDS, dated December 22nd, 2016.

INCREMENTAL COST OF FORTIFICATION PER KG.

Rs. / Kg	Rice	Wheat Flour	Oil	DFS	Milk
MDM & ICDS	30-40p	8 - 10p	10-12p	Rs. 2-3	< 2p

Resultant outcomes-Fortified Rice

Impact of Fortified Foods on Anemia Reduction and Cognitive Improvement

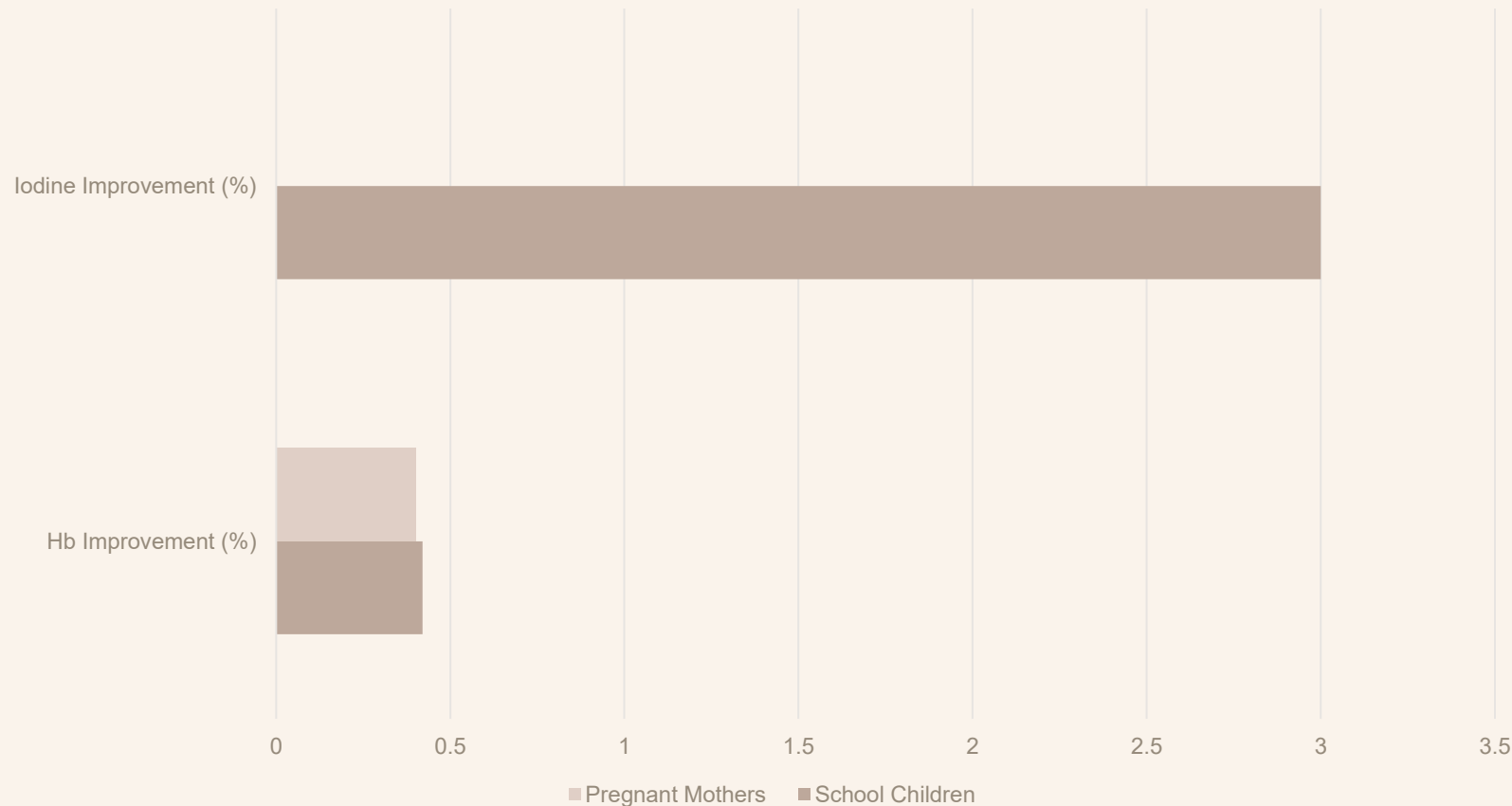


Significant anemia reduction observed through fortified rice programs in various states:

- Gujarat: 10% reduction in anemia
- Odisha: 5% reduction
- Karnataka: 3% reduction in absenteeism, 42.8% cognitive improvement

Outcome-DFS, Fortified Oil & Milk

Health Outcomes from DFS and Fortified Oil & Milk



Double Fortified Salt (DFS) led to Hb improvements: 0.42% in school children, 0.4% in pregnant mothers.

- Reduction in iodine deficiency by 3%.
- Fortified oil and milk contributed to cognitive improvements and better work capacity



10% reduction in anemia observed in key areas like Gujarat and Odisha.



ACHIEVED



42.8% improvement in cognitive abilities observed in Karnataka

42.8%



BENEFIT-TO-COST ACHIEVED



8:1 benefit-to-cost ratio achieved from food fortification interventions



BENEFIT-TO-COST ACHIEVED



Folic Acid
Foetal development
and blood formation



Vitamin B12
Normal functioning of nervous
system and blood formation



Iron
Fights anemia



Fortified Rice & Wheat Flour



Iron
Fights anemia



Iodine
Normal growth, thyroid
and brain function

Double Fortified Salt



Vitamin A
Prevents night blindness



Vitamin D
Supports strong bones



Fortified Milk & Oil



FORTIFICATION

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[Resources](#)

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 +F Logo Endorsement

 Commodity Dashboard

★ State Food Fortification
Index

 Logistic Support

 Premix

 Media Gallery

 Partner Dashboard



Wheat Flour

Double Fortified Salt

Milk

Edible Oil

Rice

Wheat Flour



Rice

Fortified With

Iron
Iodine

Double Fortified Salt



Edible Oil



Milk

Criteria to select foods for fortification

- ✓ Universal Consumption: wheat, rice, oil salt and milk are consumed by all
- ✓ Diets are primarily cereal based and wheat / rice comprise 70-90% of the total cereal consumption
- ✓ High proportion of the population is covered
- ✓ Regular consumption in relatively constant amounts to meet significant daily intake of micronutrients
- ✓ Consumption not affected by socioeconomic status
- ✓ Low potential for excessive intake
- ✓ No change in quality due to fortification, micronutrient interaction
- ✓ High consumer acceptability
- ✓ Centralized processing
- ✓ High stability during storage and
- ✓ High bioavailability

Benefits of Consuming Fortified Foods

Regular consumption of micronutrients-fortified staple foods, helps to meet 25% - 30% of our daily requirement of micronutrients.

There is a high acceptability of fortified foods by the consumers

There is a high bioavailability of micronutrients through fortified foods

Regular consumption of fortified foods has a rapid impact on our health and nutritional status

Consumption of fortified foods does not require behavior change

Way Ahead

- ▶ Proposal for Mandatory fortification of Oil and Milk
- ▶ Encouraging processed foods manufacturers to undertake fortification
- ▶ Training of their staff on food fortification
- ▶ Retail expansion for availability of fortified staples
- ▶ Premix quality checks and sampling



***Let's join hands to provide
good health & improved
quality of life to all !***





Lets Eat Right ... Lets Eat Fortified
Thank you !!

*Thank
You*

Inspiring TRUST-Safe &
Nutritious food

Questions & Queries..Plz

sirinair@gmail.com