Micronutrient Deficiencies in India

Past, Present and Way Forward to meet the SDG Targets

NFI – NAMS GOPALAN CENTENARY SYMPOSIUM: November 27 2018

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Dr. Ishaprasad Bhagwat
Micronutrients

Their deficiency has the more eloquent term: “Hidden Hunger”
The Burden of Hidden Hunger in India

- **About 26%** of India’s population - 268 million – are considered food-insecure, consuming less than 80% of minimum energy requirements.
- **58.5%** children anemic
- **57%** of the preschool children have subclinical Vitamin A deficiency.
- **200,000** babies are born every year with Neural Tube defects (NTDs) due to folic acid deficiency.
- **2.4% of GDP**: Economic Losses as a result of Hidden Hunger
- India ranks 103 out of 119 countries on basis of three indicators -- prevalence of wasting & stunting in children < 5 years, under 5 child mortality rate, and proportion of undernourished in the population.
- **62%** of the population is at risk of Vitamin A Deficiency
- Iodine deficiency is endemic in all parts of the country.
- Incidence of NTDs in the Indian varies between **0.5-8/1000 births**.

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1 The Global Hunger Index, 2018
2 FAO, 2013
3 NFHS-4 (National Family and Health Survey 2015-16) Fact Sheet
5 VP Kotech, Micronutrient Malnutrition in India: Let Us Say “No” to it Now, Indian J Community Med. 2008
Progress has been made in addressing Hidden Hunger

Earlier success with Beri Beri, Pellagra, Scurvy

Universal Salt Iodization: 93.1% households consume iodized salt (NFHS 4). Incidence of Cretinism is negligible.

Incidence of Keratomalacia has drastically come down. 60.2% children 9-59% months consumed Vitamin A in the last 6 months (NFHS 4)

Consumption of IFA by Pregnant Women has increased: 15.2% in NFHS 3 to 30.2% in NFHS 4

However, improvements have been slow. We are in danger of missing SDG2 if present trends continue
Complex, Interacting Drivers of Hidden Hunger

Social, Economic and Agricultural Drivers

AGRICULTURE

Food pricing of energy dense vs micronutrient rich food

DIET DIVERSITY LIMITED

INEQUITABLE GENDER ACCESS
The Diet Paradox

We are world’s largest producers of MILK and VEGETABLES & FRUITS.

Consumption, however, is limited
PROPOSED SOLUTIONS

1. PLANNING
2. CONCEPTS
3. REFINEMENTS
4. DELIVERY
BROAD BASED STRATEGIES

FOCUS ON AGRICULTURE AND DIET

Sustained Increased in Crop Yields and Production

Soil Productivity; Climate Change

Balance between macro- and micro-nutrient needs

Reduction in Supply Chain Losses

Processing needed, especially to reduce micronutrient losses

Increased Diet Diversity

Increase in consumption of dairy products, pulses, meat
## TARGETED INTERVENTIONS

<table>
<thead>
<tr>
<th>Supply Chain Stage</th>
<th>Estimated Cost (pppa)</th>
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<tbody>
<tr>
<td>Bio Fortification</td>
<td>USD 1.6 million (National Total for Rice)</td>
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<tr>
<td>Crop Production Level</td>
<td></td>
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<tr>
<td>Food Fortification</td>
<td>USD 0.05 for Iodization, USD 0.12 for others</td>
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<tr>
<td>Food Processing Level</td>
<td></td>
</tr>
<tr>
<td>Supplementation</td>
<td>USD 1 – 1.2</td>
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<tr>
<td>Household Level</td>
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*Ritchie and Reay, 2017*
Suitability for population wide / demographic specific deficiencies

<table>
<thead>
<tr>
<th></th>
<th>Dietary diversification</th>
<th>Increased meat and dairy (or relevant substitute)</th>
<th>Reduction supply chain losses</th>
<th>Food processing fortification</th>
<th>Biofortification</th>
<th>Dietary supplementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
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<td>Calcium</td>
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<td>Vitamin B₆</td>
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</table>

The suitability of addressing population-wide and demographic-specific micronutrient deficiencies by food-based and targeted interventions. Additional discussion on the relative merits and demands of food-based and targeted interventions can be found in the Supplementary Discussion.
FORTIFICATION

NEAR TO LONG TERM STRATEGIES

BIO FORTIFICATION
Success with Golden Rice, Iron Pearl Millet, Zinc Wheat
Widespread Use is still at least a decade away

FORTIFICATION
Techniques available for DFS, Milk and Oil Fortification, Rice and Wheat Fortification
We have the FFRC working on these issues
Increasing fortification across India; huge possibilities in PDS, MDM, ICDS
Research and Close Monitoring Needed
SUPPLEMENTATION

A NEAR TERM STRATEGY, NECESSARY BECAUSE OF WIDESPREAD DEFICIENCIES

CONTINUED NEED TO TARGET PREGNANT AND LACTATING WOMEN & CHILDREN

MORE EFFICIENT SUPPLY AND DISTRIBUTION CHANNELS NEEDED

IMMEDIATE NEED TO EDUCATE THE PEOPLE
A Project Tiger Moment?!

Project Tiger led to protection resurgence of other fauna, and forests as well

**Anemia Mukt Bharat** can work in similar ways:

- The emphasis on behavior change, including diets
- Fortification as an intervention

Let us seize this moment!
Three excellent opportunities to address Hidden Hunger

**POSHAN ABHIYAN**
A number of initiatives are being implemented, including
*Jan Andolan*; and convergence
Plans to decrease Anemia prevalence by 3% per year

**DAY – NRLM**
A potential platform of Women; they also work on gender issues
5.5 Crores reached thus far; target is 10 Crores

The Focus on **Aspirational Districts**
Collectors responsible; focus on outcomes
2030 is not far away…. 

There is **adequate data** for us to work upon

The **Solutions** are known

The **Technology** is there

The **Will** is also showing

We have **young professionals** willing to work on such challenges

Let us go in with **simple messaging** to change the scenario
The best way to predict the future is to create it.

- Peter Drucker