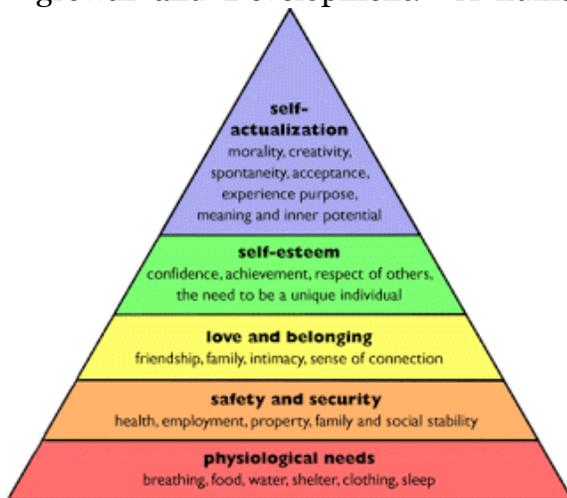


# Chameli Devi Group of Institutions, Indore



## Hidden Hunger Influencing Impaired Human Development

**Hidden Hunger** impairs Human growth and Development. A human



**66 million** children **go to school hungry** across the developing world, preventing them from reaching their fullest potential.



baby needs a protective growth in a family and safe environment of warmth and love, which promotes healthy growth and self-esteem, besides a wholesome and complete meal for his/her body and brain to grow. An expectant mother needs balanced food and should never

suffer from “Hidden Hunger”. This leads to Micro-Nutrient Deficiencies of Iron, Iodine and Vitamin D. Poverty, ignorance and affordability to access food are the most crucial factors in influencing and giving rise to Hidden Hunger.

**“ The ‘hidden hunger’ due to micronutrient deficiency does not produce hunger as we know it. You might not feel it in the belly, but it strikes at the core of your health and vitality.”**

Kul C. Gautam, former deputy executive director of UNICEF

# Going Hungry

*What a starving body experiences:*

In the first few days without food, the body loses water and salt; weight drops quickly

With no intake of energy-producing calories, the body does not generate heat; victim feels cold; starving people become inactive, sit to conserve calories

Fluid accumulation in tissue, called edema, occurs in ankles, legs and stomach, causing excessive swelling

- Early starvation
- Prolonged starvation

Fluid changes cause dizziness, loss in volume of blood, and dehydration

Undernourishment lowers resistance; infections occur in the skin, lung or intestines; diarrhea from infection or the intestine's inability to digest food

Wasting in muscles and fat occurs; bones become prominent

## Going without food

Sixty days without food can result in death from infection or heart failure.

Source: BBC, Reuters

© 2011 MCT

**Food** helps a healthy growth. Hunger creates deficiencies from an unborn stage in a child's life if his/her mother goes hungry to bed each night. This creates mal-nutrition in the human body and gives rise to Micro-Nutrient Deficiencies. This is a resultant effect of lack of balanced diet, leading to Iron, Iodine and Vitamin A deficiencies. These are serious and silent factors curbing healthy growth of children from their un-born stage. That is if expectant mothers are suffering from micro-nutrient deficiencies then their unborn baby is most likely to suffer from retarded growth with slow brain development, impacting the overall all growth of the child.

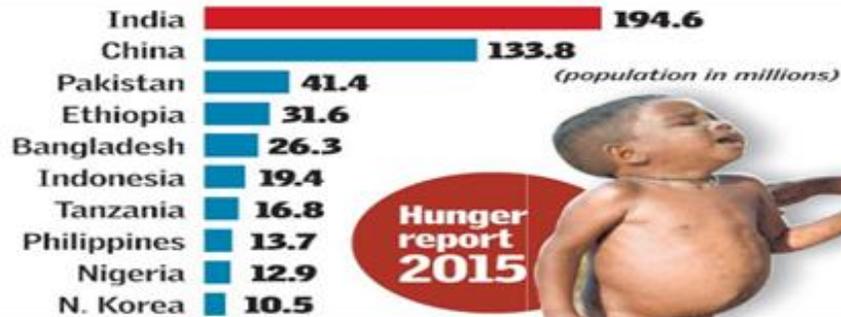
World's first ever anatomist Herophilus once remarked,

**“When health is absent, wisdom cannot reveal itself, art cannot manifest, strength cannot fight, wealth becomes useless, and intelligence cannot be applied.”**

## DUBIOUS DISTINCTION

795 million people in the world remain hungry

### TOP 10 UNDERNOURISHED COUNTRIES



Hunger  
report  
2015

Percentage of hungry people in developing regions **declined to 12.9%** from 23.3% 25 years ago

**72 of 129** nations have achieved target of halving proportion of the chronically undernourished

### What is Hidden Hunger?

- Hidden hunger, or micronutrient deficiency, is a major public health problem in developing countries caused by a lack of essential vitamins and minerals (e.g. vitamin A, zinc, iron, iodine) in the diet. Often, the signs of this form of malnutrition are 'hidden', as individuals may 'look alright' but suffer extremely negative impacts on health and well-being. For example, children may have stunted growth, have poor night vision or suffer frequently from illness. Adults, too, may succumb more frequently to illness and fatigue easily.

Hidden Hunger is one of the silent factors to curb healthy growth of children from its unborn stage, leading to slow brain development with micro-nutrient deficiencies. This retards the growth of human being seriously.



**Stunting**, which is a consequence of malnutrition in the first two years of a **child's** life, is largely irreversible. It also affects a **child's** mental **growth**. Apart from food shortage, other factors like **poor** sanitation and contaminated drinking water also cause malnutrition, leading to **stunted growth** among **children**.

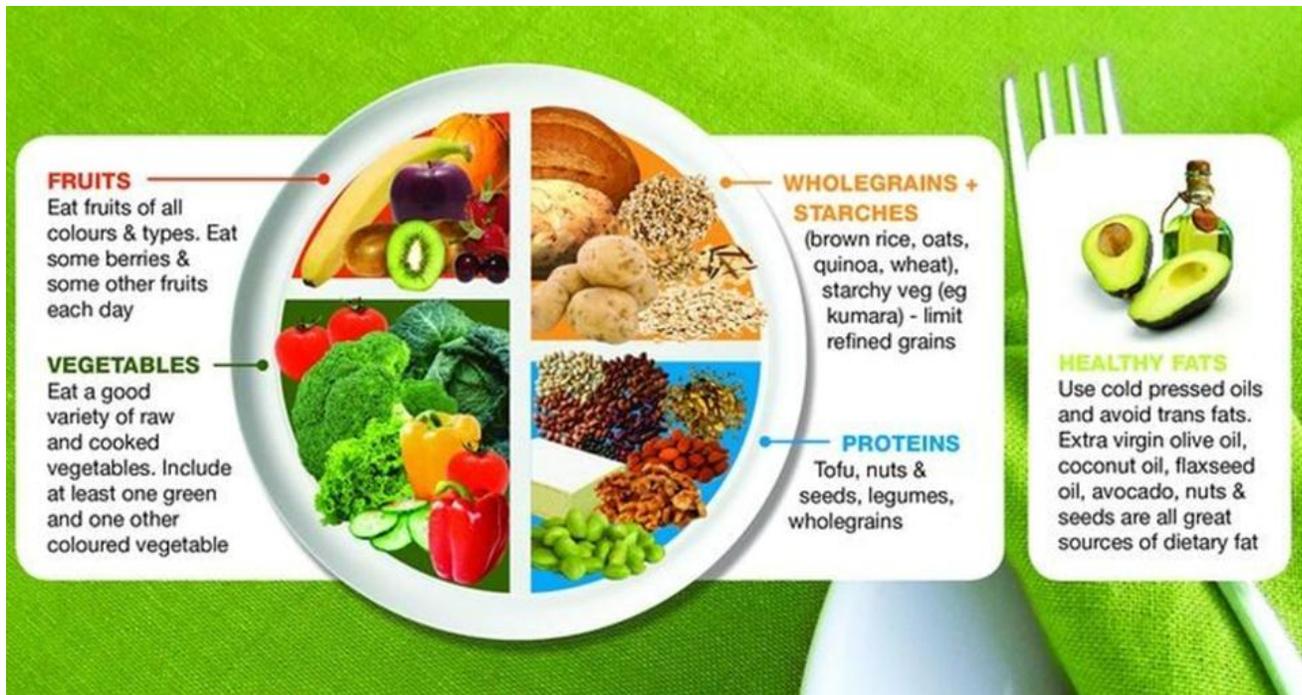
India has the highest number of children suffering from stunted growth in the world, the charity Water Aid says in a new report.

- Hidden hunger can lead to illness, blindness, premature death, reduced productivity, and impaired mental development, particularly among women and children.
- 1 out of 3 people in developing countries suffers from hidden hunger, which increases their vulnerability to infection, birth defects, and impaired development.
- People suffering from hidden hunger have diets that are deficient in micronutrients. They habitually eat large amounts of staple food crops (such as maize, wheat, and rice) that are high in calories but lack sufficient micronutrients, and low amounts of foods that are rich in micronutrients such as fruits, vegetables, and animal and fish products.
- People suffering from hidden hunger are often too poor to be able to afford foods that are more nutritious, or otherwise lack access to these foods.

### The Food Pyramid

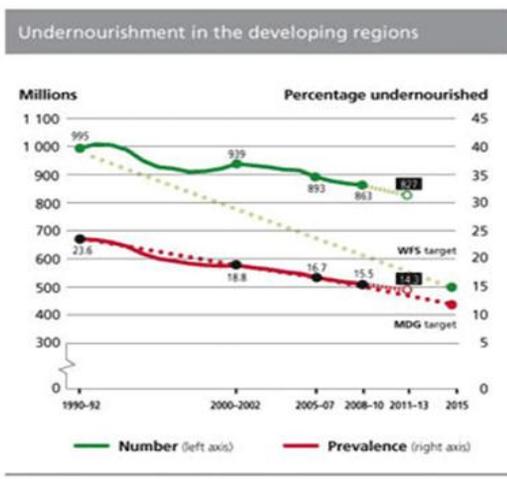


A Plate of food should be judged by three main points: Colour, Texture & Fiber



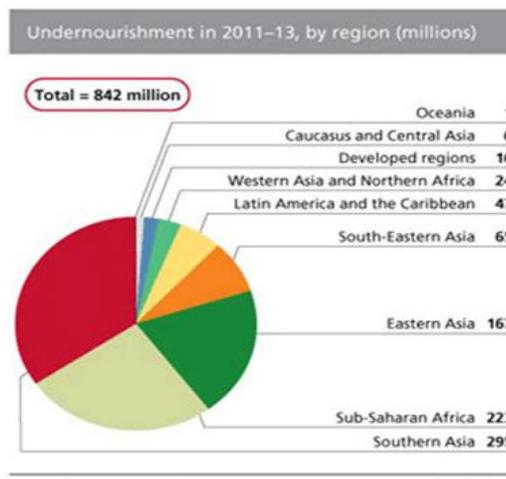
**Definition of Balanced Diet:** A diet, that contains the proper proportions of carbohydrates, fats, proteins, vitamins, minerals, and water necessary to maintain good health.

There are six types of nutrients essential for survival: proteins, carbohydrates, lipids (fats), vitamins, minerals and water. Proteins, carbohydrates and fats are macronutrients, ‘macro-’ meaning we require them in large amounts. These provide the body with energy, measured in kilojoules or kilocalories<sup>2</sup>. Vitamins and minerals are classed as micronutrients because they are only required in small amounts. Water is also an essential macronutrient.



Note: Data for 2011-13 refer to provisional estimates.

Source: FAO.

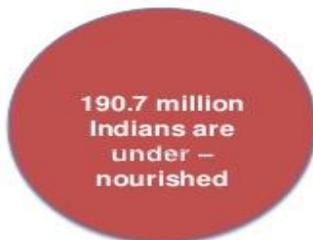


Note: All figures are rounded.

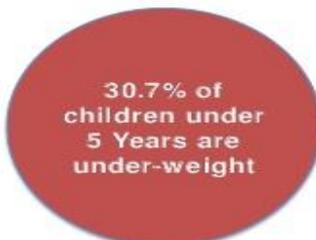
Source: FAO.

# The Hunger Challenge in India

India is home to the **largest undernourished and hungry population in the world.** And it is despite the fact that India has seen tremendous growth in the past decade.



**Hunger is Pervasive!**



**Hunger Affects Growth and Learning!**



**Hunger Affects Health and Productivity!**

Source: FAO, IFAD and WFP: 2014. The State of Food Insecurity in the World 2014. 2014 Global Hunger Index: The Challenge of Hidden Hunger. India's Undernourished Children: A Call for Reform and Action, World Bank Report (2005) Ministry of Women and Child Development, India, and UNICEF, India.



## THE CYCLE OF HUNGER

There are many ways hunger can trap people in a cycle of poverty and need. Here is how it can burden someone for a lifetime, and pass it on to the next generation.



### CHILDREN

Poor nutrition stunts physical and mental development

### FAMILY

Poor health during pregnancy leads to an undernourished child—**starting the cycle again**

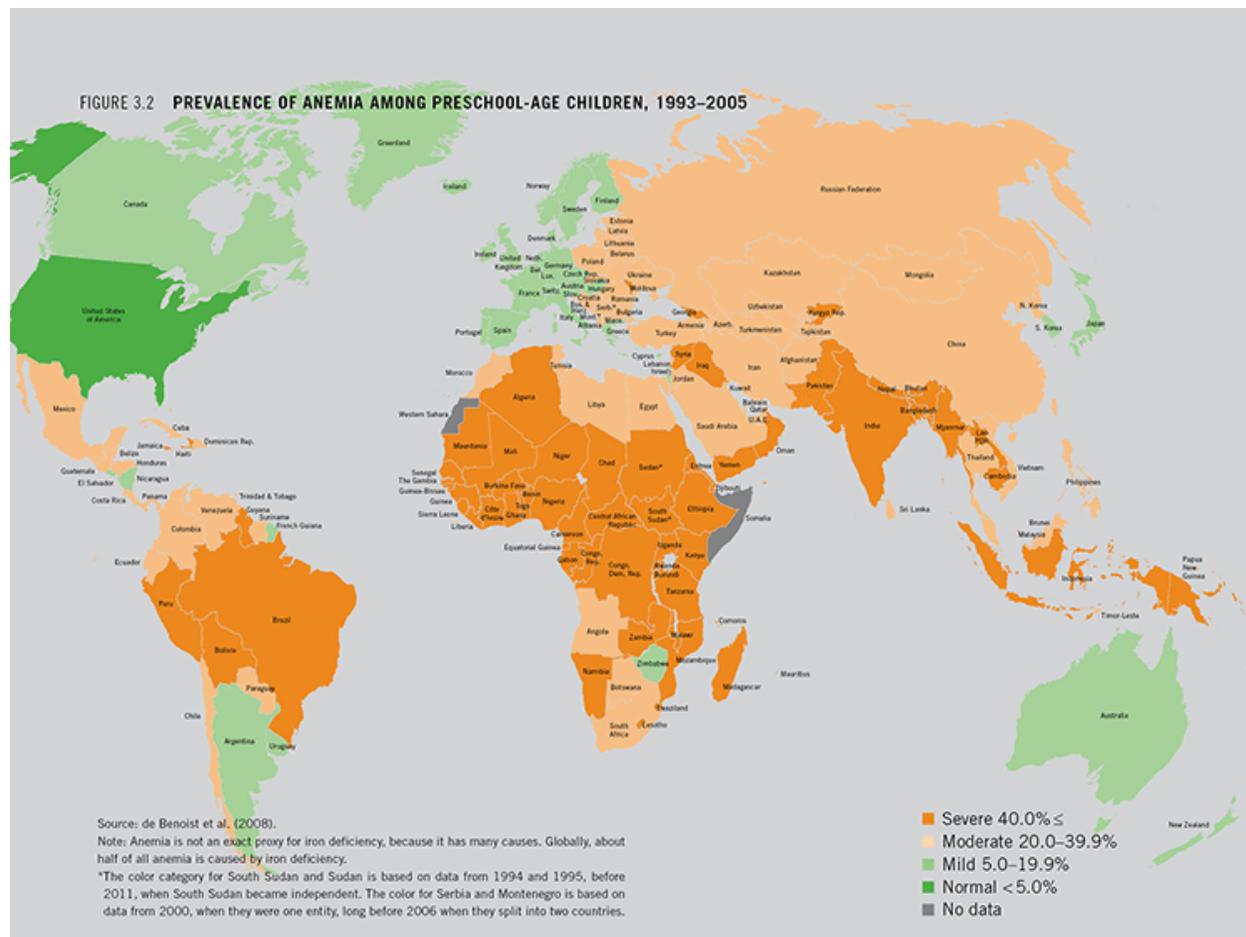


### YOUTH

Chronic health problems keep kids out of school

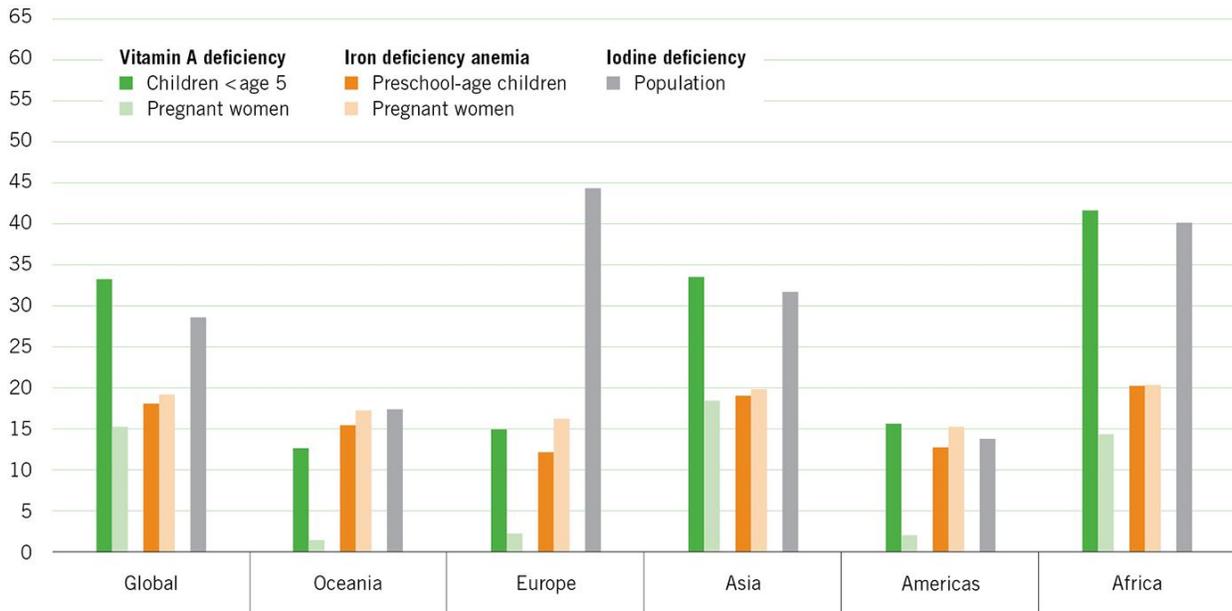
### ADULTS

A lack of education limits the ability to work



Women and children have greater needs for micronutrients (Darnton-Hill et al. 2005). The nutritional status of women around the time of conception and during pregnancy has long-term effects for fetal growth and development. Nearly 18 million babies are born with brain damage due to iodine deficiency each year. Severe anemia contributes to the death of 50,000 women in childbirth each year. In addition, iron deficiency saps the energy of 40 percent of women in the developing world (UNSCN 2005; Micronutrient Initiative 2014). Interventions to fight hidden hunger and improve nutrition outcomes generally focus on women, infants, and young children. By targeting these populations, interventions achieve high rates of return by improving health, nutritional status, and cognition later in life (Hoddinott et al. 2013).

FIGURE 3.1 PERCENTAGE OF POPULATION WITH SELECTED MICRONUTRIENT DEFICIENCIES



Source: Black et al. (2013).

The Impact of Hidden Hunger Globally, an estimated two billion people suffer from a chronic deficiency of essential vitamins and minerals (micronutrients), a condition known as hidden hunger. As the term hidden hunger indicates, the signs are not always visible in those affected by it. Nevertheless, its negative and often lifelong consequences for health, productivity and mental development are devastating.

Young children and women of reproductive age living in low-income countries are the most vulnerable. Worldwide, the most widespread micronutrient deficiencies are of iron, zinc, vitamin A, iodine and folate, but deficiencies of vitamin B12 and other B vitamins also commonly occur. In developing countries, multiple micronutrient deficiencies often occur concurrently in the same population. These deficiencies account for approximately 7 percent of the global disease burden annually. Even mild to moderate deficiencies of micronutrients lead to impaired physical and cognitive development, poor physical growth, increased morbidity from infectious diseases in infants and young children and decreased work productivity in adulthood.

## Top 20 Countries Affected by Multiple Micronutrient

### Country Hidden Hunger Index

Score Deficiency Prevalence (%) Zinc (Stunting as Proxy for Zinc) Iron (Anemia Due to Iron Deficiency) Vitamin A (Low Serum Retinol)

Rank	Country	Hidden Hunger Index Score	Deficiency Prevalence (%)		
			Zinc	Iron	Vitamin A
1.	Niger	52.0	47.0	41.8	67.0
2.	Kenya	51.7	35.8	34.5	84.4
3.	Benin	51.3	44.7	39.1	70.7
4.	Central African Republic	51.0	43.0	42.1	68.2
5.	Mozambique	51.0	47.6	37.4	68.8
6.	Sierra Leona	50.0	37.4	37.9	74.8
7.	Malawi	49.7	53.2	36.6	59.2
<b>8.</b>	<b>India</b>	<b>48.3</b>	<b>47.9</b>	<b>34.7</b>	<b>62.0</b>
9.	Bukina Faso	48.3	44.5	45.8	54.3
10.	Ghana	47.7	28.6	39.0	75.8
11.	Sao Tome and Principe	47.7	29.3	18.4	95.6
12.	Afghanistan	47.7	59.3	19.0	64.5
13.	Demographic Republic of Congo	47.7	45.8	35.7	61.1
14.	Mali	46.6	38.5	40.7	58.6
15.	Liberia	45.3	39.4	43.4	52.9
16.	Côte d'Ivoire	44.0	40.1	34.5	57.3
17.	Gambia	43.7	27.6	39.7	64.0
18.	Chad	43.3	44.8	35.6	50.1
19.	Madagascar	43.0	52.8	34.2	42.1
20.	Zambia	42.0	45.8	26.5	54.1

The Hidden Hunger Index is the average, for preschool children, of three deficiency prevalence estimates: stunting (as a proxy for zinc deficiency, as recommended by the International Zinc Nutrition Consultative Group), iron-deficiency anemia and vitamin A deficiency.

- An estimated two billion people are affected by deficiencies of essential vitamins and minerals, collectively known as “hidden hunger.” Young children and women of reproductive age in developing countries are the hardest hit.
- Micronutrient deficiencies account for approximately 7 percent of the global disease burden. • Even mild to moderate deficiencies of micronutrients have detrimental effects on human functionality and productivity. Iron deficiency leads to impaired physical and cognitive development in infants and young children and decreased work productivity in adults.

- In most of the 20 countries with the highest Hidden Hunger Index scores, 40 percent of preschool children were estimated to be stunted, more than 30 percent were anemic due to iron deficiency and more than half were vitamin A deficient.
- A number of countries in sub-Saharan Africa, as well as India and Afghanistan in Asia, had an alarmingly high level of hidden hunger, with stunting, iron deficiency anemia and vitamin A deficiency all being highly prevalent among preschool children.
- In 36 countries, home to 90 percent of the world's stunted children, micronutrient deficiencies, especially vitamin A and zinc, were responsible for up to 12 percent of the total number of life years lost (DALYs) due to ill-health, disability or early death.
- Countries with high Human Development Index scores tended to have low Hidden Hunger Index scores and vice versa, highlighting the importance of addressing hidden hunger in order to achieve adequate development, improve health care and education and vice versa.
- By highlighting the global hidden hunger hot spots and providing a ranking index of affected countries, the hidden hunger maps can inform strategies for unified efforts to eliminate hidden hunger.

Extra minerals, vitamins and trace elements, even small doses, can mean the difference between life and death for mothers and children. Micronutrients such as iron, vitamin A, iodine and folate enhance the nutritional value of food and play a crucial role in the mother's survival in pregnancy and childbirth, and a child's ability to develop to their potential.

Rates of regular consumption of foods rich in iron and vitamin A are low in India, particularly among infants and young children. The proportion of children aged six to 24 months who regularly consume vitamin A-rich foods is 39 per cent, while the proportion of those who regularly consume iron-rich food is only 11 per cent. The number of children who regularly consume vitamin A and iron-rich foods is particularly low in poorer communities.

UNICEF works with governments and a wide range of public and private organizations to make sure essential micronutrients are delivered to mothers and children in India.

### **Prevention and treatment of micronutrient deficiencies**

Micronutrient deficiencies, including deficiencies of vitamin A, iron, iodine, zinc and folic acid, are common among women and children in low- and middle-income countries. Ensuring that women of reproductive age, pregnant women and children have sufficient essential micronutrients improves the health of expectant mothers, the growth and development of unborn children, and the survival and physical and mental development of children up to five years old.

UNICEF partners governments and organizations to address micronutrient deficiencies by seeing that supplements are delivered to specific vulnerable groups around India,

and that home fortification of complementary foods (foods given in addition to breastmilk) takes place for children aged six to 24 months, along with fortification of staple foods and condiments in the family home.

### **Vitamin A supplementation**

Globally, one in three preschool-aged children and one in six pregnant women are deficient in vitamin A due to inadequate dietary intake (1995–2005 data). Global evidence indicates that in regions where vitamin A deficiency is prevalent, vitamin A supplementation can reduce child mortality by an average 23 per cent.

Vitamin A is necessary to support the response of the body's immune system, and children who are deficient face a higher risk of dying from infectious diseases such as measles and diarrhoea. Delivered periodically, Vitamin A supplementation to children aged six months to five years has been shown to be highly effective in reducing deaths by any cause in countries where vitamin A deficiency is a public health problem.

As in other developing countries, where coverage by the routine health system can be weak, in India vitamin A supplements are delivered to children through independent biannual rounds and during integrated health events, such as Village Health and Nutrition Days . This helps to sustain high coverage of vitamin A supplementation even in hard to reach areas.

### **Iron supplementation**

Iron deficiency predominantly affects children, adolescents and menstruating and pregnant women. Globally, the most significant contributor to the onset of anemia is iron deficiency.

The consequences of iron deficiency include reduced school performance in children and decreased work productivity in adults. Anaemia is most prevalent in Asia and Africa, especially among poor populations. Global estimates from the World Health Organization (WHO) database suggest that about 42 per cent of pregnant women and 47 per cent of preschool-aged children suffer from anemia.

### **UNICEF In Action**

- UNICEF expands community outreach mechanisms such as Village Health and Nutrition Days to increase awareness of and demand for vitamin A and iron supplementation for infants and young children.
- Raises awareness about the importance of universal coverage of vitamin A supplementation for the survival and health and nutrition of infants and young children.
- Raises awareness about the importance of universal coverage of iron supplementation to prevent anemia in young children.
- Scales up and universalizes coverage of vitamin A supplementation and iron supplementation especially among the most vulnerable groups of children: the youngest, the poorest and children belonging to Scheduled Caste and Scheduled Tribe families.

- Ensures that there are no supply gaps in vitamin A and iron supplement program.

## Case Study

### **Vitamin A supplementation: a national good news story**

#### **Record coverage attained, with 62 million under-fives protected from vitamin A deficiency in just one year**

The World Health Organization (WHO) recommends that in vitamin A-deficient areas, children six months to five years should receive a preventive dose of vitamin A supplementation every six months. While India's vitamin A program follows this recommendation, a 2006 National Family Health Survey indicated that only 25 per cent of under-fives were receiving supplementation. Further analysis showed children missed by the program would benefit greatly, as they were more likely to be undernourished and belong to vulnerable families. The study also showed states with higher under-five mortality rates had lower vitamin A supplementation coverage.

Recognizing the problem, the government that same year adopted biannual supplementation to reach out to children under-five with the following regime:

- children below one year receive the first vitamin A supplementation dose with their routine measles immunization at nine months;
- for children aged one to five years, the subsequent nine doses of vitamin A supplementation be administered twice a year, six months apart, through a biannual large-scale outreach vitamin A supplementation strategy.

Currently, 15 of India's major states are taking part in this biannual outreach strategy in partnership with UNICEF and others. UNICEF's role has been to support state governments' capacities to source and distribute vitamin A supplements to districts and blocks on time while mobilizing families and communities to bring their children to take advantage of the scheme.

As a result of the program, the proportion of children receiving two doses of vitamin A annually – referred to as “full vitamin A supplementation coverage” – increased from a quarter in 2006 to two-thirds in 2011, with seven of India's 15 major states reporting full coverage rates of more than 80 per cent. In 2011 alone, a record 62 million children were protected. Importantly, between 2007 and 2011.

Best regards.

**Dr. Joy Banerjee,**

**An Alumnus of IIT (KGP), Arthur D. Little Boston, USA, Ex-World Bank, USA**

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