



Hidden hunger

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The word hidden hunger refers to a more insidious type of deficiency caused by eating food that is cheap and filling but deficient in essential vitamins and micronutrients. Though, the consequences of subclinical deficiency of micronutrients are better understood and monitored, they often go unnoticed within the community. It is for these reasons that micronutrient deficiencies have been referred to as "hidden hunger".

Micronutrient deficiencies can exist even in communities where the food supply is adequate to meet the energy needs of the population. When people cannot afford to diversify their diets with adequate amounts of fruits, vegetables or animal-source foods containing micronutrients, deficiencies are inevitable.

Prevalence of hidden hunger

Micronutrients are the essential vitamins and minerals required by human beings to stimulate cellular growth and metabolism. Deficiencies of iron, iodine and vitamin A are the most widespread forms of micronutrient malnutrition with public health consequences. Other micronutrients have been shown to play a role in preventing specific disease conditions (e.g. folic acid and calcium) or in promoting growth (e.g. zinc).

Diagnosis in the community: The external visible effects of micronutrient deficiencies like anaemia or goitre help to identify the presence of these disorders. But the subclinical indicators are measured to determine and monitor the extent of the problem.

In India, the prevalence of anaemia among six groups as per the National Family Health Survey 5 (2019-21), is as follows.

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Age group	Urban	Rural	Total	Previous NFHS (4)
Men (15-49 years)	20.4	27.4	25.0	22.7
Women (15-49 years)	53.9	58.5	52.2	50.4
Adolescent boys (15-19 yrs)	25.0	33.9	31.1	29.2
Adolescent girls	56.5	60.2	59.1	54.1
Children (6-59 months)	64.2	68.3	67.1	58.6
Pregnant women (15-49 years)	45.7	54.3	52.2	50.4

Strategies for addressing micronutrient malnutrition

- Supplementation
- Fortification
- Dietary diversification.

Of these, the food-based approaches are considered by FAO as a sustainable means of meeting the nutritional needs of population groups. More attention and support to these strategies is needed.

2.1 Supplementation

Supplementation is a technical approach in which nutrients are delivered directly to the desired population by means of syrup or pills. It has the advantage of being capable of supplying an optimal amount of a specific nutrient or nutrients, in a highly absorbable form, and is often the fastest way to control deficiency in individuals or population groups that have been identified as being deficient.

Under normal circumstances, supplementation programs are used only as a short-term measure and are then replaced with long-term, sustainable food-based measures such as fortification and dietary modification, usually by increasing food diversity.

In India, supplementation programmes have been widely used to provide iron and folic acid to pregnant women, and vitamin A to infants, children under 5 years of age and postpartum women. Because a single high-dose vitamin A supplement improves vitamin A stores for about 4–6 months, supplementation two or three times a year is usually adequate. However, in the case of the more water-soluble vitamins and minerals, supplements need to be consumed more frequently. Disadvantages are lack of proper supplies and poor compliance are consistently reported.

2.2 Food fortification

Food fortification refers to the addition of micronutrients to processed foods.

Types

- To restore nutrients lost during food processing, a process known as **enrichment**. In this case, the amount of nutrients added is approximately equal to the natural content in the food before processing.
- To add nutrients that may not be present naturally in food, a process known as **fortification**. In this case, the amount of nutrient added may be higher than that present before processing.

Most fortifying agents are vitamins and minerals, and in some cases essential amino acids and proteins.

Depending on the reasons for adding nutrients, the objectives may be

- to maintain the nutritional quality of foods, keeping nutrient levels adequate to correct or prevent specific nutritional deficiencies in the population at large or in groups at risk of certain deficiencies (i.e., the elderly, vegetarians, pregnant women, etc.)
- to increase the added nutritional value of a product (commercial view); and to provide certain technological functions in food processing.

Requirements

- The fortified food(s) needs to be consumed in adequate amounts by a large proportion of the target individuals in a population.
- Nutrients added, (fortificants), should be well absorbed (bioavailability of the nutrient should be good).
- It should not alter the colour, taste, odour, and appearance of the carrier food.

- The amount of nutrient added should be stable and must not be lost much during storage and while cooking.
- Should be available to the general population at reasonable cost.

Fortified foods	Fortifying agent
Salt	iodine, iron, flour
Flours, bread, rice	Vitamins B1, B2, niacin, iron
Milk, margarine	Vitamins A and D
Sugar, monosodium glutamate, tea	Vitamin A
Infant formulas, cookies	Iron
Vegetable mixtures amino acids, proteins	Vitamins, minerals,
Soy milk, orange juice	Calcium
Ready-to-eat cereals	Vitamins, minerals
Diet beverages	Vitamins, minerals
Enteral and parenteral solutions	Vitamins, minerals

Biofortification

Biofortification, or plant breeding for the specific purpose of enhancing the nutritional properties of crop varieties by using better techniques of plant breeding or genetically modifying the plants to incorporate the desired qualities in the crop produced. There have been some reported successes, including high-protein maize, high-carotene sweet potato and cassava and rice (golden rice). This is still in the experimental stage but has a potential to remarkably improve the nutritional status of deprived sections.

Advantages of fortification: This strategy can lead to relatively rapid improvements in the micronutrient status of a population, and at a very reasonable cost, especially if advantage can be taken of existing technology and local distribution networks.

Food fortification reinforces and supports ongoing nutrition improvement programmes and should be regarded as part of a broader, integrated approach to prevent hidden hunger there by complementing other approaches to improve micronutrient status. These additions have helped to solve public health problems, such as salt iodization to prevent goitre.

Food fortification will continue to be an important tool, not only to treat or prevent specific nutritional deficiencies, but also to promote a general state of well-being in different populations, and possibly to prevent certain chronic diseases.

Dietary diversification

Increasing dietary diversity means increasing both the quantity and the range of micronutrient-rich foods consumed. In practice, this requires the implementation of programs that improve the availability and consumption of, and access to, different types of micronutrient-rich foods (such as animal products, fruits and vegetables) in adequate quantities, especially among those who at risk for, or vulnerable to, micronutrient deficiencies. In poorer communities, attention also needs to be paid to ensuring that dietary intakes of oils and fats are adequate for enhancing the absorption of the limited supplies of micronutrients.

Increasing dietary diversity is the preferred way of improving the nutrition of a population because it has the potential to improve the intake of many food constituents like antioxidants and probiotics not just micronutrients simultaneously.

There are several low-cost, food-based measures that can be promoted at the community level to improve micro nutrient status. Culturally appropriate dietary modifications should be developed to help people identify concrete actions that can improve both dietary supply and the absorption of micronutrients. This information needs to be disseminated to the public through traditional information channels.

Community-based strategies to improve micronutrient status

- Encouraging exclusive breastfeeding up to six months of age and continued breastfeeding for older infants .
- Identifying and promoting use of culturally appropriate weaning foods rich in micronutrients.
- Identifying and promoting use of traditional green leafy vegetables and fruits to add diversity to the diet.
- Preserving micronutrients in fruits and vegetables by using solar drying or canning technologies.
- Promoting small-scale community gardens.
- Rearing small livestock.
- Improving year-round supply of micronutrient rich foods.

Factors for success

Developing communities face multiple problems including health care,

education, sanitation, water supply and housing. Therefore focusing on a single micronutrient deficiency or on a single strategy is not the most effective means to eliminate micronutrient deficiencies. Complementary public health interventions that can help reduce micro nutrient malnutrition include deworming, malaria prophylaxis, improved water and sanitation facilities and childhood immunization. Successful strategies are those that address all these issues in an integrated and coordinated fashion with full political commitment.

Source: Portal Content Development Team

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