

NUTRITION NEWS

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Hidden Hunger

TOPICS OF THIS ISSUE

Hidden Hunger

Obesity

Micronutrient malnutrition

Although overeating causing overweight and obesity is a tremendously growing health problem in developed and emerging countries, there is a significant part of the population at risk of suffering hunger – “hidden hunger”. Hidden hunger is not visible at first sight. The issue here is more the quality than the quantity of food involved. It relates not to the manifest and obvious hunger of people who cannot afford sufficient quantities of food, but to a more insidious type of hunger, attributable to eating food that is inexpensive and filling but exhibits a low density of essential micronutrients. Even if people receive sufficient or excess quantities of food, hidden hunger will ensue if the food concerned does not contain the requisite amounts of nutrients to satisfy their daily nutritional needs.

Supermarkets offer an abundance of products and people are spending more and more money on food. But this circumstance seems not to be beneficial for health. Busy lifestyles, a lack of time, accommodative-

*“Even if people get enough to eat, they will become malnourished if the food does not provide the proper amounts of micronutrients – vitamins and minerals – to meet daily nutritional requirements.”
(World Food Programme, 2008)*

ness and nescience result in a high consumption of fast food. This is often accompanied by a decreased intake of fresh fruits, vegetables, dairy and whole meal products, which are rich sources of essential micronutrients. Instead, a high intake of burgers, pizza, French fries as well as sweets, sweetened beverages and superfine flour products results in insufficient supply with essential micronutrients. This way, people get full, but their bodies are still hungry. In this newsletter issue, we will explore the magnitude of the worldwide increasing overweight and obesity burden. In addition, we will explore the related causes for hidden hunger in the different age groups throughout life.





Obesity epidemic

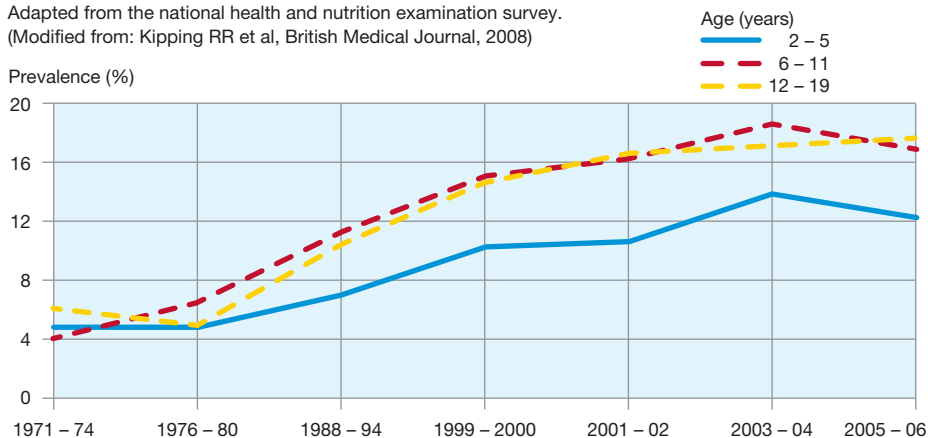
Overweight and obesity are a growing cause of concern globally, because of alarming trends in prevalence and severity. The latest WHO projections indicate that “at least one in three of the world’s adult population is overweight and almost one in 10 is obese. Additionally there are over 20 million children under the age of five who are overweight.” In the past, overweight and obesity were considered a health problem only in rich populations. According to the WHO (2008), overweight and obesity are now dramatically increasing in low- and middle-income countries, especially in the cities.

Causes of obesity

Main drivers of the obesity epidemic are societal changes in lifestyle (less physical activity) and eating habits (high energy load), leading to an imbalance between energy input and energy expenditure. In addition, a complex array of genetic factors, ethnicity, eating habits and health during pregnancy (e.g. maternal diabetes), and non-genetic family factors like parental obesity, eating and lifestyle habits in infancy, childhood, and during adolescence, are also likely to be involved.

Prevalence of obesity in US children

Adapted from the national health and nutrition examination survey. (Modified from: Kipping RR et al, British Medical Journal, 2008)



In 2007 it was estimated that globally 22 million children under 5 years were overweight, with more than 75 % of overweight and obese children living in low and middle-income countries. It is not only the scale of childhood obesity that is challenging, but also the speed at which the prevalence has increased. The greatest annual increases in obesity since 1970 in school children have been in North America and Western Europe.

(Kipping RR et al, British Medical Journal, 2008)

Percentage of overweight and obese adults (%)

based on national body mass index data.

Source: WHO, 2008 (www.who.int/bmi/index.jsp, accessed November 19, 2008).

Country	% Overweight Adults	% Obese Adults
Australia	53.50	16.40
Brazil	40.60	11.10
Canada	49.10	15.30
China	18.90	2.90
Germany	66.50	19.40
Mexico	No data available	23.60
Mongolia	52.00	9.80
United Kingdom	66.90	24.20
United States of America	66.30	32.20
Saudi Arabia	72.50	35.60

Consequences of obesity

Excess weight and obesity are associated with adverse health outcomes such as metabolic disorders, increasing the risk of cardiovascular disease and diabetes, exacerbation of asthma and cancer, muscle-skeletal problems (e.g. osteoarthritis) and psychosocial consequences (e.g. poor self esteem, depression). These health problems already start with a slight excess weight and often lead to disability and premature death.

Micronutrient malnutrition

Micronutrient malnutrition – the cause of hidden hunger – may occur in all age groups. Special population groups with enhanced micronutrient needs are in addition smokers, women who take birth control pills, heavy workers, athletes, strict vegans, and regularly dieting people.

Children / Teenagers

In children, hidden hunger may result mainly from consumption of carbohydrate-based foods with low micronutrient density (pasta, white bread), sugar-rich lemonades and sweets/candies. In teenagers, irregular eating (no defined meal-times during the day) and regular dieting are additional causes of hidden hunger. This may impair the immune system and affect the growth and development of motoric and mental capabilities. In this age group, sufficient intake of micronutrients such as vitamins A, C, D, B-vitamins as well as calcium, iodine, iron, and zinc is often lacking. In female teenagers at childbearing age, supply with vitamin A, iron and folic acid is of particular concern.

The elderly

Often elderly people consume no balanced diet due to restricted access to or lacking preference of proper nutrition. Causes are reduced purchasing power, lack of appetite, sensory changes in terms of taste and smell, digestive problems, depression e.g. due to loneliness, and often no longer doing their own cooking. Although excess weight and obesity are often prevalent in the elderly, sufficient supply of micronutrients such as vitamin A, B-vitamins and vitamin C is of concern. As a result of increasing immobility and staying at home, vitamin D production in skin may not be enough to maintain health. Therefore, sufficient vitamin D intake from diet or supplements is important.

Pregnancy & lactation

There is an increased requirement for micronutrients during pregnancy and lactation. Pregnant or lactating women, who do not consume sufficient amounts of milk, dairy products, animal-derived foods or vegetables as well as vegetarians and women with insufficient exposure to sunlight, are at risk of not meeting their increased requirements of micronutrients such as vitamin A, B12, D, iron and calcium.



General recommendations:

- Limit intake of sugar and foods that are filling but low in micronutrient content.
- Increase consumption of fruits and vegetables.
- Increase consumption of whole meal products, legumes, grains, nuts.
- Ensure intake of the required daily amounts of essential micronutrients, for example by supplementing your diet with multivitamin and mineral tablets and / or fortified foods and beverages.
- Increase level of physical activity to at least 30 minutes of regular, moderate-intensity activity on most days.

Multivitamins, as well as fortified foods and beverages, are an ideal way for optimizing the intake of vitamins to help prevent hidden hunger.



Vitamin	Physiological Function	Recommended Intakes (Men/Women)*
Fatsoluble Vitamins		
Vitamin A (Retinol)	Formation and maintenance of skin and mucous membranes, bone and tooth growth, eye sight	US: 900/700 µg RAE/day Europe: 1000/800 µg RE/day
Beta-Carotene	Precursor of Vitamin A, antioxidant	
Vitamin D (Cholecalciferol)	Regulation of calcium and phosphorus metabolism, formation and maintenance of teeth and bones, prevents rickets	US: 5-15/5-15 µg/day Europe: 5-10/5-10 µg/day
Vitamin E (Tocopherol)	Protection of cells and sensitive substances e.g. hormones, enzymes, other vitamins (antioxidative effect), production of red blood cells, maintenance of skin, fertility	US: 15/15 mg/day Europe: 12-15/11-12 mg TE/day
Vitamin K (Phylloquinone)	Normal blood clotting	US: 120/90 µg/day Europe: 70-80/60-65 µg/day
Watersoluble Vitamins		
Vitamin C (Ascorbic Acid)	Development of bones, cartilage, muscle and blood vessels, immune system, iron absorption	US: 90/75 mg/day Europe: 100/100 mg/day
Vitamin B1 (Thiamine)	Nervous and cardiovascular system, energy metabolism, growth	US: 1.2/1.1 mg/day Europe: 1.0-1.3/1.0 mg/day
Vitamin B2 (Riboflavin)	Energy metabolism, maintenance of skin	US: 1.3/1.1 mg/day Europe: 1.2-1.5/1.2 mg/day
Vitamin B6 (Pyridoxine)	Nervous system, protein metabolism, production of red blood cells, maintenance of skin	US: 1.3-1.7/1.3-1.5 mg/day Europe: 1.4-1.6/1.2 mg/day
Vitamin B12 (Cyanocobalamin)	Production of red blood cells, nervous system	US: 2.4/2.4 µg/day Europe: 3/3 µg/day
Niacin	Carbohydrate, protein and fat metabolism, maintenance of skin	US: 16/14 mg NE/day Europe: 13-17/13 mg NE/day
Biotin	Carbohydrate, protein and fat metabolism	US: 30/30 µg/day Europe: 30-60/30-60 µg/day
Pantothenic Acid	Energy metabolism, function of skin and mucous membranes, growth and pigmentation of hair	US: 5/5 mg/day Europe: 6/6 mg/day
Folic Acid	Production of red blood cells, genetic material development	US: 400/400 µg DFE/day Europe: 400/400 µg DFE/day

* Recommended Intakes are provided for the United States based on the most recent Dietary Reference Intakes (DRIs) released by the Food and Nutrition Board of the US Academy of Sciences. The data provided for Europe are based on the D-A-CH reference values established in 2000 by the National Nutrition Societies of Germany (D), Austria (A) and Switzerland (CH) and serve as guidelines for nutrient intakes of an apparently healthy population.

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References

For further information regarding hidden hunger, a list of selected scientific references is available for download at www.nutrition.basf.com. Please go to Human Nutrition / About us / Scientific Affairs.



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