

Vitamins are required constituents of the human diet because they are synthesized inadequately or not at all in the human body. Only small amounts of these substances are needed to carry out essential biochemical reactions (e.g., by acting as coenzymes or prosthetic groups). Overt vitamin or trace mineral deficiencies are rare in Western countries because of a plentiful, varied, and inexpensive food supply; food fortification; and use of supplements. However, multiple nutrient deficiencies may appear together in persons who are chronically ill, alcoholic, or living in poverty. After bariatric surgery, patients are at high risk for multiple nutrient deficiencies. Moreover, subclinical vitamin and trace mineral deficiencies (often designated as “hidden hunger”), as diagnosed by laboratory testing, are quite common in the normal population, especially in the geriatric age group and socioeconomically deprived individuals due to the lack of nutrient-dense foods. Conversely, because of the widespread use of nutrient supplements and food fortification, nutrient toxicities are gaining pathophysiologic and clinical importance.

Victims of famine, emergency-affected and displaced populations, refugees, and camp populations are at increased risk for protein-energy malnutrition and classic micronutrient deficiencies (vitamin A, iron, zinc, iodine) as well as for overt deficiencies in thiamine (beriberi), riboflavin, vitamin C (scurvy), and niacin (pellagra).

Body stores of vitamins and minerals vary tremendously. For example, stores of vitamins B₁₂ and A are large, and an adult may not become deficient until ≥ 1 year after beginning to eat a deficient diet. However, folate and thiamine may become depleted within weeks among those eating a deficient diet. Therapeutic modalities can deplete essential nutrients from the body; for example,