

A Mini Review on Vitamin Deficiency

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Introduction

Vitamin deficiency is the condition of a long-term lack of a vitamin. When caused by not enough vitamin intake it is classified as a primary deficiency, whereas when due to an underlying disorder such as malabsorption it is called a secondary deficiency. An underlying disorder may be metabolic – as in a genetic defect for converting tryptophan to niacin – or from lifestyle choices that increase vitamin needs, such as smoking or drinking alcohol. Government guidelines on vitamin deficiencies advise certain intakes for healthy people, with specific values for women, men, babies, the elderly, and during pregnancy or breastfeeding. Many countries have mandated vitamin food fortification programs to prevent commonly occurring vitamin deficiencies. Hypervitaminosis refers to symptoms caused by vitamin intakes in excess of needs, especially for fat-soluble vitamins that can accumulate in body tissues. The history of the discovery of vitamin deficiencies progressed over centuries from observations that certain conditions – for example, scurvy – could be prevented or treated with certain foods having high content of a necessary vitamin, to the identification and description of specific molecules essential for life and health. During the 20th century, several scientists were awarded the Nobel Prize in Physiology or Medicine or the Nobel Prize in Chemistry for their roles in the discovery of vitamins. A number of regions have published guidelines defining vitamin deficiencies and advising specific intakes for healthy people, with different recommendations for women, men, infants, the elderly, and during pregnancy and breast feeding including Japan, the European Union, the United States, and Canada. These documents have been updated as research is published. In the US, Recommended Dietary Allowances (RDAs) were first set in 1941 by the Food and Nutrition Board of the National Academy of Sciences. There were periodic updates, culminating in the Dietary Reference Intakes.

Water-soluble vitamins

Thiamine (Vitamin B1) deficiency is especially common in countries that do not require fortification of wheat and maize flour and rice to replace the naturally occurring thiamine content lost to milling, bleaching and other processing. Severe deficiency causes beriberi.

Riboflavin (Vitamin B2) deficiency is especially common in countries that do not require fortification of wheat and maize flour and

rice to replace the naturally occurring riboflavin lost during processing.[9] Deficiency causes painful red tongue with sore throat, chapped and cracked lips, and inflammation at the corners of the mouth (angular cheilitis).

Niacin (Vitamin B3) deficiency causes pellagra, a reversible nutritional wasting disease characterized by four classic symptoms often referred to as the four Ds: diarrhea, dermatitis, dementia, and death. The dermatitis occurs on areas of skin exposed to sunlight, such as backs of hands and neck.

Vitamin C deficiency is rare. Consequently, no countries fortify foods as a means of preventing this deficiency.[9] The historic importance of vitamin C deficiency relates to occurrence on long sea-going voyages, when the ship food supplies had no good source of the vitamin.

Fat-soluble vitamins

Vitamin A deficiency can cause nyctalopia (night blindness) and keratomalacia, the latter leading to permanent blindness if not treated. It is the leading cause of preventable childhood blindness. Vitamin D deficiency is common. Most foods do not contain vitamin D, indicating that a deficiency will occur unless people get sunlight exposure or eat manufactured foods purposely fortified with vitamin D.

Vitamin E deficiency is rare, occurring as a consequence of abnormalities in dietary fat absorption or metabolism, such as a defect in the alpha-tocopherol transport protein, rather than from a diet low in vitamin E.

Vitamin K deficiency as a consequence of low dietary intake is rare. A deficient state can be a result of fat malabsorption diseases. Signs and symptoms can include sensitivity to bruising, bleeding gums, nosebleeds, and heavy menstrual bleeding in women.

How to cite this article: Nwosu, Benjamin U. "A Mini Review on Vitamin Deficiency." *Vitam Miner* 10 (2021) : 7

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Citation: Nwosu BU (2021) A Mini Review on Vitamin Deficiency. *Vitam Miner* Vol.10 No.7:

Received date: July 01, 2021; Accepted date: July 15, 2021; Published date: July 22, 2021