



Vitamins and Minerals



Every day, your body produces skin, muscle and bone. It makes rich red blood that carries nutrients and oxygen to every part of your body. It sends nerve signals along thousands of miles of brain and body pathways. Your body formulates chemical messengers that go from one organ to another, with instructions to help sustain life. In order to complete all of these actions, your body needs vitamins and minerals. Vitamins and minerals perform hundreds of roles in the body. They help make bones, heal wounds, improve your immune system, and convert food into energy and repair cellular damage. Each vitamin and mineral has a unique role in the body for maintaining health.

The best way to get enough vitamins and minerals is to eat a balanced diet with a variety of foods. You can usually get all of your vitamins from the foods you eat. Most of the time your body only needs very small amounts of vitamins and minerals to function properly. If you don't get these vitamins and minerals though, you and your family can get sick, or have physical impairments. Blindness, bone deformities, birth defects and low weight can all be caused by not getting enough vitamins and minerals.



Vitamins are organic substances (made by plants or animals). Minerals are inorganic elements that come from the earth (soil and water) and are absorbed by plants. Animals and humans then absorb minerals from the plants they eat.

Vitamin and mineral deficiency is a big problem all over the world. It is the world's leading cause of mental impairment. Vitamin and mineral deficiency compromises immune systems, leading to the deaths of approximately 1 million young children a year and poor health and growth for many more. Over 1/3 of child deaths are due to under nutrition, mostly from increased severity of disease. It is estimated that vitamin and mineral deficiency is responsible for the deaths of approx 60 000 women in child birth and 250 000 birth defects every year. It is also associated with significant increase in deaths from heart disease and stroke. Even moderate levels of deficiency with no clinical symptoms can have devastating consequences.

More than 1/3 of children in Indonesia, Laos PDR, the Philippines, PNG and Vietnam have anemia. A recent study by UNICEF on stunting in children under the age of 5 showed that the mean prevalence in South East Asia 2006-2010 was 34% and in Vietnam was 31%. The presence of stunting in Vietnamese children is evidence of continuing malnutrition in spite of the enormous improvements in Vitamin A and Iron deficiencies. 5% of Vietnamese children are severely underweight. Nutritional deficits and

undernourishment between conception and the age of two are associated with significant impairment of cognitive function and physical abilities. Most of the irreversible damage due to malnutrition in Vietnam happens during gestation and in the first 24 months of life. 7% of infants in Vietnam are born with low birth weight, which is often compounded with decreased breastfeeding and lack of access to

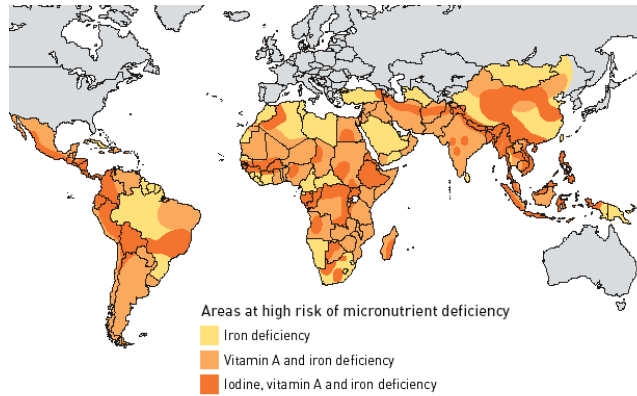


Figure 1: Vietnam is at risk of micronutrient deficiency

important nutrients. 70% of the population in rural Vietnam receive less than the required nutrient intake of calcium, irons and vitamins A, C, B12 and niacin compared to urban communities. However, this is not just a problem for the poor. It has been shown that children are undernourished in 1/5 of even the richest Vietnamese households. It is estimated that annually Vietnam loses US\$544 million in GDP to vitamin and mineral deficiencies and the health problems that this causes.

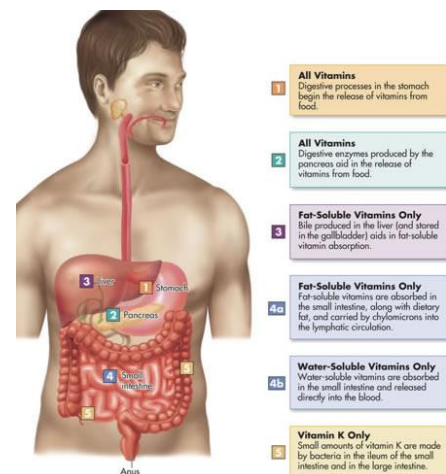
Vitamins:

There are two types of vitamins. Water soluble and fat soluble. Water soluble vitamins are found in the watery portions of the foods you eat. They are absorbed directly into the blood stream as food is broken down during digestion. A lot of your body consists of water. This means that many water soluble vitamins can move around your body easily. Water soluble vitamins have many tasks in the body. One of the most important is helping to free the energy found in the food you eat. Others help keep tissues healthy.

Water soluble vitamins are:

1. B-Vitamins – B1, B2, B3, B5, B6, B7, B9, B12
2. Folate (folic acid)
3. Vitamin C

Rather than slipping easily into the bloodstream like most water-soluble vitamins, fat soluble vitamins gain entry to the blood via lymph channels in the intestinal wall. Fatty foods and oils are reservoirs for fat soluble vitamins. Within your body, fat tissues and the liver act as the main holding pens for these vitamins and release them as needed. To some extent, you can think of these vitamins as time-release micronutrients. It's possible to consume them every now and again, perhaps in doses weeks or months apart rather than daily, and still get your fill. Your body squirrels away the excess and doles it out gradually to meet your needs.



Fat soluble vitamins help keep your eyes, skin, lungs, gastrointestinal tract and nervous system in good repair. They help build bones and protect vision.

Fat soluble vitamins are:

1. Vitamin A
2. Vitamin D
3. Vitamin E
4. Vitamin K



Minerals:

Minerals can be categorized as being major minerals or trace minerals. Major minerals are no more important to your health than the trace minerals, they are just present in your body in greater amounts.

One of the main jobs of major minerals is to maintain the proper balance of water in the body. Another important role major minerals play is to help maintain healthy bones.

Major minerals are:

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| 1. Calcium | 5. Potassium |
| 2. Chloride | 6. Sodium |
| 3. Magnesium | 7. Sulfur |
| 4. Phosphorous | |

Trace minerals are involved in lots of different roles in your body. For example iron carries oxygen throughout the body, while fluoride strengthens bones and wards off tooth decay. The other trace minerals perform equally vital jobs, such as helping to block damage to body cells and forming parts of key enzymes or enhancing their activity.

Trace minerals are:

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| 1. Chromium | 6. Manganese |
| 2. Copper | 7. Molybdenum |
| 3. Fluoride | 8. Selenium |
| 4. Iodine | 9. Zinc |
| 5. Iron | |

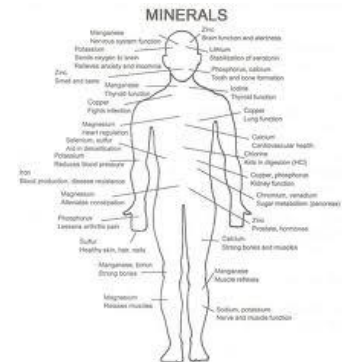


Figure 2: Why we need minerals