

## Review Article

## Incredibly Common Nutrient Deficiencies

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**Abstract:** Nutrient deficiencies occur when the body does not absorb nutrients in the required amounts. Deficiencies can cause a variety of health problems, such as digestive problems, skin problems, stunted or defective development of bones, and even dementia. Nutrient deficiencies can also be sneaky. You may not notice any symptoms until you have been severely deficient for some time, leading you to (falsely) believe that your body is getting all the nutrition you need. More often, however, such deficiencies cause symptoms, which can range from minor to severe. Unless you know what to look for, though, you're likely to mistake the signs for something else. Nutritional deficiencies occur when a person's nutrient intake consistently falls below the recommended requirement. Nutritional deficiencies can lead to a variety of health problems but it can be prevented by eating a balanced diet or eating a particular nutrient rich diet which the body needs more.

**Keyword:** nutrients, health problems, skin problems.

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## INTRODUCTION

The world has been confronted with hunger and malnutrition for decades and for such a long time, there has been a progress in the approach to hunger and malnutrition that has changed a few times. From reducing the number of hungry people to realizing that malnutrition is not only undernutrition and addressing it means more than only to feed people in the sense of quantity but also quality. Micronutrient deficiencies are vital for right development to meet the full potential. Nutrient deficiencies influence health and the future of undernourished women and children may be affected. In general, reducing such a high number of nutrition deficiencies related diseases and malnutrition is important to plan. Combating malnutrition and its all forms comprise sensitive and multisector approach because malnutrition is not only about food security, growing food production and agriculture but it includes many sectors from health to climate. Consequences of insufficient intake of a nutrient may be solved with food fortification and food supplements, which is also important action, but not sustainable. Energy is required for the conduct of biological functions in the body of living beings (all living beings including humans). This energy is obtained from food. Nutrition is the whole process of ingestion of food (nutrients) by living things (the process of transporting food into the body), digestion, absorption and assimilation and the release of indigestible substances. Nutrients are substances needed

for energy production, physical growth and repair of wear and tear.

Our diet should include such food which can supply the right amount of nutrients. Such a diet is called a balanced diet. Every person needs 6 nutrients for energy, tissue maintenance and bodily functions. This includes proteins, vitamins, carbohydrates, fats, water and minerals.

- ✓ **Protein:** Protein is a very important nutrient for the nutrition of the body, which should be consumed by everyone. For our body to function properly, protein is essential for building muscle and building and repairing cells in our body. Along with this, protein is also the source of energy for our body. Rich sources of protein include eggs, fish, meats and beans. Protein provides amino acids to the body.
- ✓ **Vitamins:** Vitamins are very much needed by our body. If for any reason our body is not able to get any vitamin, then our body can suffer from vitamin-borne diseases. Vitamins are substances that help your body grow. It strengthens your immune system and keeps you away from many diseases. We get most of the vitamins from fruits and vegetables.
- ✓ **Minerals:** Minerals are a good nutrition. Some important minerals or minerals are necessary for our body to function properly. It not only corrects the metabolism of the body but also keeps your

health good. Its sources include fruits, vegetables, dairy products, meat and fish.

- ✓ **Carbohydrate:** Starch or starch is a major food substance in the form of carbohydrate which is found in many types of food items. Carbohydrates are found in sufficient quantity in potatoes, sago, rice, whole grains, pasta, bread, corn etc. By eating it, the body gets energy and it also plays an important role in digestion.
- ✓ **Fat:** Fat or fat is the main component of our diet and performs many functions in the body. Essential sources of this include dairy products, meat, seeds, and nuts and foods such as vegetable oils. Fat is digested into fatty acids, which are used as an energy source.
- ✓ **Water:** We also include water in nutrition. About 60 percent of the body is made up of water. Drinking enough H<sub>2</sub>O helps maintain fluid balance in the body, which helps transport nutrients in the body, regulates body temperature, and aids in the digestion of food. So never let your body lack water.

Nutrition is essential for any living being, for this physiological functions are not possible. Just as fuel is needed for a vehicle, in the same way our body needs nutrients.

1. **Energy:** The energy required for carrying out various functions of the body is obtained from the oxidation of various components, mainly carbohydrates and fats.
2. **Physical Repair:** Food contributes to the growth of the body and the repair of damaged organs and tissues. Proteins, minerals, salts, vitamins, etc. contribute to this work.
3. **Metabolic Control:** Food maintains the various organs and animals of the body in proper condition and contributes to control the metabolic activities by proper operation of them. Vitamins, minerals, salts and water play an important role in this work.
4. **Immunity:** Balanced diet increases the immunity power in the body. Proteins, minerals, vitamins, etc. are important substances for this function. In this way food protects the body from diseases.

Generally a human body needs nutrients according to its age and biological functions. Different standards have been set for children, pregnant women and adults and according to these standards a person should include nutrients in his diet. If we talk about Indians, then the survey of the Government of India also says that nutrition per person should be according to his age. The 2012 survey gave different nutritional standards for rural and urban areas. However, we are telling you about the nutritional needs given by the nutritionist. You can also take nutrients according to the need of the body by consulting a dietician.

#### COMMON NUTRIENT DEFICIENCIES

It is advised to consume a healthy and well balanced diet. Deficiency of certain nutrients can affect

your health in many ways. Nutrient deficiencies manifest in different age groups. These deficiencies can increase the risk of serious health problems and certain diseases if left unchecked. Therefore, it is advisable to consume a well-balanced diet that can ensure the intake of all the essential nutrients. Nutrient deficiencies also prevent optimal growth of the body, but the good news is that nutritional deficiencies are preventable and can also be overcome with the right nutritional support.

#### Types of Nutritional Deficiencies

There are three main types of nutritional deficiency which are:

1. **Vitamin Deficiency:** The most frequent Vitamin deficiency includes vitamin b deficiency –vitamin b-9(folate), vitamin b12 deficiency and vitamin d deficiency. B Vitamins helps the body convert food into energy. They perform important functions in the body. Their deficiency can be treated by eating a healthy diet.
2. **Mineral Deficiency:** Mineral deficiency includes iodine deficiency, iron deficiency, calcium deficiency, zinc deficiency, magnesium deficiency. Mineral deficiency can cause anemia, bone density loss, loss of appetite, muscle pain and cramps. The extent of deficiency will be based on how much the mineral is deprived.
3. **Protein Deficiency:** Protein deficiency is very common and it is also associated with calorie intake. Proteins serve many functions like giving immunity, wound healing, stabilize blood sugar, build muscle mass. If the diet is deficient in calories than protein will start supplying energy to the body. They perform their functions well if the calorie intake is adequate. Body shows various symptoms in protein deficiency like fatigue, delayed wound healing, muscle weakness, hair loss. The majority of nutritional deficiency diseases can be avoided by consuming a good diet consisting of a variety of healthy foods.

The most common nutrients are protein, vitamins A, B, C, D, calcium, folate, iodine, and iron.

#### 1. Protein

Protein-energy, formerly known as protein-energy malnutrition, is seen in children of growing age who have no access to nutrients. This deficiency is also seen in older people who have limited access to quality nutrition. This leads to anorexia, depression or long hours of fasting/starvation in them.

In children, two common forms of protein-energy malnutrition are kwashiorkor and rickets.

- **Rickets:** Fat loss occurs due to loss of fat and muscle mass.
- **Kwashiorkor:** Weight loss is caused by a diet deficient in protein but predominant in carbohydrates.

A well-balanced diet as per the RDA (Recommended Dietary Allowance) for age can help prevent these deficiencies.

## 2. Iron

When it comes to the causes of deficiency of vitamins and minerals, the list is huge. According to WHO, anemia still tops the list.

Iron deficiency is the most common cause of anemia. Children and pregnant women are the most vulnerable group of the population. Anemia in pregnant women increases the risk of maternal death during pregnancy or delivery and also occurs in low birth weight babies.

Dietary sources: Red meat, organ meats, shellfish are excellent sources of heme iron with good bioavailability.

## 3. Vitamin

A-Vitamin A is a fat-soluble vitamin that is responsible for immune function and healthy vision. Vitamin A deficiency can lead to blindness, suppression of immunity. Vitamin A deficiency (VAD) is a problem of public health in almost 130 countries, mainly in the continent of Africa and the South-East Asia. Pregnant women and children in developing countries are the most affected group. Mothers with deficiency of vitamin A cope with a night blindness, especially during last trimester. As to a child, lack of vitamin A causes blindness, visual impairment, and increase the probability to die from infection, diarrhoea or measles. (WHO, 2017a) WHO estimations are up to 500,000 blind children every year because of Vitamin A shortage, and around 250 million pre-school children do not receive enough in threatened countries. There is a risk of infection due to this.

Solution: Vitamin A supplements for children 6-59 months are highly effective in preventing its deficiency and reducing mortality in women and children. It is important to consume enough vitamin A in the diet. Also, it is important to note that excess vitamin A intake leads to vitamin A toxicity.

Diet Source: Bright fruits and vegetables rich in beta-carotene such as carrots, spinach, broccoli, red bell peppers, pumpkin, grapes, cantaloupe, and sweet potatoes are good sources of vitamin A.

## 4. Vitamin D

It is a fat-soluble vitamin, which acts like a steroid hormone in the body. It has a major role in the gene interaction of nutrients. Which can turn multiple genes on and off. Vitamin D3 is responsible for the calcium absorption needed to maintain bone mineral density. It also helps in preventing Rickets, Osteoporosis. Reduces the risk of fractures and helps in building a strong immunity.

Diet Source: Fish and fish oil supplement, cheese, milk.

## 5. Vitamin B12

Vitamin B12 or cobalamin is a water-soluble vitamin responsible for brain and neurological function. Deficiency can lead to megaloblastic anemia, atrophic gastritis, in which thinning of the stomach lining is seen. Pernicious anemia in which absorption of vitamin B12 is reduced, Crohn's disease, celiac disease, bacterial growth, or parasitic infection are some of the conditions affect the small intestine.

Diet Source: Shell fish, egg yolk, milk products, seaweed are some good sources of vitamin B12.

## 6. Iodine Deficiency

Iodine is responsible for the production of thyroid hormone which is responsible for regulating metabolic changes, growth and repair. In children, it can lead to growth abnormalities and mental retardation. Iodine is an essential biogenic element producing a thyroid hormone that is necessary for a thyroid gland function and thyroid hormone production. The thyroid is responsible for proper growth and development. Worldwide, there are about 2 billion people with insufficient iodine status, estimated number of school-aged children with inadequate iodine intake is 240 million (Bailey *et al.*, 2015, 22-33).

Diet Source: Fish, egg dairy and seaweed are rich sources of iodine. Fish, shellfish or some mineral waters are examples of food/drinks with a quite high content of iodine but there is not much food with iodine and if so, the food is not available. There are about 50 countries with iodine deficit, particularly in mountainous areas. WHO has been promoting iodine fortification of salt since the 1980s because the costs of salt iodization are very low and salt is widely used globally. Unfortunately, iodized salt is not natural item in many regions (FAO, 2001).

## 7. Zinc

Zinc is an essential mineral required by hundreds of enzymes and multiple transcription factors that regulate gene expression. While the exact mechanism of action is unclear, one possibility centers on zinc's role as an essential component of numerous metalloenzymes important in protein synthesis and cell division. Another possibility is zinc's role in the Hedgehog signaling pathway, a critical component in the pathways that govern hair follicle morphogenesis.

Zinc deficiency may be either inherited or acquired and may affect multiple organ systems. Patients may experience diarrhea, immunological effects, and delayed wound healing. Abnormalities in taste and smell may occur. Cutaneous effects include acral and periorificial dermatitis, while hair changes include TE and brittle hair.

Dietary risk factors include vegetarianism, as bioavailability of zinc is lower in vegetables than meat. Additionally, vegetarians typically consume more legumes and whole grains, which contain phytates that bind to zinc and inhibit absorption

## CONCLUSION

In today's time, with the changing lifestyle every moment, there has been a lot of change in the eating habits of people, due to which they are facing nutritional deficiency. Nutrients play an important role in maintaining our adulthood. There are many needs of the human body at every stage of life, such as the need for micronutrients and macronutrients for growth hormones in puberty, which can be fulfilled only by a balanced diet and if this is not done then we will face many health related challenges in future. Consuming any nutrient in excess is also harmful for your health. Always consult an expert before adding dietary supplements to your children's diet. Research proves that children are more independent about their eating habits and all of these choices are fuelled by changing social media trends, friends, and the fast food experience. This is further reducing the option of choosing nutritious food. Another factor that is driving a change in eating habits is home-cooked food, time taken to cook food, information on nutritious food and easy access to fast food, not just children but people of all ages. And promote the taste, due to which a large number of people are deficient in nutrients and today's generation is facing health related harm. In addition, health experts say that people have to face diseases such as diabetes, heart problems, rickets and osteoporosis in the early years due to nutritional deficiencies in the long run.

As one gets older, it becomes difficult to get essential nutrients. Because older people are less active than younger people, they need to consume fewer calories and eat less. With increasing age, people lose their ability to absorb nutrients and due to which their metabolism slows down. It shows that we need to change our eating habits and if this is not done then we may have to face many diseases. That's why the elderly and women need essential nutrients, such as B vitamins, calcium and omega 3 fatty acids, for physical, mental and emotional well-being.

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