

	Why it is necessary in a person's diet:	Deficiency	Who it effects on a global level:	Fortification	Misc.
Vitamin A	<p>Plays an important role in vision, bone growth, reproduction, cell division, and cell differentiation (in which a cell becomes part of the brain, muscle, lungs, blood, or other specialized tissue). It helps regulate the immune system, which helps prevent or fight off infections by making white blood cells that destroy harmful bacteria and viruses. Vitamin A also may help lymphocytes (a type of white blood cell) fight infections more effectively.</p> <p>The body's immune system needs vitamin A to help fight measles. Preschool age children are more likely to have vitamin A deficiency than are other age groups, as rapid growth makes their bodies unable to store nutrients for very long. Any country with an Under-5 Mortality rate of more than 50 is likely to have a vitamin A public health problem. High dose vitamin A supplementation should be routine in these populations.</p> <p>Vitamin A protects women before, during, and after pregnancy, and promotes normal fetal development.</p> <p>Vitamin A-rich foods keep eyes healthy and prevent blindness.</p> <p>Vitamin A helps eyes stay moist. Vitamin A deficiency causes the inside of the eye to dry out, and may lead to corneal damage resulting in partial or complete blindness. This damage is irreversible.</p>	<p>Night blindness (the inability to see clearly after dusk) is one of the first signs (it contributes to blindness by making the cornea very dry and damaging the retina and cornea).</p> <p>Cells lining the lungs lose their ability to remove disease-causing microorganisms which contributes to pneumonia</p> <p>Mild degree of deficiency may increase children's risk of developing respiratory and diarrheal infections, decrease growth rate, slow bone development, and decrease likelihood of survival from serious illness.</p> <p>Pregnancy depletes a woman's vitamin A stores: When a woman does not have adequate vitamin A in her body before becoming pregnant, early fetal development suffers, and the baby is less likely to develop normally later in the pregnancy, too. After birth the mother's breast milk will contain less vitamin A than it should, so the infant will continue to suffer.</p>	<p>Approximately 250,000 to 500,000 malnourished children in the developing world become blind each year from a deficiency of vitamin A</p> <p>Of the 11 million children who die each year due to common childhood illnesses, it is estimated that up to 23% of them could be saved through improved vitamin A status.</p>	<p>In underdeveloped countries, vitamin A fortification is limited to milk and dairy products, margarine and fat spreads and breakfast cereals.</p> <p>Vitamin A fortified foods including oils, margarine and sugar are also good sources of vitamin A where such foods are available.</p>	<p>Severe zinc deficiency, which is also associated with strict dietary limitations, often accompanies vitamin A deficiency</p>

<p><b>Folic Acid</b></p>	<p>During pregnancy, for the fetus to grow properly, folate is needed to make DNA, among a wide range of metabolites. A baby's spinal cord, spine, brain and skull all develop from the neural tube, which is formed in the very early days of pregnancy, between seventeen and thirty days after conception. The neural tube then closes, due to the presence of the right proteins at the right time and in the right place. This process is triggered by DNA.</p>	<p>Neural tube defects result in malformations of the spine (spina bifida), skull, and brain (anencephaly). Spina bifida and anencephaly, the two most common neural tube defects, occur when the tube does not close properly, exposing the baby's brain or spinal cord to amniotic fluid.</p> <p>Some 80 to 90 percent of babies born with spina bifida survive, but with some degree of disability, often severe. Children with spina bifida may live with paralysis of the legs; hydrocephalus ('water on the brain'); learning disabilities; and decreased bowel and bladder control.</p> <p>With anencephaly, the child's brain does not fully develop or is completely absent. Anencephaly is always fatal. It often leads to miscarriage, but even full-term babies die soon after birth.</p>	<p>Worldwide, 250,000 babies are born each year with serious birth defects of the spine or brain.</p>	<p>Fortified foods include most enriched breads, flours, corn meals, rice, noodles, macaroni and other grain products.</p> <p>Foods that are already rich in folate are: leafy, green vegetables (like spinach and broccoli), legumes, dried beans, nuts, and citrus fruits.</p>	<p>Folate is a generic term given to a group or family of B vitamins. Folic acid is the most stable form of folate, but occurs only rarely naturally in foods. Folic acid and folate (the anion form) are forms of the water-soluble Vitamin B9.</p>
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<p>Vitamin D</p>	<p>The major biologic function of vitamin D is to maintain normal blood levels of calcium and phosphorus. By promoting calcium absorption, vitamin D helps to form and maintain strong bones.</p>	<p>In children, vitamin D deficiency causes rickets. Rickets is a bone disease characterized by a failure to properly mineralize bone tissue. Rickets results in soft bones and skeletal deformities.</p> <p>In adults, vitamin D deficiency can lead to osteomalacia, which results in muscular weakness in addition to weak bones. Symptoms of bone pain and muscle weakness may indicate vitamin D deficiency, but symptoms may be subtle and go undetected in the initial stages.</p>	<p>Vitamin D intake is often too low to sustain healthy levels in countries without mandatory staple food fortification, such as with milk and margarine. Even in countries that do fortify, vitamin D intakes are low in some groups due to their unique dietary patterns, such as low milk consumption, vegetarian diet, limited use of dietary supplements, or loss of traditional high fish intakes. Rickets is still a prominent problem in much of the developing world.</p>	<p>Milk, margarine</p>	<p>vitamin D deficiency has been associated with iron deficiency, leading researchers to question whether or not iron deficiency may impair vitamin D metabolism</p>
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<p>Zinc</p>	<p>The human body relies on zinc to perform many functions, including: healing of wounds, growth and repair of tissue, proper clotting of blood, correct thyroid function, especially the metabolism of proteins, carbohydrates, fats and alcohol, fetal development and sperm production.</p> <p>Studies of people receiving zinc supplements have shown a decrease in rates of infection, especially reduced rates of acute lower respiratory infections. Among children receiving zinc supplements there is reduced incidence and duration of acute and persistent diarrhea.</p>	<p>Zinc deficiency results in poor appetite (which can lead to deficiencies in other nutrients), low immunity and slow healing of wounds, anemia, poor growth and skeletal abnormalities, spontaneous abortion and birth defects, and impaired sexual maturation and sterility.</p> <p>The effects of zinc deficiency vary according to a person's age:</p> <p>For women of reproductive age, zinc deficiency during pregnancy affects the mother's health, the progress of the pregnancy, and its outcome. Poor zinc status is associated with pregnancy-induced hypertension, pre-eclampsia and placental abruption, pre-term delivery and hemorrhaging.</p> <p>For the baby the effects can be severe: poor fetal growth and low birth-weight, poor fetal neurobehavioral development, birth defects and higher rates of infant death. Low-birth weight infants may be especially vulnerable to zinc deficiency. Studies of low birth-weight babies who received zinc supplements show increased weight gain and improved developmental scores. For infants up to two months, the most common problem is diarrhea.</p> <p>Among school-aged children, common symptoms of zinc deficiency include hair loss, growth retardation, inflammation of the eyelids, and recurring infections. Studies show that children with low height or weight for their age are likely to be zinc deficient.</p> <p>Male adolescents with zinc deficiency have shown delayed sexual development, decreased sperm count and lower levels of testosterone, as well as skeletal abnormalities, short stature and anemia.</p>	<p>Estimations of the global prevalence of zinc deficiency indicate that approximately one third of the world's population live in countries that have a high risk of zinc deficiency. The most vulnerable population groups are infants, young children, and pregnant and lactating women because of their elevated requirements for this essential nutrient. Very few surveys have been completed to determine directly the extranet of zinc deficiency.</p>	<p>Wheat products are usually the fortification vehicle for zinc.</p> <p>Breast milk is the best source of zinc for babies.</p> <p>The best, most easily absorbed sources of zinc are beef, pork, poultry, fish and shellfish.</p> <p>Plant sources: Nuts, seeds, legumes and whole-grain cereals are good sources of zinc.</p>	<p>Zinc deficiency is most often found in association with other health conditions. For example, severely malnourished children or those with persistent diarrhea or respiratory problems may be zinc deficient. High rates of iron-deficiency anemia in a region indicate a risk of zinc deficiency in the same region and high rates of stunting (very low height-for-age) among children in a particular region indicate widespread zinc deficiency.</p>
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<p>Iron</p>	<p>The iron in our blood carries oxygen throughout our body. It is absolutely critical to our survival, and our bodies store it in several places. But when we bleed, we lose iron. Women need more iron than men due to menstruation. During pregnancy, the growing baby also requires iron that is taken from the mother's blood and iron stores. Women also lose significant amounts of blood and therefore iron during childbirth.</p>	<p>Iron deficient women are 5 to 10 times more likely to die while giving birth than healthy women.</p> <p>Small babies, and especially those born prematurely, have low iron stores from the time they are born. Young children use a lot of iron as they grow, so low iron stores mean poor growth and slower mental development.</p> <p>Iron deficiency in children under two years of age leads to brain damage that cannot be corrected later.</p> <p>Low iron levels make us tired, and they reduce the body's ability to fight infections.</p> <p>Signs of iron deficiency include: constant fatigue, loss of appetite, shortness of breath (even after light exertion), dizziness, pale face, gums, lips, tongue, fingernails, or in the inside of the lower eyelids.</p> <p>Iron deficiency is the leading cause of anemia (when the blood contains too few red blood cells). Anemia can also result from malaria, from parasites that cause bleeding (like hookworm), and from some genetic conditions. These are important additional causes of anemia in some regions, especially Sub-Saharan Africa.</p>	<p>Iron deficiency has largely been eradicated from developed countries, but more than 750 million children in the developing world have iron-deficiency anemia.</p>	<p>Iron-fortified foods usually are wheat flour or bread, maize meal, cereals and pasta.</p> <p>Breast milk is the best source of iron for babies under the age of six months.</p> <p>Plant products that include iron: Pulses, beans, fruits and vegetables, such as raisins, dates, prunes, dried apricots and spinach contain large amounts of iron, but in a form that is more difficult to digest and absorb.</p> <p>The best food source of iron is red meat. Eggs, oysters, chicken, turkey and fish are also high in iron.</p>	<p>Eating foods rich in vitamin C at the same meal with iron-rich foods maximizes the body's ability to absorb iron from plant foods. Conversely, the absorption of iron from plant foods is reduced if black tea is drunk together with food.</p>
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<p>Iodine</p>	<p>Iodine is a mineral essential for human development and growth. Our bodies need iodine to produce the hormones that regulate the thyroid gland. Without adequate amounts, the thyroid cannot regulate the body's metabolism, growth and development.</p>	<p>Pregnant women who do not consume enough iodine are more likely to have pregnancy complications including miscarriages or stillbirths.</p> <p>Babies born to iodine deficient mothers also have lower birth weights and are more vulnerable to disease. These children may suffer permanent mental and physical retardation before birth, or develop learning disabilities as they grow older.</p> <p>Children with iodine deficiency are more likely to have learning disabilities. They perform poorly in school, do not learn as quickly as healthy children and score, on average, 10 to 15% lower in IQ tests. Also, these children are less coordinated physically than healthy children.</p> <p>Adults lacking iodine tend to be tired and weak. This affects their ability to work, sometimes making them unable to support their families.</p> <p>Previously, the most commonly known sign of iodine deficiency was goiter, the swelling of the thyroid gland in the neck.</p>	<p>Worldwide, more than 20 million people suffer from varying degrees of mental impairment caused by a lack of iodine. About six million have cretinism, the most serious form of mental retardation.</p>	<p>Using iodized salt is the most effective way to prevent iodine deficiency. Iodized salt is safe for people of all ages, including pregnant women, very young children, and those who are ill.</p>	<p>Iodized salt can prevent iodine deficiencies, but it is not a medicine. It cannot cure mental retardation or cretinism and therefore eating large amounts of iodized salt will not increase intelligence or encourage growth.</p>
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