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# Most People Don't Reach Micronutrient Requirements Through Food Alone

Analysis by Dr. Joseph Mercola | November 20, 2023

## STORY AT-A-GLANCE

- Most adolescents are not getting adequate nutrient intake from diet alone — a finding confirmed from other studies in developed countries such as Spain, France, Portugal and Germany
- Three-quarters of adolescents consumed less than 54% of the recommended amounts of healthy foods like fruits, vegetables and dairy products
- Nearly three-quarters of the youth exceeded the recommended limit for sweet and salty snacks — by 453%
- When nutrient intake was considered from diet alone, adolescents often consumed less than recommended amounts of the fat-soluble vitamins A, D and E along with the water-soluble vitamins folate, biotin and pantothenic acid
- The use of dietary supplements helped to increase the adolescents' intake of vitamins and minerals, particularly magnesium and vitamin C, but this isn't a replacement for a healthy, nutrient-rich diet

**While it's possible to get all the vitamins and minerals your body needs by eating a healthy diet, most people fall short. The issue isn't typically a matter of quantity but quality — many people are eating energy-rich, nutrient-poor foods, setting them up for an excess of omega-6 fats from seed oils and sugar while important micronutrients are lacking.**

For instance, among children and adults with high intakes of added sugars — more than 25% of their caloric intake — dietary intake of vitamins A, C and E and magnesium were low.[1] Research published in Critical Reviews in Food Science and Nutrition also suggested that more than 80% of the U.S. population is at risk of certain nutrient inadequacies.[2]

Among adolescents, who are growing rapidly and have an increased need for nutrients as a result, low vitamin and mineral intake is also common, according to a study in BMC Nutrition.[3]

## Many Adolescents Missing Out on Important Vitamins and Minerals

The study involved 342 Slovenian adolescents with an average age of 15.4 years. In addition to collecting data on eating habits, body height and mass and micronutrient intake the researchers assessed participants' use of dietary supplements, including multivitamins consumed in popular drinks.

When nutrient intake was considered from diet alone, adolescents often consumed less than recommended amounts of the fat-soluble vitamins A, D and E along with the water-soluble vitamins folate, biotin and pantothenic acid. Minerals such as iodine, chromium and molybdenum were also low.

The adolescents weren't getting enough of these nutrients because three-quarters of them consumed less than 54% of the recommended amounts of healthy foods like fruits, vegetables and dairy products.[4] At the same time, nearly three-quarters of the youth exceeded the recommended limit for sweet and salty snacks — by 453% — and the recommended amount of meat products by 320%.[5]

Sodium intake was also high, "most likely due to excessive consumption of meat/meat products (except female DS [dietary supplement] users) and sweet/salty snacks."

The use of dietary supplements helped to increase the adolescents' intake of vitamins and minerals, particularly magnesium and vitamin C. However, the team stated, "Although DS use improved micronutrient intake in adolescents (especially vitamin C and magnesium), activities on public-health interventions should be focus to improve their diets."[6]

Overall, the study stressed that adolescents are not getting adequate nutrient intake from diet alone — a finding confirmed from other studies in developed countries such as Spain, France, Portugal and Germany. The researchers concluded:[7]

> *"After reviewing and summarizing nutrient deficiencies in adolescents from different studies, almost the entire spectrum of nutrients has been identified as those with inadequate intake (e.g. minerals calcium, magnesium, iron, zinc, potassium, and iodine, and vitamins D, K, E, C, folic acid, B2, B6, B12), making it difficult to highlight the most important ones."*

## Children and Adults Are Lacking in Nutrients, Too

Other age groups are also lacking in important nutrients needed for optimal health, potentially compromising immune system function, exacerbating chronic disease and hindering growth and development.[8]

One study suggested that, globally, 56% of preschool-aged children, or 372 million, are deficient in at least one of three micronutrients. Among non-pregnant women of reproductive age, 69%, or 1.2 billion people, are deficient.[9]

While most individuals with micronutrient deficiencies live in low- and middle-income countries, close to half (48%) of women and children in high-income countries also have at least one micronutrient deficiency.[10] A computer analysis of diets from 20 people, including professional and amateur athletes and sedentary adults, also revealed that each one fell short of meeting recommended micronutrient levels.[11]

"Food alone in all 20 subjects did not meet the minimal Recommended Daily Allowances (RDA) micronutrient requirements for preventing nutrient-deficiency diseases," the team

concluded.[12]

## Nutrient Levels in Food Are Falling

Many nutrient deficiencies are the result of poor dietary choices or lack of access to healthy foods. However, foods are also generally less nutritious than they used to be. It's interesting to note that even in 1936, concerns were raised about nutrient levels in food. An excerpt from the 74th USA Congressional Record from that year states:[13]

> *"Laboratory tests prove that the fruits, the vegetables, the grains, the eggs and even the milk and the meats of today are not what they were a few generations ago (which doubtless explains how our forefathers thrived on a selection of foods that would starve us today).*
>
> *It is bad news to learn from our leading authorities that 99% of the American people are deficient in these minerals, and that a marked deficiency in any one of the more important minerals actually results in disease. Any upset of the balance, any considerable lack of one or another element, however microscopic the body requirement may be, and we sicken, suffer, and shorten our lives."*

Nutrient declines have only continued. In one analysis of 43 garden crops from 1950 to 1999, "apparent, statistically reliable declines" were detected for six nutrients — protein, calcium, riboflavin, vitamin C, phosphorus and iron. The declines ranged from 6% for protein to 38% for riboflavin.[14]

A study that analyzed nutritional quality changes in wheat from 1850 to 2016 also found nutrient levels had dropped. While the amount of carbohydrates in wheat increased, protein content and other nutrients, including manganese, iron, zinc and magnesium, declined.[15,16]

## Common Nutrient Deficiencies

In the U.S., it's estimated that 1 in 3 Americans are deficient in at least 10 minerals, putting them at risk of chronic diseases such as heart disease and diabetes.[17] Even at a subclinical level, being deficient in vitamins and minerals can cause a range of symptoms, ranging from fatigue and irritability to heart palpitations and pain.[18] Common nutrient deficiencies include:

1. **Vitamin D —** An estimated 40% of Europeans are deficient in vitamin D, while 13% are severely deficient.[19] Among older Americans, up to 100% may be deficient, in large part due to less time spent outdoors.[20]

   The only way to gauge whether you might need to supplement, and how much to take, is to get your level tested, ideally twice a year, in the early spring, after the winter, and early fall when your level is at its peak and low point. Vitamin D is best obtained via sensible sun exposure, but supplementation may be necessary for some people.

2. **Magnesium —** It's estimated that more than half of the U.S. population may not be consuming enough magnesium.[21] You only need about 150 milligrams (mg) to 180 mg a day to prevent deficiency, but optimal levels are closer to the 600 mg/day level. For comparison, the RDA for magnesium is around 310 mg to 420 mg per day depending on your age and sex.[22]

   Dark green leafy vegetables are a good source of magnesium, and juicing your greens is an excellent way to boost your intake, although supplementation is likely necessary for most people.

3. **Vitamin K2 —** Known for its role in bone and heart health, vitamin K2 is found in grass fed animal products such as meat, eggs, liver and dairy, as well as in fermented foods, including sauerkraut, certain cheeses and the fermented soy food natto — items that many Americans do not consume enough of.

4. **Vitamin B12 —** A water-soluble vitamin also known as cobalamin, vitamin B12 plays a role in numerous biochemical reactions and neurological functions in your body,

including DNA synthesis.[23] Your body can't make vitamin B12 on its own, so it must be obtained via your diet or supplementation.

It's been suggested that nearly two-fifths of Americans may have lower than ideal B12 levels, with 9% deficient and 16% below 185 pmol/L, which is considered marginally deficient.[24] While vegetarians and vegans are susceptible since B12 is derived from animal products, even meat eaters may be deficient, as problems with absorption are common.

5. **Vitamin A —** An estimated 51% of adults are not consuming enough vitamin A,[25] increasing their risk of degenerative diseases like macular degeneration, a leading cause of blindness in the U.S.[26]

   Vitamin A is a group of nutrients that falls into two different categories: retinoids found in animal foods and carotenoids found in plant foods. The two are chemically different and provide different health benefits, but both are necessary for optimal health. Plant foods high in beta-carotene include sweet potatoes, carrots, cantaloupe and mangoes.[27] Animal foods rich in vitamin A include liver, egg yolks and grass fed butter.

## Can a Multivitamin Make Up for Nutrient Deficiencies?

No dietary supplement can replace a healthy diet full of nutrient-dense whole foods. But if you're not eating right, or you suspect you have nutrient deficiencies, a multivitamin may help to fill in the gaps. In one study, a team of researchers from Oregon State University found a significant positive effect when older men used multivitamins. The multivitamin group had improved biomarkers of nutrition while the placebo group did not.[28]

In fact, nutrition biomarkers fell in some of the placebo participants, which "suggests that food alone was not enough to keep their vitamin and carotenoid levels up," Tory Hagen, principal investigator and Helen P. Rumbel Professor for Healthy Aging Research at the Linus Pauling Institute explained.[29]

Daily multivitamin use in older adults may also give memory a boost. In one study, researchers estimated that taking a multivitamin improved performance by "the equivalent of 3.1 years of age-related memory change" compared to placebo[30] and could not only help maintain cognitive functioning but potentially enhance it later in life.

Since multivitamins contain both water- and fat-soluble vitamins, it's generally recommended you take half your daily dose in the morning, with breakfast, and the other half with your main meal. Be sure that you're not using a multivitamin to replace real food, however.

Dietary supplements should be used in addition to a healthy lifestyle, not in place of it. You can also work with a holistic health care provider to help you identify any nutrient deficiencies in your body and use targeted supplements and foods to address them.

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