The American Diet, Nutrient Intake and The Case for Multivitamins

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Recently, respective friends of mine made the following two comments:
- “I don’t take any vitamins. There’s no need to. I get them from my food.”
- “There’s no proof that taking a multivitamin has any value.”

Not surprisingly, it wasn’t the first time I heard these comments. In fact, I’ve been hearing variations on this theme for the past thirty years or so—and they are just as inaccurate now as they were then. Of course I don’t just expect you to take my word for it, nor should you. Rather let’s examine the facts.

A Good Diet

Let’s begin with the premise that it is necessary to eat a good diet in order to receive the maximum amount of vitamins and minerals that foods have to offer. But what constitutes a good diet? According to conventional dietetics, the USDA’s MyPlate (which replaced MyPyramid, the previous diet guidelines) fits the description.¹

The MyPlate icon depicts five food groups using a mealtime place setting of a plate and a glass. It is divided into sections of approximately 30 percent grains, 30 percent vegetables, 20 percent fruits and 20 percent protein, accompanied by a smaller circle representing dairy, such as a glass of low-fat/nonfat milk or a yogurt cup.

The basic rationale for the switch from MyPyramid to MyPlate was explained by First Lady Michelle Obama when MyPlate was unveiled. “Parents don’t have the time to measure out exactly three ounces of chicken or to look up how much rice or broccoli is in a serving…. But we do have time to take a look at our kids’ plates…. And as long as they’re eating proper portions, as long as half of their meal is fruits and vegetables alongside their lean proteins, whole grains and low-fat dairy, then we’re good. It’s as simple as that.”²

Nevertheless, MyPlate is not without its critics. Walter Willett, PhD, Chair of the Department of Nutrition for Harvard School of Public Health (HSPH), criticized MyPlate, saying, “unfortunately, like the earlier U.S. Department of Agriculture pyramids, MyPlate mixes science with the influence of powerful agricultural interests, which is not the recipe for healthy eating.”³ Consequently, HSPH released its own adjusted and more detailed version of MyPlate, called the Harvard Healthy Eating Plate. Harvard’s plate features a higher ratio of vegetables to fruit, adds healthy oils to the recommendation, and balances healthy protein and whole grains as equal quarters of the plate, along with recommending water and suggesting sparing dairy consumption.

Whether following MyPlate or the Harvard Healthy Eating Plate, these dietary guidelines don’t translate into actual benefits if Americans don’t follow the recommendations. So let’s examine how many Americans actually adhere to dietary recommendations.

Report Card On American Diets

The diet of most Americans need to improve, according to the USDA, and indicated by the Healthy Eating Index (HEI). During 1999–2000, the diets of most people (74 percent) needed improvement (fig. 1). Only 10 percent of the population had a good diet; 16 percent had a poor diet.⁴ Unfortunately, the diet quality of Americans, as assessed by the most recent HEI in 2010 (which assessed 2007–2008 diets), did not change, with three exceptions. Scores declined for Sodium and increased for Whole Fruit and Empty Calories.⁵

In both 2001–02 and 2007–08, HEI-2010 scores were below the maximum possible score for all food components, except for Total Protein Foods. In 2007–08, scores for Greens and Beans and Whole Grains were below 50 percent of their maximums. Scores for the remaining food components were...
also substantially below their maximums (57 percent to 72 percent) in most cases. HEI-2010 researchers concluded, “The diet quality of Americans is far from optimal and, according to the HEI-2010 total score, did not improve overall between 2001–02 and 2007–08.”

**Nutrient Intake Of Americans**

So for the 10 percent of Americans that are following dietary guidelines, will they receive 100 percent of the recommended daily intake (RDI) for micronutrients (vitamins and minerals)? According to the goals of nutrient intake established by the USDA, comparing the nutritional goals for Americans to the nutrient content of foods consumed in a 2000 calorie per day diet, there will be insufficient amounts of vitamin D, vitamin E, choline, magnesium (for men only) and potassium. Imagine that—even if you follow dietary guidelines you won’t be reaching 100 percent of your nutrient intake goals.

![Percentage Vitamin Decline in Foods](chart.png)

But let's take this a step further and examine the actual nutrient content of our foods. Has it changed in the last two decades? Are we still getting the same amount of nutrients from foods that we used to get? Once again, data from the USDA shows that the vitamin content of foods has indeed changed—and not for the better:

This decline is made even worse when you consider that this includes foods that are already enriched with vitamins. Furthermore, the most recent National Health and Nutrition Examination Survey (NHANES) indicates that:

- Vitamin B6, iron and vitamin D are the three nutrients with the highest prevalence of deficiency.
- Vitamin C and vitamin B12 are nutrients with intermediate prevalence of deficiency.
- Older adults were more likely to be vitamin B12 deficient.
- Men were more likely to be vitamin C deficient compared to women.
- Non-Hispanic black and Mexican-American (12 percent) people were more likely to be vitamin D deficient compared to non-Hispanic white people.

**Other Diet Plans**

But what if you're following a different diet plan rather than MyPlate? Do you fare any better? One study addressed this question by examining the nutrient content of four popular diet plans: two different versions of the Atkins Diet, The South Beach Diet and the DASH Diet. Analysis determined that each of the four popular diet plans failed to provide minimum recommended daily intake (RDI) sufficiency for 27 of the micronutrients (vitamins and minerals) analyzed. Further analysis of the four diets found that an average intake of 27,575 calories would be required to achieve sufficiency in all 27 micronutrients! Six micronutrients (biotin, vitamin D, vitamin E, chromium, iodine and molybdenum) were identified as consistently low or nonexistent in all four diet plans. Clearly, eating a different diet plan isn’t likely to improve your dietary report card where nutrients are concerned.

**The Multivitamin: A Nutrition Insurance Policy**

This research makes a good case for the daily use of a multivitamin. I like to think of it as a nutrition insurance policy that helps to fill in the gaps for those nutrients you may not be getting in your diet. In fact, this position was stated in the Journal of the American Medical Association back in 2002:

Most people do not consume an optimal amount of all vitamins by diet alone. Pending strong evidence of effectiveness from randomized trials, it appears prudent for all adults to take vitamin supplements.

Their stated reason for taking this position was: Vitamin deficiency syndromes such as scurvy and beri beri are uncommon in Western societies. However, suboptimal intake of some vitamins, above levels causing classic vitamin deficiency, is a risk factor for chronic diseases and common in the general population, especially the elderly.

Furthermore, in a study of 90,771 men and women, the regular use of a multivitamin was found to significantly improve adequate intake of nutrients compared to non-users. Also, recent research found that multivitamin supplements are generally well tolerated, do not increase the risk of mortality, cerebrovascular disease, or heart failure, and their use likely outweighs any risk in the general population (and may be particularly beneficial for older people). So the bottom line is that multivitamins really do work as a nutrition insurance policy.
toms, anxiety, fatigue and confusion. Supplements containing high doses of B-vitamins (e.g., multivitamins) may be more effective in improving mood states.

**AGING:** At the ends of our chromosomes are stretches of DNA called telomeres. These telomeres protect our genetic data, making it possible for cells to divide. Each time a cell divides, telomeres get shorter. When they get too short, the cell can no longer divide and becomes inactive or “senescent” or dies. This process is associated with aging. In a cross-sectional analysis of data from 586 women (35 to 74 years), multivitamin use was assessed and relative telomere length was measured. The results were that multivitamin use was significantly associated with longer telomeres. Compared with nonusers, the relative telomere length was on average 5.1 percent longer among daily multivitamin users. It is possible, therefore, that multivitamins may help us live longer.

**Conclusion**
Research shows that Americans are not generally eating a good diet—and even those who do aren’t necessarily getting sufficient amounts of all of the important vitamins and minerals. Multivitamins can work as a nutrition insurance policy, helping to fill in the missing nutrient gaps. Furthermore, other research indicates that regular multivitamin use may help reduce the risk for cardiovascular disease and some cancers, while helping to reduce stress, improve energy and maybe even help you live longer.

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Other Multivitamin Benefits

In addition to functioning as a nutrition insurance policy, the daily use of a multivitamin may offer other benefits as well.

CARDIOVASCULAR: A 12-week, randomized, placebo-controlled study of 182 men and women (24 to 79 years) found that a multivitamin was able to lower homocysteine levels and the oxidation of LDL-cholesterol—both of which are highly beneficial in reducing the risk for cardiovascular disease. Other multivitamin research has also demonstrated effectiveness in lowering homocysteine levels.

A 6-month, randomized, double-blind, placebo-controlled study of 87 men and women (30 to 70 years) found that multivitamin use was associated with lower levels of C-reactive protein, a measurement of inflammation associated with cardiovascular disease and other degenerative diseases. Other multivitamin research in women has shown similar results.

A Swedish, population based, case-control study of 1296 men and women (45 to 70 years) who previously had a heart attack and 1685 healthy men and women as controls, found that those using a multivitamin were less likely to have a heart attack. Other multivitamin research in Swedish women has shown similar results.

CANCER: A large-scale, randomized, double-blind, placebo-controlled study was conducted with 14,641 male U.S. physicians initially 50 years or older, including 1312 men with a history of cancer, to determine the long-term effects of multivitamin supplementation on incidence of various types of cancers. Results showed that during a median follow-up of 11.2 years, men with a history of cancer who took a daily multivitamin had a statistically significant reduction in the incidence of total cancer compared to those taking a placebo.

STRESS/ENERGY: A human clinical study with 96 healthy men (18 to 46 years) examined the effect of multivitamin supplementation in relation to plasma interleukin-6 (IL-6, a pro-inflammatory chemical produced by the body) and anger, hostility, and severity of depressive symptoms. The results showed that plasma IL-6 was associated with anger, hostility, and severity of depressive symptoms, and that multivitamin use was associated with lower plasma IL-6 levels.

A review of scientific literature indicated that patients complaining of fatigue, tiredness and low energy levels might have low levels of vitamins and minerals. Certain risk groups like the elderly and pregnant women were identified, as was the role of B-vitamins in energy metabolism. Results found that supplementation with nutrients including B-vitamins (e.g., a multivitamin) can alleviate deficiencies, but supplements must be taken for an adequate period of time.

A meta-analysis of eight randomized and placebo-controlled studies evaluated the influence of diet supplementation on stress and mood. Results showed that supplementation reduced the levels of perceived stress, mild psychiatric symp-

References

11. Ward E. Addressing nutritional gaps with multivitamin and