

Deficits in a World of Plenty

Before we delve too much deeper into the answers, into nutrients and their association with depression, we should spend a few pages talking about how common nutrient deficiencies are. Many people will tell you that nutrient deficiencies are very rare in the United States and in other advanced industrial countries. We have access to fresh food, all year long. Why would we ever end up deficient in nutrients?

Look on the list of ingredients of your nutritious breakfast cereal or the snack food you pick up from a quick stop. What ingredients do you see? When thiamin is listed as an ingredient, it was added in the manufacturing process. It is not native to the cereal grain. Folic acid, thiamin, riboflavin, magnesium, zinc, and other nutrients are commonly added to cereals.

Have you ever wondered why companies add vitamins and minerals to your food?

First, it is marketing. A nutritional label with 45 percent of your daily value of zinc might get your attention. As consumers are becoming more nutrition oriented, we might choose the food item with added nutrients over one that adds as little as possible. Moms looking for healthy snacks for their children might compare the iron or calcium content of two products and choose the one with more nutrients. We may be likely to choose the “fortified” foods as a result because of their impressive lists of nutrients. Fortified foods have become popular because we are more nutrient conscious.

Second, our food is fortified because there would be severe nutritional consequences otherwise. The folic acid campaign in the United States is the key example. In the 1990s, the Food and Drug Administration in the United States required that grain products be fortified with folic acid. Our foods

are fortified with folic acid because without the added vitamin, most of us would be dangerously low in this key nutrient. Low intake of folic acid or food folate in pregnant women is associated with neural tube defects (such as spina bifida) in our babies.

Look at the label on your cereal box and note the level of folic acid. It is in your cereal because the food processing company is required to add it, not because Mother Nature put it there. If folic acid did not get added to our grains, not only would we have more incidences of neural tube defects in this country, we might have higher rates of depression as well. You will see that in the next chapter. So in this sense, fortification of our food may be a good thing, though it is not without potential pitfalls and remains controversial among nutritionists.

The fact that we live in a world in which a boxed cereal can supply adequate folic acid is evidence to some that, with such impressive technology, we are not likely to be nutrient deficient. The government will continue to respond to widespread nutrient deficiencies with government policy as it has with folic acid.

But as far as I am concerned, if you are still deficient today in folic acid or in magnesium and it is aggravating your depression, you probably do not want to wait around for government action. I certainly do not recommend it.

So how likely is it that your nutritional intake is inadequate today?

You will probably be surprised. Let's look at the data.

The U.S. Department of Health and Human Services conducts an ongoing food survey called the National Health and Nutritional Examination Survey (NHANES). Thousands of people are interviewed about their food intake. If they report that they eat one cup of broccoli and three scallops a day, the NHANES team determines the nutrient profile of that food intake from a massive food database collected and maintained by the United States Department of Agriculture (USDA). For every survey respondent, the NHANES team determines their nutrient intake. With the survey sampling techniques, we get a pretty fair idea of what people in the United States eat.

Based on the 2001–02 survey, we should be thankful that folic acid is added

to our food. Note table 6.1 below. I present the average intake of various nutrients as determined by the 2001–02 NHANES survey in the first column. I also provide the twenty-fifth percentile value—25 percent of respondents fall at or under that nutrient intake. The dietary reference intake (DRI) is in the third column and my commentary is in the fourth.

First, take a look first at magnesium. The DRI is 320 milligrams. The average intake for women nineteen and older is 240 milligrams. Twenty-five percent of us do not even consume 200 milligrams of magnesium a day. How bad is our intake of magnesium? Very bad. Most of us are likely deficient. And this has implications for depression.

What about iron? We should be eating at least 18 milligrams of iron a day. On average, we eat 13 milligrams and the bottom quarter of us eat about 10 milligrams a day—nearly half the amount we should be consuming according to the government. I also consider that intake to be “very bad.”

As a country, our zinc, B-6, and folic acid consumption is poor as well. On average we consume the DRI. But a solid 25 percent of us do not consume this basic level of these nutrients. Our intake of B-12 is much better.

There is an issue that makes the magnesium, iron, and zinc results even worse than they appear from the food survey. Some of our food contains substances that hinder their absorption. You will learn about phytic acid in the grains and legumes chapter and oxalic acid in the fruit and vegetable chapter. You will see that if we are counting on these food groups for our minerals, we need to prepare them properly to maximize our bodies’ absorption of them.

Nutrient	Average intake	25th percentile	DRI	How bad?
Magnesium (mg)	240.0	184.0	320.0	Very bad
Iron (mg)	13.1	10.2	18.0	Very bad
Zinc (mg)	9.7	7.5	8.0	Bad
B-6 (mg)	1.5	1.2	1.3	Bad
Folic acid/folate (mcg)	483.0	359.0	400.0	Bad
B-12 (mcg)	4.3	2.8	2.4	Better

All the nutrients in table 6.1 are implicated in depression. Our fat intake is also implicated—low levels of Omega-3 fatty acids are associated with depression. Our intake of this necessary fat is also dreadfully low as you will see.

So, yes, we live in one of the wealthiest parts of the globe with tremendous access to food and to food technology that should keep us healthy. But so far, we have done a very poor job of translating that wealth to our dinner table.

DEPRESSION IS ON THE RISE

We have the tendency in the United States to note the eating habits of the generations following us and scoff. Back in high school, I remember eating a Zinger for lunch and a teacher making a comment along the lines of “kids these days.”

“But this is the only time I’ve eaten a Zinger!” I wanted to exclaim as the teacher walked away. Instead, I just slumped down in my chair.

As an adult I have returned to that same school to do data analysis work and have been shocked at “kids these days.” There are children who have a jumbo soda and bag of chips for lunch every day. Their lunch even appears to be somewhat socially acceptable.

Growing rates of disease and obesity among young people have made these lunch time habits the concerns of policy makers. These worsening eating habits have implications for mental health as well.

Rates of depression are increasing with each generation. A cross-national study reported in the *Journal of the American Medical Association* in 1992 found that each new generation is more likely to suffer from depression at some point during its life cycle. Depression is also likely to hit earlier in life. (Cross National Collaborative Group 1992).

In the 2004 National Health Interview Survey, we see that trends continue to worsen. Researchers asked women about their ability to do basic things like carry groceries, visit friends, or enjoy leisure time at home. They then asked a follow-up question: *what condition causes you to have difficulty engaging*

in these activities? About 1 percent of respondents mentioned depression. Of those, researchers asked, *how long have you had depression, anxiety, or an emotional problem?*

The younger the respondent was, the more likely she was to have battled with depression. She was also likely to have battled for a longer portion of her life. Women currently in their sixties (my mother's age) have lost an average of 15 percent of their lives to depression—about nine years. Women in my generation, approaching forty, have lost nearly one-third of their lives to depression, also about nine years. Women my age have lived half as many years as women my mother's age and yet we have lost as many years of our lives to depression as our mothers have. Rates are worse still for younger women.

The changing nutrient intake among “kids these days” is likely one player in this picture.

THE NUTRIENT-DEPRESSION LINK

The human body is complicated and researchers still do not know why, on a fundamental level, we get depressed. Neurotransmitters seem to play a role. Raising the levels of these neurotransmitters in the brain is the goal of popular depression medications—the selective serotonin reuptake inhibitors (SSRIs) and serotonin norepinephrine reuptake inhibitors (SNRIs).

Because depressed people tend to have relatively low levels of serotonin and norepinephrine, the SSRIs and SNRIs work to keep the cells in the brain from reabsorbing these neurotransmitters. They stay locked in the synapses, the spaces between the cells, allowing all the cells to use them as they send signals throughout the brain. The medication essentially raises the brain's levels of neurotransmitters although the whole body's levels are the same.

St. John's Wort also works to block the reuptake of serotonin and is used in complementary medicine in the United States and in mainstream medicine in Europe. Amino acid therapy, the therapy that finally brought me relief, also works to raise your body's levels of neurotransmitters.

The key point for our purposes, however, is that our neurotransmitter levels are also affected by our general nutrient status. Our body uses tryptophan to make serotonin. But in order to do so, it needs vitamin B-6, folate, and magnesium. B-6 also helps convert phenylalanine into tyrosine and tyrosine into norepinephrine. Tyrosine is a common amino acid therapy recommended for depression by alternative medicine doctors because of the importance of phenylalanine and norepinephrine in feeling well. However, in the presence of a B-6 deficiency this amino acid therapy simply will not be effective.

Tyrosine is one of the many supplements I took early on in my depression and it did not do a bit of good even though I had low levels of tyrosine. The reason it was not effective is because I was also deficient in vitamin B-6. In light of a B-6 deficiency, supplemental amino acids will not be effective without added B-6 (which many amino acid blends include).

Regardless of the type of path you use to survive that critical state of depression, look back at your therapy and ask yourself why you needed it. If you used an SSRI, 5HTP, or St. John's Wort, ask yourself why your levels of serotonin were so low in the first place that this therapy was necessary. Do you eat no foods that contain tryptophan? Do you have insufficient amounts of B-6, folate, or magnesium to convert your tryptophan to serotonin? Why is it that you cannot produce these neurotransmitters? It is a basic biological function. Your body should be up to the task if it's working properly.

These are questions one of my doctors asked me when I started on the amino acid therapy. But I was feeling great and I had at least five hundred tasks to catch up on. I was busy and I didn't hear his questions. I had begun a nutrient-rich diet, so I was not concerned about my nutrient intake. I moved on in a state of ignorant bliss without realizing how critical it was to find out why my body was not working properly and not producing all those important neurotransmitters. Yet it is critical for long-term wellness to conduct this search.

FIND THE ANSWERS

My grandmother is the poster child for the need to fix the problem. In the 1940s and 1950s her postpartum depression was treated with shock therapy when she had “nervous breakdowns” and her medication was not sufficient.

Researchers are finding that shock therapy increases the level of zinc in the brain (Nowak et al. 2005). Brain zinc levels are correlated with depression; if you are low in zinc, you are likely to be depressed. My grandmother never treated her zinc deficiency. Well, actually she never had a zinc test, so we don’t know for sure that she was deficient. But we do know this: she developed type 2 diabetes at a young age, developed heart problems in her fifties, and died looking very elderly at the age of sixty-one.

We also know that depression and heart problems are associated with low levels of zinc in the body. Researchers are also finding that people suffering from depression benefit from added Omega-3 fatty acids in their diets. People with diabetes or heart disease may benefit from Omega-3s as well. Depression, diabetes, and heart disease share at least one common deficiency: Omega-3 fatty acids. I argue today that my grandmother never fixed the cause of her postpartum depression and she went on to develop other degenerative diseases.

Don’t follow that path.

In the next section I provide you with the tools to get to the root of your depression and to go on to live a much healthier life. These are the tools that I have used in my search, tools that depressed people do not have the time or energy to investigate themselves. You will be able to discuss these tools with your doctor and work on improving your quality of life. But before that discussion, let me say something about two controversies that can get in the way of discussing this issue of rebuilding: medication choices and diet choices.

Medication Choices

If you are on or have been on medication for depression, how many times have you felt as though someone who did not use medication judged you to be weak?

If you have not been on antidepressant medication, how many times have you felt as though people have not taken your depression seriously because, after all, you didn't need medication?

You really can't win with either choice.

For my part, I don't care what methods you used to get through that acute period. I am really glad you are here on the other side with the rest of us. Not everyone is as lucky as we are and I wish they had found *anything at all* to change their outcome.

The good news in this book is that whatever your prior choices for therapy, you will benefit by working with your doctor to fix the cause of your problem. In the next section, I refer to studies that use vitamins and minerals in *combination with medication*, so if you are on medication now you can see that there are clinical trials that use both medication and nutritional supplements to help improve the health of the patients in the studies.

Diet Choices

I used to be a vegetarian and was somewhat close to eating no animal products for a while. I became an omnivore because it was the fastest, most efficient way for me to add nutrients to my diet. There is evidence as well that animal fat is necessary in the human diet. The jury is also still out on whether we need animal products for our B-12 and one form of Omega-3 fatty acid (DHA), so I eat animal forms of these nutrients. Others choose the algae forms.

Let's agree to disagree. In this book I discuss strategies to maximize the nutrition in your food. If you are a vegetarian, you will find good tricks to increase the vitamin and mineral content of your plant-based diet. I want people to have the tools to fix the underlying cause of their depression, whatever foods they may choose to eat or avoid.