Podcast: Better Moods with Better Diets Transcript

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Nutrition and Psychological Well-Being

Doesn't it seem like when it comes to nutrition, there are more opinions than facts to go around? Every day we hear new [music] theories about diets and supplements and best foods to eat. Well, my role is to take the mystery out of good nutrition and look at the science. Welcome to the NutritionFacts Podcast. I'm your host, Dr. [music] Michael Greger. Today we look at the connections between diet and psychological well-being.

There are two components of psychological health, the absence of mental health disorders such as depression, as well as the existence of positive psychological well-being. That's the focus of an emerging field of positive psychology focusing on happiness, life satisfaction, and flourishing, which may translate to physical benefits such as improvements in blood pressure, immune function, and longevity.

What is the contribution of food consumption to well-being? Well, studies have linked the consumption of fruits and vegetables with enhanced well-being.

A systematic review of research found evidence that consuming fruits and vegetables was associated with increased psychological well-being. Okay, but that's just an association. A famous criticism in this area of research is that maybe there's just some inherent personality trait or type of family upbringing that might lead people simultaneously to eat in a healthy way and also to have better mental well-being. So, the diet is merely correlated [snorts] with but incorrectly gives the appearance of helping to cause the level of well-being. But recent research circumvented this problem by seeing if changes in diet are correlated with changes in mental well-being. In effect, studying the evolution of well-being and happiness after increases in the consumption of fruits and vegetables. Increased fruit and vegetable consumption appeared predictive of increased happiness, life satisfaction, and well-being up to 0.24 life satisfaction points for an increase of eight portions a day. What does that mean? Is that a lot? Is that a little? That's a lot, equal in size to the psychological gain of going from unemployed to getting a job.

My daily dozen recommendations are for at least nine servings of fruits and veggies a day. This study was done in Australia. It was repeated in the UK and researchers there found that same thing, though the Brits may need to bump up their daily minimum to more like 10 or 11 servings a day.

Okay, but does eating fruits and veggies also reduce the risk of depression and anxiety? I mean, well-being is nice, but governments and medical authorities are often interested in the determinants of major mental illness, not life satisfaction. And indeed, using the same data set, but instead looking for mental illness, eating fruits and vegetables may help to protect against future risk of clinical depression and anxiety as well.

Fruit, Vegetables, and Happiness

A systematic review and meta-analysis of dozens of studies found that every 100 g increased intake of fruit was associated with a 3% reduced risk of depression.

That's about half an apple. Yet less than 10% of most Western populations even consume a bare minimum. Maybe the problem is we're just telling people about the long-term benefits of fruit intake for chronic disease prevention rather than the near immediate improvements in well-being.

So, maybe we should be advertising the happiness gains, but first we need to make sure they're real. We've been talking about associations. Yes, a healthy diet may reduce the risk of future depression or anxiety, but being diagnosed with depression or anxiety today could also lead to lower fruit and vegetable intake. Now, in these studies you can indeed show that the increase in fruit and vegetable consumption came first and not the other way around. But as a great enlightenment philosopher pointed out, just because the crows before dawn doesn't mean the caused the sun to rise. To prove cause and effect, you need to put it to the test with an interventional study. Unfortunately, to date many studies were like this, where those randomized to eat fruit showed significant

improvements in anxiety and depression, fatigue, and emotional distress. Wow, amazing. But that was compared to chocolate and potato chips.

Apples, clementines, and bananas making people feel better than a sort of potato chips and chunky chocolate wafers. Not exactly [clears throat] a revelation. This is the kind of study I've been waiting for, a randomized controlled trial in which young adults were randomized to a diet as usual group, encouragement to eat more fruits and veggies, or a third group given two servings of fruits and vegetables a day to eat over and above their regular diet. And the ones given fruits and veggies showed improvements in their psychological well-being with increases in vitality, flourishing, and motivation within just two weeks.

However, simply educating people to eat their fruits and vegetables may not be enough to reap the full reward. So, perhaps greater emphasis needs to be placed on actually providing people with fresh produce. For example, offering free fruit for people when they shop. I know that would certainly make me happy.

In our next story, we look at how fasting, exercise, and diet can raise BDNF levels in our brain. There's accumulating evidence that brain-derived neurotrophic factor may be playing a role in human depression. BDNF controls the growth of new nerve cells, so low levels may explain the atrophy of specific brain areas you see among depressed patients. That may be one of the reasons exercise is so good for our brains.

Fruits and Veggies Against Depression

Start an hour day exercise regimen, within 3 months you can get a quadrupling of BDNF release from your brain. This makes sense. I mean, anytime we were desperate to catch prey or desperate not to become prey ourselves, we needed to be cognitively sharp. And so when we're fasting or exercising or in a negative calorie balance, our brain starts churning out BDNF to make sure we're firing on all cylinders. So, of course, Big Pharma is eager to get drugs to mimic this effect, but is there any way to boost BDNF naturally? Yes, I just said it, fasting and exercise. Okay, okay, but is there anything we can add to our diet to boost BDNF? Well, higher intakes of dietary flavonoids appear to be protectively associated with symptoms of depression. The Harvard Nurses' Study followed tens of thousands of women for years and found that those who were eating the most appeared to reduce the risk of coming down with depression. Flavonoids occur naturally in plants, so there's a substantial amount in a variety of healthy foods, but but wait, how do we know the benefits are from the flavonoids and not just from eating healthier in general? You don't know until you put it to the test. See, some fruits and vegetables have more than others. Apples have more than apricots, plums more than peaches, red cabbage more than white, kale more than cucumbers. So, if you randomize people into one of three groups, more high flavonoid fruits and vegetables, more low flavonoid fruits and vegetables, or no extra fruits and vegetables at all, after 18 weeks only the high flavonoid group got a significant boost in BDNF levels, which corresponded to an improvement in cognitive performance. The BDNF boost may help explain why each additional daily serving of fruits and vegetables is associated with a 3% decrease in the risk of depression.

Exercise, Fasting, and BDNF

A teaspoon a day of the spice turmeric may boost BDNF levels more than 50% within a month, consistent with the other randomized controlled trials that have so far been done. Nuts may help, too. In the Predimed study, where people were randomized to be sent weekly batches of nuts or extra virgin olive oil, the nut group lowered their risk of having low BDNF levels by 78%.

And brain-derived neurotrophic factor is not just implicated in depression, but schizophrenia as well. Have those with schizophrenia undergo a 12-week exercise program, and they get a significant boost in BDNF levels, leading the researchers to suggest that exercise-induced modulation of BDNF may play an important role in developing non-pharmacological treatment for chronic schizophrenia patients.

Okay, but what actually happened to their schizophrenia symptoms? Let's find out. 30 individuals with schizophrenia randomized to ramp up to 40 minutes of aerobic exercise three times a week or not, and there did appear to be an improvement in psychiatric symptoms such as hallucinations, as well as increasing their quality of life. In fact, you can actually visualize what happened in their brains. Loss of brain volume in a certain region

appears to be a feature of schizophrenia, but 30 minutes of exercise three times a week and you can get up to a 20% increase in size of that region within 3 months. Calorie restriction may also increase BDNF levels in schizophrenics, but they didn't just have them eat less, but eat healthier, less saturated fat and sugar, and more fruits and veggies. It's like the Soviet fasting trials for schizophrenia. They reported these truly unbelievable results, supposedly restoring people to function. Fasting described as an unparalleled achievement in the treatment of schizophrenia. Okay, but part of the problem is that the diagnostic system the Soviets used is completely different, making any results hard to interpret, but they do have a subgroup that does seem to correspond to the Western definition, and they still report between 40 and 60% improvement rates from fasting. But that's not all they did. After being fasted for up to a month, they were put on a meat and egg-free diet. So, when they report these, you know, remarkable effects even years later, that's for those who stuck with the diet. Uh those who broke the diet evidently relapsed, and the closer the diet was followed, the better the effect. They note that not all patients were able to remain vegetarian, but they tried to keep meat to a minimum. And look, we know from randomized controlled trials that just removing meat and eggs can improve mental states with even just 2 weeks.

And so, you know, it's hard to know what role the fasting itself played in the reported improvement. A single high-fat meal can drop BDNF levels within hours. And you can prove it's the fat itself by seeing the same thing injecting fat straight into their veins.

And perhaps that helps explain why increased consumption of saturated fats and a high-fat diet may contribute to brain dysfunction.

Flavonoids, Turmeric, and Nuts

Neurodegenerative diseases, long-term memory loss, cognitive impairment. Maybe that helps explain why the standard American diet has been linked to higher risk of depression. Dietary factors modulating the levels of brain-derived neurotrophic factor. Finally today, we've known our mental state can affect our gut, but might our gut bacteria be affecting our mental state? Before Thorazine was invented in 1950, mental illness was often treated surgically.

In fact, in 1949, the inventor of the lobotomy was awarded the Nobel Prize. But before tens of thousands were lobotomized, colectomy was all the rage. There was this theory that bad bacteria in the gut, intestinal putrefaction, was the cause of mental illness. So, the cure was to just surgically remove the colon.

Yes, the surgery killed about one in three, but when they didn't die, surgeons bragged that, for example, when he resected the colons of school children as a preventative measure, there was a cessation of abnormal sex practices such as masturbation, which was viewed at the time as a precursor for mental illness later in life. There were others, though, that took less drastic approaches, suggesting one could instead treat this intestinal putrefaction by changing the intestinal flora. So, over a century ago, there were reports of successfully treating psychiatric illnesses like depression with a dietary regimen that included probiotics. Doctors perceived a connection between depression and feces deficient in quantity and moisture and very offensive in odor. So, they gave people probiotics, and not only did people feel better psychologically, but their feces increased in quantity, became softer, more regular consistency, and the offensive smell diminishes.

Exercise and Diet for Schizophrenia

Concurrent with the probiotics, however, all patients were started on a vegetarian diet. So, it may not have been the probiotics at all. This field of inquiry remained dormant for about 100 years, but a new discipline has recently emerged known as enteric, meaning intestinal, neuroscience. Our enteric nervous system, the collection of nerves in our gut, has been referred to as our second brain, given its size, complexity, and similarity. We've got so many nerves in our gut, as many as in our spinal cord.

And it kind of makes sense or the size and complexity of our gut brain is not surprising when considering the challenges posed by the interface with our largest body surface.

We have 100 times more contact with the outside world through our gut than through our skin. And we also have to

deal with our 100 trillion little friends down there. Takes a lot of processing power.

Now, anyone who's gotten butterflies in their stomach knows that our mental state can affect our gut. In fact, everyday stressors can affect the integrity of our gut flora.

So, our mental state can affect our gut, but can our gut affect our mental state? We didn't know until recently. For example, many suffering from chronic fatigue syndrome complain of gut dysfunction. So, researchers tried giving people probiotics to see if their mental and emotional state could be improved, and indeed it appeared to help. What about healthy people, though?

This is the study that really rocked the scientific establishment. An assessment of the psychotropic properties of probiotics. One month of probiotics was found to significantly decrease symptoms of anxiety, depression, anger, and hostility.

How is that possible?

Gut Bacteria and Mental Health

Well, a variety of mechanisms has been proposed for how intestinal bacteria may be communicating with our brain. Until that study was published, though, the idea that probiotic bacteria administered to the intestine could influence our brain seemed almost surreal, like science fiction. Science, yes, but fiction, no. Likely, organisms already inside us carry out some degree of influence on our mental well-being. So, might people suffering from certain forms of mental health problems benefit from a fecal transplant from someone with a more kind of happy-go-lucky bacteria?

We don't know, but this ability of probiotics to affect brain processes is perhaps one of the most exciting recent developments in probiotic research.

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Information about my books, How Not to Die, [music] How Not to Diet, and How Not to Age, is at nutritionfacts.org/books. All proceeds, which I get, are donated directly to charity. [music] And I've got a new book in the publication pipeline, the manuscript for How Not to Hurt, on diet and lifestyle approaches to pain management. It's been handed in and will be published December 15th.

I'm going to be doing a series of webinars to feature some of the new research that I discovered. Sign up for our free newsletter at nutritionfacts.org/subscribe to stay updated on when those will be.

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