

Nutrition: Anxiety, Depression and Cognitive Disorders - Part 2

There probably hasn't been a single presentation in this entire training where we haven't talked about inadequate sleep and how it contributes to whatever subject we're talking about, and this is no different. With depression and mental health disorders, sleep may be one of the most important factors. Thirty percent of adults report less than six hours of sleep a night. That's up from about 1 or 2 percent in the '60s reporting that, and this is crucial because most research suggests that the average person needs seven to eight hours to function properly. Forty million Americans now report chronic long-term sleep disorders, and if you look in the literature, there's a significant association between poor sleep and major depression, anxiety, and suicidal behavior. That's in large part because sleep is when our brain gets much needed rest and rejuvenation, particularly in deep sleep, and if we're not getting enough of that, all kinds of things happen in our brain that lead to these mental health disorders.

Exercise or physical activity is another major contributing factor. Less than 3 percent of American adults get 30 minutes of activity a day, which is kind of shocking, and only 20 percent get the recommended amount of physical activity per week. The average adult spends 50 to 70 percent of the day sitting, and that's one of the biggest problems because even if you're getting three or four hours a week of exercise in a gym or something like that, if you're sitting for most of the rest of the time, you're still going to be at high risk of disease, including depression and mental health disorders. Exercise is known to improve cognitive function, boost mood, and even increase IQ.

We live an increasingly sedentary lifestyle. Less than 50 percent of Americans participated in an outdoor activity even once in 2013. Again, that's a shocking statistic, given how human beings evolved primarily living outdoors and with a very active lifestyle. Thirty percent of Americans say they just don't spend any time at all outside. Those that do get less than 30 minutes in the sun. Only 10 percent of children polled get any daily outdoor activity. Increasingly kids are indoors at school all day. They come home and they're indoors. They're playing video games. They have dinner. They maybe play a little bit inside or do homework if they're older, and they go to bed. Inadequate exposure to bright light outside during the day can cause problems with our circadian rhythm, and too much exposure to light at night with television, video games, and even normal room light can also disrupt our circadian rhythm. This leads to HPA axis dysfunction, which is a risk factor for depression and other mental health disorders.

Impaired gut function is a major contributor. The gut has been referred to as the second brain. The gut and the brain are part of a unified central nervous system. Most of the output of the brain goes into the pontomedullary system, which in turn goes into the vagus nerve, which innervates the entire gut, so we have a bidirectional connection between the gut and the brain. As I mentioned earlier, inflammatory cytokines that are produced in the gut travel into the bloodstream and affect the brain. The vast majority of the body's serotonin, 95 percent of what's produced, is in the gut.

We have 400 to 500 times more melatonin in the gut than in the brain. There's a strong relationship between the gut microbiome and the chemicals that bacteria produce and brain function and mood. Studies have shown that significant changes in the gut bacteria of animals exposed to various stressors early in life lead to changes in brain function later in life. Significant differences have been identified in the gut microbiome of patients with major depression compared to healthy controls, and then we have a lot of research showing that probiotics reduce anxiety, improve emotional cognitive response, and improve mental well-being, and prebiotics have been shown to lower cortisol and decrease stress and the anxiety response. So there are numerous lines of evidence connecting the health of the gut with mental health, and unfortunately, even though there's been some attention given to this in the dominant paradigm, I would say in conventional medicine, if the average person goes to their doctor complaining of depression, very few conventional physicians are going to think about the gut at all, and even fewer are going to know what to do about it even if they are thinking in that direction.

Disruptions in the gut microbiome and intestinal permeability, of course, lead to systemic inflammation. Endotoxins like lipopolysaccharide can escape the gut and provoke release of inflammatory cytokines, and then those are associated with several different mental health disorders, including depression and anxiety.

Small intestine bacterial overgrowth, or SIBO, is associated with depression, anxiety, and mood disorders. Fifty to 85 percent of irritable bowel syndrome may be caused by SIBO, although that number is somewhat controversial, but in any case, there's a growing body of research suggesting that IBS, irritable bowel syndrome, is caused or contributed to by disrupted gut microbiome, whether that's SIBO in the small intestine or whether it's just an imbalance of good and bad microbes in the colon or other pathogens, fungal overgrowth or parasites, that have been undetected, some kind of pathological change in the function of the gut, instead of just a gut-brain axis issue or a psychosomatic disorder, which IBS was originally considered to be.

As a general diet strategy to improve mood and gut health, not surprisingly I recommend a Paleo type of diet. It's anti-inflammatory. It removes a lot of the foods that can provoke gut permeability like gluten or dairy or grain. You can use Cyrex testing to identify foods that cause gut permeability. You can increase prebiotic-rich foods, foods with fermentable fiber. If the patient tolerates FODMAPs, which they may not if they have gut issues, those are foods that do stimulate the growth of beneficial bacteria, things like onions, Jerusalem artichoke, lentils, if they tolerate legumes or lentils in particular, but then all kinds of fruits and non-starchy vegetables and starchy plants. You can add daily fermented foods to promote good gut bacteria, things like kefir or sauerkraut, and then if the patient has significant gut issues, then interventions like the low-FODMAP diet or GAPS or the Specific Carbohydrate Diet can be helpful, at least in the short term, to get those under control. As a reminder, though, if the patient is on an antimicrobial treatment for SIBO, they should consume some fermentable fiber to improve the efficacy of the treatment, and we talk about that in the SIBO treatment section.

Celiac disease and non-celiac gluten sensitivity are associated with a variety of neurological and psychiatric complications. Up to 22 percent of patients with celiac disease develop cognitive dysfunction. Up to 57 percent of people with neurological dysfunction of unknown origin test positive for anti-gliadin antibodies. Neurological conditions associated with gluten sensitivity include seizure disorders, neuropathy, ADD and ADHD, autism, ataxia, anxiety, depression, and schizophrenia. Unfortunately this is another area where the phrase WNL applies. That stands for “We’re not looking.” If the average person goes to a doctor and presents with these kinds of symptoms, they’re not going to get a gluten test, and if they do, it will probably be the standard test for anti-gliadin antibodies alone, which is not sufficient. As we’ve discussed elsewhere, you need a much more comprehensive workup, but very few patients are getting this in the conventional model. So if you have a patient with neurological dysfunction, it’s imperative to do a thorough test, like Cyrex Array 3, for gluten sensitivity or sensitivity to the entire wheat proteome, and then you’d want to do a 60-day complete gluten elimination as a standard recommendation for any patient with neurological dysfunction.

Depression and mental health disorders can also be caused by malnutrition. That might sound strange, given that obesity affects, now, 38 percent of the US population, but one way to think of it is that we are well fed, but undernourished. People eat a lot of energy-dense foods, but nutrient-poor foods. So let’s talk a little bit about macronutrients.

Protein: Most people get enough of it in the typical US diet, but for those who are vegetarian or vegan, they may not get enough. Neurotransmitters are created from amino acids that are provided by protein in the diet. Too little protein can exacerbate mood disorders, and especially if the diet is not containing all of the essential amino acids. The ideal intake for someone with mental health disorders should be one-half to one gram per pound of body weight, which is one to two grams per kilogram.

One risk, though, with very high protein intakes, in terms of mental health, is excess methionine. Methionine is an amino acid that’s found in lean proteins like lean meat or egg whites. It’s an important amino acid, we need it, but if you have too much methionine and not enough glycine, which is found in things like bone broth or cartilage or the more gelatinous cuts of meat, like beef shanks or chuck roast, then that can contribute to neurological symptoms. Excess methionine can also cause elevated homocysteine, which leads to inflammation, and when you get more glycine from broth and these gelatinous cuts of meat, that increases methionine metabolism. Higher glycine intake from these foods may protect against neurological conditions and improve brain function. Some studies have shown significantly lower glycine levels in depressed patients. High-dose treatment with glycine as a supplement has been shown to reduce symptoms and improve cognition and psychosis in schizophrenia. Glycine has been shown to protect against neurological damage that’s caused by stroke. It functions as an inhibitory neurotransmitter by antagonizing norepinephrine, which is a catecholamine that has stimulating effects, and glycine has been shown to help with sleep and anxiety.