

Relation between Food and Brain Health

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Abstract

Improved new strategies are needed for the prevention of recovery from mental illness as these disorders leading cause of disability worldwide. Today Mental trouble seems to be spreading everywhere in some way or the other. Poor food choices and selection of foods might contribute to deficiency of the nutrients which actually can result in depression and other mental illness. Some amino acids like tryptophan, tyrosine, methionine, and phenylalanine are often helpful in treating many mild disorders including depression."This article will review the association between Food and brain health.

Helping patients to eat a diet that is rich in brain food – Consuming antioxidants-rich foods and vitamins-rich fruits and vegetables will have a positive impact on the brain and certainly lessen the destructive effects of free radicals. Foods like carrots, pumpkin, spinach, oranges, tomato, nuts and seeds, will be of great help. These foods may also help to reduce the risk of age related neurodegenerative diseases such as dementia and Alzheimer's diseases. Considerations for dietary intervention for the betterment of mental health will be discussed.

Keywords: Brain Health, Food, Mood.

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Clinical Case

Mr Meethalal, a 43-year-old married man who presents with irritability and a low mood for two months. He is currently treated with Panazep 12.5 mg. While his focus and work function are improved, he reports low appetite, fatigue, and difficulty in sleeping. He has realized that he has started getting angry over the matter. He feels guilty and concerned about not connecting emotionally to his young children ages 2 and 4. Further history reveal no substance use, no active medical issues, and blood work reveals no abnormalities.

The right decision of food has a profound effect on your mental state. It is also a saying that "As you eat, so will your mind". In cases like Mr Meethalal's, knowing the food history is very important to start the protocol of treatment, both in assessing low appetite as a possible medication side effect, or as a symptom of depression. Furthermore, a food history is essential to understand whether dietary recommendations could assist in his recovery.

Over 2,000 years ago, Hippocrates said, "let thy food be thy medicine and thy medicine be thy food."¹

Several nutritional deficiencies, such as vitamin B12, B9 (folate), and zinc, can cause symptoms of depression and dementia such as low mood, fatigue, cognitive decline, and irritability.

Dietary patterns high in processed foods, or a "western dietary pattern," are strongly correlated with an increased risk of developing depression, mild cognitive impairment.^{2,3,4,5}

Eating small portions of proteins several times in a day will help boost energy in the human body and will clear the mind. "Protein-rich tuna fish, turkey, chicken have amino acids which help the human body stay alert. Beans, peas, milk, soya, yogurt too are a good source of healthy proteins. People who are suffering from depression must ensure they do not consume alcohol, or smoke, and even cut down on caffeine intake to overcome the problem."

Overweight or obese people are more likely to suffer from depression because excess body weight will impact immune system and bring hormonal changes among both men and women. Obese

individuals must immediately work on cutting down weight if they intend to overcome depression, and healthy food habits is first step in that direction.

Many people who are depressed also have problems with alcohol or drugs; and these not only can interfere with mood, sleep, and motivation, they can also reduce the effectiveness of depression medications.

This is Your Brain on Food

The brain is an organ with very high metabolic and nutrient demands. On average, the brain consumes 20% of a person's daily caloric intake, approximately 400 calories per day. It is composed of 60% fat, and contains high concentrations of cholesterol and polyunsaturated fatty acids (PUFAs) such as Omega-3s. Production of monoamine neurotransmitters such as serotonin, norepinephrine, and dopamine, important in the pathophysiology of mental illness, depends on adequate building blocks of amino acids, and mineral dependent co-factors. Folate and other B vitamin. Proper function of the methylation cycle also reduces homocystiene^{6,7} elevated levels of which are linked to cardiovascular disease and depression.

Omega-3 fatty acids form an integral part of neuronal cell membranes and influence a number of essential processes in the central nervous system. More specifically, they regulate neurotransmission, influence gene expression, and directly effect neurogenesis and neuronal survival. They also act as anti-oxidants and have anti-inflammatory properties.

It has been seen that use of Turmeric and its active component curcumin has been found to reduce the symptoms of depression and Alzheimer's diseases. It has strong anti-inflammatory and anti-oxidant benefits.

The Four Primary Goals of the Happiness Diet

1. Optimal brain nourishment with particular emphasis on the following key brain nutrients:

- Long-chain omega-3 fats—DHA/EPA
- “Slow-release,” nutrient and fiber-dense, low-to-moderate glycemic carbs – fruits, veggies, beans, and physically intact whole grains
- Brain-healthy proteins
- Magnesium, Zinc, Vitamin D, and the B vitamins - inadequate levels of these nutrients are not uncommon and can be detrimental or even devastating to brain health. Additionally, stress increases the bodily needs for these nutrients.
- Powerful antioxidants, including vitamins C and E and most importantly the plant-based antioxidants, particularly the anthocyanins in blue/purple plant-based foods and the flavonoids in dark chocolate, tea, extra virgin olive oil, nuts, coffee, apples, and herbs and spices. Anthocyanins and flavonoids are members of the polyphenol family of plant antioxidants. Polyphenols have been shown to stimulate neurogenesis (formation of new brain cells) and protect the brain from oxidative damage.

2. A healthy cardiovascular system

- A healthy and optimally functioning heart and arteries are fundamental for brain health.

3. Reducing oxidation in the brain and body

4. Reducing inflammation in the brain and body

The food choices we make have an enormous influence on the health and function of our brains—with profound influence on cognitive function, mood, stress, and how our bodies respond to stress.

Bottom line: You can eat yourself smarter, happier and more peaceful or stupid, sad, and stressed.

Therefore, it appears that dietary pattern can influence mental health through a number of mechanisms. Basic building blocks of the brain such as monoamine neurotransmitters, myelin, and neuronal membranes depend on adequate nutrient intake.

Summary

In order to promote mental health and recovery from mental illness, one could consider encouraging patients to eat a diet that is optimal for brain health. Specifically, this diet would include omega-3 fatty acids, Brain healthy protein, magnesium, zinc, antioxidants, fruits vegetables, vitamins B, D, C and E. A diet that is rich in brain food- fish, seafood, beans & legumes, leafy greens, fruits and other vegetables, olive oil (monounsaturated fat), yogurt, nuts – can be an effective and relatively simple way to promote mental health and recovery from mental illness that can easily be integrated into health care.

Mr Meethalal is provided with education regarding the importance of adequate nutrition for his mental health and encouraged to make some changes with his diet in line with the considerations discussed above. He is glad to hear about steps he can take on his own to improve his mental wellbeing. A few weeks later in follow-up, His irritability improves.

Four weeks of treatment with medication and food intervention, Mr Meethalal's depressive symptoms have improved significantly. He is feeling positive about the direction his life is heading, and plans to continue to pay attention to his food choices.

Helping patients to eat a diet that is rich in brain food- fish, seafood, beans & legumes, leafy greens and other vegetables, fruits, olive oil (monounsaturated fat), yogurt, nuts – can be an effective and relatively simple way to promote mental health and recovery from mental illness that can easily be integrated into health care.

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