



DEPRESSION AND NUTRITION

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For decades, the prevailing treatment for mental health problems has been medication (and psychotherapy to a lesser extent). Most antidepressants drugs cause severe side effects, which usually causes the patients to skip taking their medications. Such noncompliant patients are at a higher risk for committing suicide or being institutionalized.

Mental health problems are believed to be the result of a combination of factors, including age, genetics and environmental factors. One of the most obvious, yet under-recognized factors in the development of major trends in mental health is the role of nutrition. The evidence indicates that food plays an important contributing role in the development, management and prevention of specific mental health problems such as depression. The most common nutritional deficiencies seen in mental disorder patients are of omega-3 fatty acids, B vitamins, minerals, and amino acids that are precursors to neurotransmitters.¹⁻⁵

Nutritional neuroscience is an emerging discipline shedding light on the fact that nutrition and depression are intricately and undeniably linked and nutritional factors are intertwined with human cognition, behavior, and emotions. The dietary intake pattern of the general population in many Asian and American countries reflects that they are often deficient in many nutrients,

especially essential vitamins, minerals, and omega-3 fatty acids.⁶ Studies have indicated that daily supplements of vital nutrients are often effective in reducing patients' symptoms.⁷ The significance of various nutrients in mental health, with special relevance to depression has been discussed below.

Carbohydrates: Carbohydrates have been found to affect mood and behavior. Carbohydrates trigger the release of insulin in the body, which triggers the entry of tryptophan to brain. Tryptophan in the brain affects the serotonin levels.⁸

Proteins: Proteins are made up of amino acids and are important building blocks of body. Many of the neurotransmitters in the brain are made from amino acids. The neurotransmitter dopamine is made from the amino acid tyrosine and the neurotransmitter serotonin is made from the tryptophan.⁹ If there is a lack of any of these two amino acids, there will not be enough synthesis of the respective neurotransmitters, which is associated with aggression and low mood in the patients.

Omega- 3 fatty acids: Grey matter of brain contains 50% fatty acids that are polyunsaturated (PUFA) in nature (about 33% belong to the omega-3 family). Experimental studies have revealed that diets lacking omega-3 PUFA lead to considerable disturbance in neural function.¹⁰ Research findings point out that an imbalance in the ratio of the essential fatty acids (EFAs), namely the omega-6 and omega-3 fatty acids, and/or a deficiency in omega-3 fatty acids, may be responsible for the heightened depressive symptoms.

B-complex vitamins and micronutrients: According to a study reported in Neuropsychobiology, supplementation of nine vitamins, 10 times in excess of normal

recommended dietary allowance (RDA) for 1 year improved mood in both men and women.¹¹ Several studies have revealed the mental health may be compromised due to deficiency of micronutrients like chromium, zinc.

Vitamin B12 (Cyanocobalamin): Supplementation with cobalamin enhances cerebral and cognitive functions in the elderly; it frequently promotes the functioning of factors related to the frontal lobe, in addition to the language function of people with cognitive disorders.¹²

Folate: It has been observed that patients with depression have blood folate levels, which are, on an average, 25% lower than healthy controls.¹³ Low levels of folate have also been identified as a strong predisposing factor of poor outcome with antidepressant therapy.

Iodine: Iodine plays an important role in mental health. The iodine provided by the thyroid hormone ensures the energy metabolism of the cerebral cells.¹⁴

Iron: Iron is necessary for oxygenation and to produce energy in the cerebral parenchyma and for the synthesis of neurotransmitters and myelin. Iron deficiency is known to cause fatigue and depression.¹⁵

Selenium: Low selenium intake is associated with lowered mood status.¹⁶ Intervention studies with selenium with other patient populations reveal that selenium improves mood and diminishes anxiety.

Zinc: At least five studies have shown that zinc levels are lower in those with clinical depression.¹⁷ Furthermore, intervention research shows that oral zinc can influence the effectiveness of antidepressant therapy.¹⁸

Current researches in psychoneuroimmunology and brain biochemistry indicate the possibility of communication pathways that can provide a clearer understanding of the association between nutritional intake, central nervous system, and immune function thereby influencing an individual's psychological health status. These findings may lead to greater acceptance of the therapeutic value of dietary intervention among health practitioners and health care providers addressing depressive disorders.

REFERENCES

1. Hibbeln JR: Fish consumption and major depression. *The Lancet* 1998, 351(9110):1213.
2. Rudin DO: The major psychoses and neuroses as omega-3 essential fatty acid deficiency syndrome: substrate pellagra. *Biol Psychiatry* 1981, 16(9):837-850
3. Bell IR, Edman JS, Morrow FD, Marby DW, Mirages S, Perrone G, Kayne HL, Cole JO: **B complex vitamin patterns in geriatric and young adult inpatients with major depression.** *J Am Geriatr Soc* 1991, **39**(3):252-257
4. Eby GA, Eby KL: **Rapid recovery from major depression using magnesium treatment.** *Med Hypotheses* 2006, **67**(2):362-370
5. Buist R: **The therapeutic predictability of tryptophan and tyrosine in the treatment of depression.** *Int J Clin Nutr Rev* 1983, **3**:1-3

6. American psychiatric A: Diagnostic and statistical manual of mental disorders. 4th ed. Washington DC: 2000.
7. Shaheen Lakhan SE, Vieira KF. Nutritional therapies for mental disorders. *Nutr Jr* 2008;7:2
8. Sathyanarayana Rao TS, Asha MR, Ramesh BN, Jagannatha Rao KS. Understanding nutrition, depression and mental illnesses. *Indian J Psychiatry* 2008;50:77-82
9. <http://diet.hajimeru.biz/category/health/nutritionj/>.
10. Sinclair AJ, Begg D, Mathai M, Weisinger RS. Omega-3 fatty acids and the brain: review of studies in depression. *Asia Pac J Clin Nutr* 2007;16:391-7
11. Benton D, Haller J, Fordy J. Vitamin supplementation for one year improves mood. 1995;32:98-105
12. Bourre JM. Effect of nutrients (in food) on the structure and function of the nervous system: Update on dietary requirements for brain, Part 1: Micronutrients. *J Nutr Health Aging* 2006;10:377-85
13. Coppen A, Bailey J. Enhancement of the antidepressant action of fluoxetine by folic acid: A randomized placebo controlled trial. *J Affect Disord* 2000;60:121-30
14. Sathyanarayana Rao TS, Asha MR, Ramesh BN, Jagannatha Rao KS. Understanding nutrition, depression and mental illnesses. *Indian J Psychiatry* 2008;50:77-82
15. Benton D. Selenium Intake, mood and other aspects of psychological functioning, *Nutr Neurosci* 2002;5:363-74
16. Shor-Posner GR, Lecusay, Miguez MJ, Moreno-Black G, Zhnag G, Rodriguez N, et al . Psychological burden in the era of HAART: Impact of selenium therapy. *Int J Psychiatry Med* 2003;33:55-69
17. Levenson CW. Zinc, the new antidepressant? *Nutr Rev* 2006;6:39-42.

18. Nowak G, Szewczyk A. Zinc and depression, An update. Pharmacol Rep 2005;57:713-8.

