

# Nutrient Depletion-Induced Neuro-Chemical Disorder (Brain Hunger) as a Basic Factor of Psychopathology

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**Mini review**

Volume 2 Issue 3

**Received Date:** July 07, 2017

**Published Date:** July 22, 2017

## Abstract

The prevalence of psychopathology as well as its incidence points to the need of generating different and more integrative methods of research and treatment that include the nutritional aspects of mental health. Therefore, this article briefly shows important scientific evidence of the deleterious effects of nutritional under nourishment as an essential factor in the genesis of psychopathology. Consequently, in order to understand and generate an integrative nutritional view of this problem we postulate that there is a Nutrient Depletion-Induced Neuro-Chemical Disorder (Brain Hunger) as a promising explanation and topic of study. At the same time it will serve as framework to understand and serve as foundation for nutritional interventions to manage of psychopathology.

**Keywords:** Brain Hunger; Nutrient Depletion; Neuro-Chemical Disorder; Psychopathology Resumen

## Introduction

The prevalence and increasing incidence of mental health (psychological/ neuropsychiatric) conditions and their consequences have stimulated the research for more comprehensive etiological explanations and therapeutic approaches. Even though biochemical and neurophysiologic approaches have exposed potential explanations for psychopathology, deleterious effects of deficient nutritional intake on the neurobiological/biochemical substrates of behavior are indispensable in integrative healthcare. Therefore, irrespectively of their professional and theoretical background, therapists should be aware of the diverse manifestations of psychopathology [1] as well as its underlying causes.

Numerous researchers have explored the relation between nutritional problems and mal-adaptative behaviors, suggesting there is a relationship between

them, as well as the neurological and epigenetic implications of nutritional deficiencies on the development of psychopathology. Davidson and Kaplan (2012) identified an association between higher levels of nutrient intakes and better mental health, consistent with a growing body of evidence exposing the association between dietary status and deviant behavior. In animal models, malnutrition during a vulnerable period of brain development leads to a decrease in brain cells, myelin production, and number of synapses, in addition to alterations in neurotransmitter systems [2-6].

In humans about 45 essential micronutrients are indispensable for life and must be supplied through the diet because they cannot be synthesized in the human body, meaning that at least 30 vitamins, minerals, and dietary components are needed by the body that are not manufactured on its own in sufficient amounts. As a

plausible consequence psychiatric disorders are expressions of cumulative deficiencies of micronutrients required to manage oxidative stress [7-9].

Kidd (2007), points out that the omega-3 fatty acids docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) are orthomolecular, conditionally essential nutrients that enhance quality of life, have influence on behavior and mood, and generate neuro protective metabolites, observed in double blind, randomized, controlled trials, DHA and EPA combinations have shown benefits in conditions such as attention deficit/hyperactivity disorder (AD/HD), autism, dyspraxia, dyslexia, and aggression. Also several epidemiological studies have exposed that blood concentrations of vitamins B<sub>6</sub>, B<sub>12</sub>, and folic acid are linked to people's performance on tests of memory and abstract thinking [10,11]. In a randomized clinical trial vitamin D supplementation of patients with Major Depressive Disorder (MDD) for 8 weeks had beneficial effects on the Beck Depression Inventory (BDI), indicators of glucose homeostasis, and oxidative stress. Gesch, Hammond, Hampson, Eves & Crowder (2002) conducted an experimental, double-blind, placebo-controlled, randomized trial of nutritional supplements on 231 young adult prisoners, where those receiving supplementation committed less offenses [12,13].

These are a few examples in which micronutrients can benefit mental health, at the time that supports our position of a Nutrient Depletion-Induced Neuro-Chemical Disorder (Brain Hunger) as a promising explanation and topic of study for future integrative treatments for mental health conditions. Fortunately an increasing amount of literature links dietary choices to brain health and the risk of psychiatric illness suggesting that vitamin deficiencies can affect psychiatric patients in the following ways: a) deficiencies may play a causative role in mental illness and exacerbate symptoms, b) psychiatric symptoms can result in poor nutrition and c) vitamin insufficiency (defined as subclinical deficiency) may compromise patient recovery (Ramsey & Muskin, 2013). Therefore it is essential to study, assess and promote good nutritional intake as a form of promotion of health and prevention of "brain-hunger" which is the genesis of many conditions including psychopathology.

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