

# Nutrition and Bipolar Depression



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## KEYWORDS

- Bipolar depression • Diet • Nutrition • Omega-3 fatty acids • *N*-acetylcysteine
- Vitamin D • Mediterranean diet

## KEY POINTS

- Increasing research has identified the quality of one's diet as a potential major contributor to mood stability and expression. Mediterranean dietary patterns compared with Western dietary patterns may be supportive of good mental health in general and bipolar disorder specifically.
- Patients with bipolar disorder tend to have a poorer quality diet, with increased sugar, high fat, and carbohydrate intake. This may contribute to both poor physical health and mental health.
- Omega-3 fatty acids and *N*-acetylcysteine have been demonstrated to be helpful dietary supplements in the control of bipolar depressive symptoms.

## INTRODUCTION

Nutritional psychiatry is an emerging discipline focused on the relationship between dietary patterns and mental health disorders.<sup>1</sup> Whereas the role of diet in physical health is well-acknowledged, the relationship between diet and mental health has received much less attention. The quality of diet is well known to be associated with many diseases, such as cardiovascular disease, type 2 diabetes, hypertension, and stroke. Therefore, changes that promote good dietary habits are commonly encouraged by health care providers to both prevent and treat these illnesses. However, the role of diet in mental health is much less known and with limited promotion among clinicians. Nevertheless, the impact that nutrition may have on the brain is self-evident. The brain operates at a very high metabolic rate, commanding much of the body's nutrient intake in order to support its structure as well as power its function. Nutritional psychiatry postulates that diet may contribute to either resilience or risk in mental illness.

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Over the last decade, there have been an increasing number of well-designed studies that have demonstrated the association of a healthy diet with improvements in a variety of mental illnesses and symptoms, such as depression, anxiety, attention, and irritability.<sup>2-9</sup> Furthermore, their positive effect sizes suggest certain dietary interventions may be clinically relevant to patients, although as of yet, there are no available data regarding the therapeutic impact of dietary changes on existing mental illness.<sup>10</sup>

The effect of diet in major depressive disorders has recently been an area of more intense study. Two meta-analyses of diet and depression have supported the observation that a Mediterranean-style diet is associated with a protective effect on depression (as well as stroke and cognitive impairments), whereas a Western dietary pattern is associated with an increased likelihood for depression.<sup>4,11</sup> In another meta-analysis, Lai and colleagues<sup>3</sup> concluded that diets that emphasized fruit, vegetables, fish, and whole grains were associated with a reduced depression risk. These results suggest that what we eat may make a difference in how we think, or at least in how we feel.

Evaluation of the role nutrition and nutraceuticals may have in bipolar disorder has received only very limited research attention. At the turn of the century, the data that were available were often cobbled from secondary and experimental analyses of studies with other foci of attention, often confounding clear interpretation.<sup>12</sup> However, with the recent findings of the role that diet may play in depression and a new framework for understanding the relationship between nutrition and affective symptoms, there has been an increased focus on nutrition in bipolar disorder.

The purpose of this article is to review the recent research conducted on nutrition and bipolar disorder, with special emphasis on its depressive phase. Also discussed is the potential of nutritional interventions for bipolar depressions.

## NUTRITION IN BIPOLAR DISORDER

In the past century, the food industry has undergone an enormous transformation, resulting in substantial increases of production, availability, advertising, and sale of food.<sup>12</sup> These changes have caused profound shifts in the composition of diets globally, which in turn, has contributed to the increased burden of diseases (such as cardiovascular disease, stroke, and hypertension) during the latter part of the 20th century.<sup>13,14</sup> As noted above, the Western diet has come under increased scrutiny for its role in these illnesses. A Western diet reflects a higher consumption of foods such as processed meats, pizza, chips, hamburgers, white bread, sugar, flavored drinks, and beer, a pattern that reflects high intakes of saturated fat, sodium, nitrates, and refined carbohydrates, including sugars. In health research, this dietary pattern is frequently compared with a Mediterranean diet, which emphasizes consumption of fruits, vegetables, fish, and whole grains, while limiting unhealthy fats.

Recent data from the SUN (Seguimiento Universidad de Navarra) Cohort study in Spain, an ongoing longitudinal study of 10,094 adults, demonstrated an inverse association between the level of adherence to a Mediterranean dietary pattern and the risk for depression.<sup>7</sup> Similarly, data from the Whitehall II cohort, a British based longitudinal study with 3486 participants, found an increased risk of self-reported depression after 5 years for those adhering more strongly to a Western-style diet pattern, and a reduced risk for those following a whole-foods diet pattern.<sup>15</sup> These findings have raised the question about diet and bipolar disorder as well, especially given the concern that many bipolar patients are at a higher risk of metabolic syndrome.

What kind of diets do patients with bipolar disorder typically have? There have been a few cross-sectional studies that have assessed the diets in small groups of bipolar patients. Jacka and colleagues<sup>16</sup> compared the diets of 23 women with bipolar

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