

## Depression the Hidden Iceberg: Role of Nutrition & Dietary Intake

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**Abstract:** Mental health is a neglected component of health care and dietary habits are a major facet of people's lifestyles that controls health, morbidity, and mortality. Role of nutrition in development of mental health problems is still under recognized, yet evidence relating diet and mental health is growing fast, as well as its impact on short and long-term mental health. Food may play an important causal role in the development, management and prevention of mental health problems such as depression, schizophrenia, attention deficit hyperactivity disorder, and Alzheimer's disease. Depression is a disturbance in mood, attention, and body evident as varying degrees of sadness, frustration, loneliness, hopelessness, self-doubt and remorse. Etiology of antenatal depression is multi-factorial and deeply embedded in socio cultural factors. Depression is a major contributor to the global burden of disease effecting 350 million people yearly (WHO, 2008). It's an international public health concern. A healthy diet may reduce the risk of severe depression; whereas depression can lead to increase or decrease in dietary intake. Both quality and quantity of dietary intake is influenced by stress. Proper nutrition may prove to be an affordable investment for people diagnosed with depression to mitigate their symptoms and improve overall health. Screening and treatment of stress and depression and helping individuals adopt healthy dietary habits can help reduce both; morbidity and mortality and health care costs.

**Keywords -** depression, nutrients, dietary intake, recommendations.

### I. INTRODUCTION

Depression is a disturbance in mood, attention, and body; evident as varying degrees of sadness, frustration, loneliness, hopelessness, self-doubt and remorse (George Mason University, 2007). The symptoms include loss of interest or happiness, diminished energy, troubled sleep, appetite, inability to concentrate and often anxiety. These problems can worsen and lead to considerable impairments in an individual's ability to take care of his or her everyday errands. In the worst case, depression can lead to suicide. According to WHO (2012), approximately 1 million people commit suicide each year, that means 3000 suicides each day.

Various epidemiologic researches have linked the intake of certain nutrients with the reported prevalence of different types of depression. For example, inverse correlations have been found between intakes of fish and levels of depression. Complex carbohydrates and other nutrients like folic acid, omega-3 fatty acids, selenium and tryptophan are thought to decrease the symptoms of depression. People, who have low intakes of folic acid, are more likely to be diagnosed with depression than those with higher intakes. Similar results were observed in studies concerning the association of depression with low levels of zinc and vitamins B1, B2 and C. Treating patients by supplementing with these micro nutrients resulted in relief of symptoms of depression, in some cases as much as 50%.

### II. DEPRESSION AND DIETARY INTAKE

Research studies on general population have shown that depression leads to variety of altered food habits, including meal skipping, lack of interest in food, poor food choices and poor motivation in preparing and cooking balanced meals. These habits have lead to anorexia, weight loss, malnutrition and micronutrient deficiency (Rao, Asha, Ramesh & Rao, 2008). Alternatively, depressed patients have been reported to overeat, experience increased appetite or food cravings particularly for carbohydrate and chocolate, which can lead to weight gain (Rose, Soperski, & Golomb, 2010; Torres & Nowson, 2007; Ruusunen, 2013).

In a systematic review and meta-analysis of dietary patterns of 21 studies, the healthy diet pattern was significantly associated with a reduced risk of development of depression (Lai, Hiles, Bisquera, Hure, Mcevoy

& Attia, 2013). A healthy diet may lower the risk of severe depression, according to a prospective follow-up study of more than 2,000 men conducted at the University of Eastern Finland. Non depressed individuals showed a preference for 'whole food' i.e. vegetables, fruits and fish; whereas depressed individuals selected 'processed food' i.e. sweetened desserts, fried food, processed meat, refined grains and high-fat dairy products (Ruusunen, 2013).

In a study conducted by Christensen and Somers (1994) to assess the dietary intake of individuals experiencing a current episode of major depression, twenty-two females and 7 males diagnosed with depression completed 3-day food records. These food records were analyzed to obtain an estimate of the nutrient intake and it was compared to the Recommended Dietary Allowances (RDA). A significant percentage of the individuals consumed less than the recommendation of one or more nutrients. Depressed subjects tend to consume more carbohydrates in their diets than non-depressed individuals (Christensen & Somers, 1996), and they show heightened preference for sweet carbohydrate or fat rich foods during depressive episodes (Christensen, 2001). High carbohydrate intakes increase brain uptake of tryptophan, which in turn stimulates the synthesis of serotonin (Rogers, 2001).

While depression is the major contributor of disability for both males and females, the incidence of depression is 50% higher among females (WHO, 2008). Depressed women tend to consume fewer nutrients than their non depressed counterparts. According to a cross sectional survey in Tehran, on 430 mothers of elementary school children, revealed that 51.4% of the mothers experience depression. The diet of depressed group had a reduced intake of macronutrients, except for fat (Payab, Motlagh, Eshraghian, Rostami, Siassi, Abbasi, Ahmadi, Karimi, Mahjour & Seifirad, 2012).

### **III. ROLE OF NUTRIENTS**

A number of studies have shown that acute tryptophan depletion produces depressive symptoms and results in worsening of mood (Neumeister, Praschak-Rieder, Hesselmann, Vitouch, Rauh, Barocka, Kasper, 1998). Folic acid deficiency may also associate with depression, and it has particular effects on mood, cognitive as well as social functioning (Reynolds, 2002). Recently, it has been reported that low levels of dietary folic acid are associated with elevated depressive symptoms in middle-aged men (Tolmunen, Voutilainen, Hintikka, Rissanen, Tanskanen, Viinamaki, Kaplan, Salonen, 2003). In general, a low-fat diet may have negative effects on mood (Wells, Read, Laugharne, Ahluwalia, 1998), and altered dietary fat intake can lead to acute behavioral effects such as drowsiness, independent of energy consumption (Lloyd, Green, Rogers, 1994).

A high intake of proteins also seems to increase alertness (Rogers, 2001). Increased dietary serine and lysine may be linked to the pathogenesis of major depressive disorder (Hakkarainen, Partonen, Haukka, Virtamo, Albanes, Lonqvist, 2003). Apart from specific nutrients or vitamins, certain foods may have an effect on mental wellbeing. Warm milk, has been used to treat insomnia. Individuals drinking regular coffee with caffeine have reported to have decreased total sleep time and sleep quality, and increased sleep latency (Shilo, Sabbah, Hadari, Kovatz, Weinberg, Dolev, Dagan, Shenkman, 2002). It has been reported that people with a high consumption of fish appear to have a lower prevalence of major depressive disorder (Tanskanen, Hibbeln, Hintikka, Haatainen, Honkalampi, 2001; Silvers & Scott, 2002). Recently, it has been also reported that increased fish intake in people without depressive symptoms had no substantial effect on mood (Ness, Gallacher, Bennett, Gunnell, Rogers, Kessler, Burr, 2003).

### **IV. TREATMENT WITH SUPPLEMENTATION**

A double-blind placebo-controlled trial with 30 patients showed that omega-3 essential fatty acid supplements alleviated symptoms in patients with bipolar disorder (Stoll, Severus, Freeman, Rueter, Zboyan, Diamond, Cress, Marangell, 1991). In a recent double-blind, placebo-controlled trial on 231 young adult prisoners, by comparing the number of their disciplinary offences before and during the supplementation, antisocial behavior was reduced by the supplementation of vitamins, minerals and essential fatty acids (Gesch, Hammond, Hampson, Eves, Crowder, 2002). Vitamin D supplementation during winter was reported to improve mood in a double-blind, placebo-controlled trial on 44 healthy volunteers (Lansdowne, & Provost, 1998).

### **V. DIETARY RECOMMENDATIONS**

By ensuring that our diet provides adequate amounts of complex carbohydrates, amino acids, essential fats, minerals, vitamins and water, we can achieve mental well being.

1. A healthy diet can be expensive but if spend less on processed foods and snacks; we can buy healthier choices like fish, fruit and vegetables. Buy fruits and vegetables when they are in season. Bean and lentils are good meat substitutes.

2. Eating regular meals maintains blood sugar levels throughout the day. Meal skipping, especially breakfast can lower blood sugar level and lead to low mood and fatigue. Take at least 3 meals a day and snack in between with fruits, nuts and cereals.
3. Limit your intake of refined food made of white flour and high sugar foods. Sucrose is readily absorbed in blood stream and causes a surge of energy that soon wears off as the body increases its insulin production, leaving you feeling tired and low.
4. Wholegrain cereals, pulses, fruit and vegetables contain complex carbohydrates so they are more filling and, the sugar in these foods is absorbed more slowly. These foods are more nutritious as they contain thiamin (B1), folate and zinc. These have been associated with control of mood, and supplementation has shown to improve the mood of people with depression in a few studies.
  - Choose whole-meal bread and granary rather than white e.g. whole-meal chapattis, oat cakes, rice cakes and corn cakes.
  - Choose whole grain, high fiber, low sugar types breakfast cereals.
  - Select Basmati or brown rice and whole-meal pasta
  - Boiled and baked potatoes
  - Aim to eat at least five portions of vegetables and fruits a day.
  - Green vegetables should be steamed, without over cooking or you vitamin content will be lost.
  - Avoid sugar and sugary drinks, cakes, sweets and puddings.
5. Recent research suggests that tryptophan a amino acid found in proteins, can influence mood. So include protein at every meal to ensure a continuous supply, for example; meat, fish, eggs, milk, cheese, nuts, beans and lentils (dhal).
6. Eat a wide variety of foods to keep your diet appealing and to ensure you obtain all the micronutrients you need. If you have bread at one meal, try cereal or potatoes, rice or sweet potatoes at the others. Include at least 2 portions of different fruits or vegetables and a protein food at each meal. Also add red meat and fish, it contains vitamin B12, which seems to be related with mood.
7. Include fish, especially oily fish, in your diet. A few studies suggest that patients on antidepressant medications, when treated with omega 3 oil supplements reduces symptoms of depression.
8. Depression can have diverse effects on dietary habits of people. Some individuals lose interest in food and are unable to shop and cook, so lose weight. Others want to eat more when they are unhappy. Some medications can also influence your appetite. Both excessive weight loss or weight gain can make your mood worse and should be avoided. Weight loss and lack of glucose and other nutrients will deprive the brain of nutrition and effect mood.
9. Not drinking enough fluid has significant implications for mental health. Even mild dehydration can affect our behaviour and feelings. Adult daily water loss is approximately 2.5 litres. If this is not replaced, you will get symptoms of dehydration, including irritability, reduced mental functioning and loss of concentration. People use coffee, colas, and tea to boost energy levels which contain caffeine. However if caffeine is consumed in large quantities, can increase blood pressure, depressive symptoms, anxiety and sleep problems. Caffeine also has a diuretic effect and leads to dehydration.
10. Alcohol has a depressant effect on the brain and can result in a rapid deterioration of your mood. It is also a toxin that has to be deactivated by the liver. During this detoxification process the body uses essential vitamins and minerals. Thiamin, zinc and other vitamin deficiencies are common in heavy drinkers and may cause low mood, aggressive behaviour and irritability, as well as l
11. ong-term mental health problems.
12. Exercise causes release of endorphins in the brain that help us to relax and to feel happy. Exercise is especially important for people with depression. Exposure to sunlight is especially valuable as it affects the pineal gland and directly boosts mood. Exercise has some other advantages; weight control, heart, toned body, prevents bone mass loss and the increased risk of osteoporosis. Whatever kind of exercise you choose, start with 20 minutes, thrice a week and increase accordingly.

## **VI. Conclusion**

Depression is a disorder that can be reliably diagnosed and treated as part of primary health care. Specialist care or psychotherapy is needed for a small proportion of individuals with complicated depression or those who do not respond to first-line treatments. Depression is often treated with antidepressants and other prescription medication which often lead to severe side effects. The literature is inconsistent. More clinical trials are needed to ascertain whether correcting nutrient deficiencies or minimizing the excessive intake of certain micronutrients or foods would reduce the risk and/or the symptoms of depression. Proper nutrition may prove to be an affordable investment for people diagnosed with depression to mitigate their symptoms and improve overall health.

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