International Research Journal of Humanities, Language and Literature
ISSN: (2394-1642)
Impact Factor 7.972 Volume 12, Issue 12, Dec 2025
Association of Academic Researchers and Faculties (AARF)
Website-www.aarf.asia, Email : editor@aarf.asia , editoraarf@gmail.com

A Review Paper on the Bidirectional Relationship Between Food and Mood

Dr. Upasana, Assistant Professor, Department of Home Science
Mahila College Dalmianagar, Rohtas
Veer Kunwar Singh University, Ara, Bihar

Abstract

Nutrition is crucial for sustaining strong mental health. Our eating habits, emotions, and mental well-being are closely connected. The way we feel influences what we choose to eat. The foods we select can influence our mood and even our subsequent food choices. All essential nutrients, including vitamins, minerals, healthy fats, and amino acids, should be regularly included in the diet to prevent deficiencies that could impair brain function and cause mental health conditions to arise or worsen. Diet can influence mental health issues like depression, anxiety disorders, schizophrenia, and obsessive-compulsive disorder. The link between diet and mental health is no longer anecdotal; it's a fact increasingly clarified by science. With mounting evidence showing a close relationship between the food you eat and mental health disorders, improving your nutrition is an effective way to directly alleviate mental health symptoms and enhance your overall well-being. Therefore, the goal of this review paper was to map out the current research detailing the impact of diet on mental health.

Keywords: nutrition, nutrients, food, mood, mental health

1. Introduction

Mental health is considered one of the overlooked components of healthy living. According to the World Health Organization (WHO), mental health is "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and can make a contribution to his or her community" (WHO, Mental Health, 2025). For maintaining a healthy nutritional status, it is crucial to promote normal bodily functions and prevent dysfunction caused by internal and external factors. Although inadequate nutritional intake leads to impaired body processes and proper intake of nutrients and foods leads to restoration or improved body functions (Muscaritoli, 2021). Earlier studies also showed that diet and nutrition play a remarkable role in the mood and mental health of the individual, in addition to body composition and metabolism.

For numerous biochemical processes, a balanced, nutritious diet is very important for sustaining proper mental health and overall well-being. The anti-inflammatory and antioxidant properties of foods like whole grains, lean meats, healthy fats, fruits, and vegetables help in protecting brain cells from oxidative stress and

inflammation, the two major components that contribute to mood disorders and cognitive decline. Additionally, the nutrients from these diets help in neurogenesis, i.e., the growth of new neurons that play a role in the immune system and gut microbiota, which are recognised as important factors for brain health. As we know that long-term dietary modifications also affect gene expression. Through biochemical processes like epigenetic pathways, dietary modifications in gene expression may affect neurological functioning and, in the long term to mental stability. Dietary intake also impacts the structure, activity, and composition of the brain as well as the synthesis and balance of hormones, neuropeptides, and neurotransmitters that regulate mood and behaviour. The gut-brain axis also plays a significant role, as a healthy microbiome enhances emotional stability and manages stress. By including macronutrients like essential fatty acids and micronutrients like vitamins and minerals, multiple metabolic and neurochemical processes are maintained that ultimately help in maintaining optimal emotional and mental health. Therefore, this review paper aims to study the multiple studies that help in understanding the relationship between eating patterns and mental health outcomes.

2. Biological Mechanisms Underlying the Food–Mood Relationship

Understanding the foundations of nutrition makes it easier to understand how dietary components directly impact the body's capability on the physiological and mental level. These are as follows, which is well depicted in Figure number 1.

2.1. Serotonin

The neurotransmitter serotonin, sometimes known as the "feel-good" hormone, is essential for mood stabilization, fostering sound sleep, controlling appetite, and altering the way pain is perceived. In terms of happiness, emotional equilibrium, and general well-being, it is an essential chemical messenger. The fact that many antidepressant drugs are made to increase serotonin's brain activity highlights how crucial it is for controlling mental wellness. It's interesting to note that the brain uses a number of biochemical pathways that depend on vital minerals like calcium, copper, riboflavin (vitamin B2), and vitamin B1 (thiamine) to produce serotonin. As cofactors in the enzymatic processes necessary for the synthesis of serotonin, these nutrients highlight the critical connection between gut health, nutrition, and mental stability (McLean Hospital, 2025).

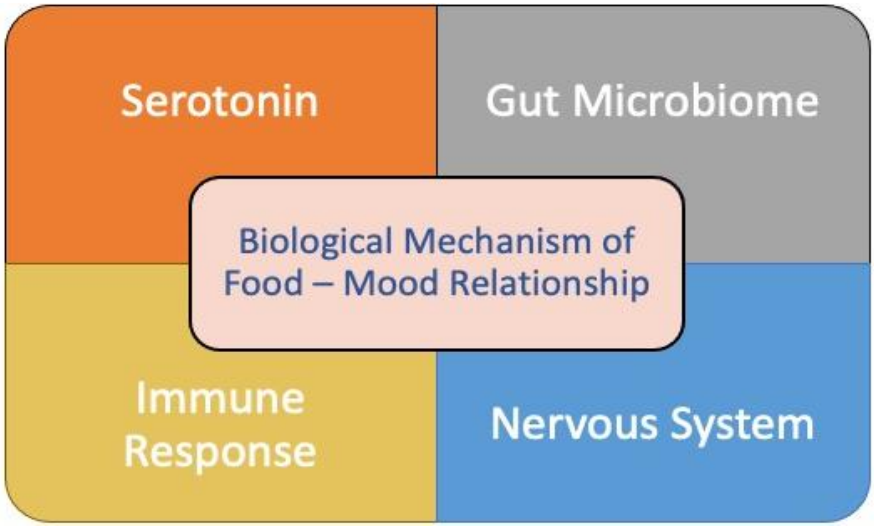

Figure number 1: Biological Mechanism of Food-Mood relationship.

2.2. Gut Microbiome

The intestinal microbiome contains billions of good bacteria that are essential for sustaining health, including the production of certain vitamins and neurotransmitters that may be deficient in the diet. The gut and the brain are in constant, dynamic communication: the gut bacteria tell the brain what they need to do to stay healthy, and the body tells the gut what chemicals to make for different physiological processes. While the relationship between gut health and general physical well-being has long been understood, scientific studies are just now starting to reveal the gut's profound impact on mental health, highlighting its critical role in cognitive and psychological control (McLean Hospital, 2025). The above statement is justified by another previous study in which it was emphasised that the gut microbiota breaks down dietary fiber from plant-based foods to generate short-chain fatty acids (SCFAs), which impact immune responses, facilitate gut–brain signaling, enhance mitochondrial function, and support serotonin synthesis, while also modulating gene expression through epigenetic processes (Jacka, 2019).

2.3. Immune Response Regulation

The body uses inflammation as a natural defense mechanism to guard against dangerous dangers like infections or injuries. Nevertheless, because the body finds it difficult to identify and process some dietary components, especially large levels of refined carbohydrates, saturated fats, and artificial food additives, they can produce persistent low-grade inflammation. Recent studies suggest that this diet-induced inflammation could contribute to the explanation of the association between excessive ultra-processed food consumption and brain health problems. Chronic inflammation has been linked to functional abnormalities and cognitive deterioration in key brain areas, such as the amygdala and hippocampus. hile the amygdala controls the release of stress chemicals like adrenaline and epinephrine, the hippocampus plays a crucial role in stress management by regulating dopamine production, which influences mood and m otivation.

Scientists are now looking more closely at how these inflammatory pathways relate to neurological and psy chological health, emphasizing the close relationship between our diet and the brain's capacity to perform at its best (McLean Hospital, 2025).

2.4. Nervous System

The brain, spinal cord, and peripheral nerves make up the nervous system, which coordinates the actions of different systems throughout the body by sending and receiving signals. The brain's neuroplasticity—its capacity to create new neural connections and cut off those that are no longer required—is crucial to the efficiency of these neural transmissions because it allows the body and mind to adjust to demands from the external environment and internal changes. A malfunctioning neurological system can cause or worsen mental health issues like obsessive-compulsive disorder, bipolar disorder, anxiety, depression, and attention-deficit/hyperactivity disorder. In order for this complex system to develop nerve fibers, build proteins, and preserve neural integrity, proper nutrition is essential. Certain minerals, fatty acids, carbohydrates, and amino acids are examples of essential nutrients. In order to help control neurodegenerative diseases like Alzheimer's and Parkinson's, omega-3 fatty acids, for example, are utilized therapeutically to reduce inflammation in the

nervous system. Flaxseeds, walnuts, and chia seeds are plant-based sources of these healthy fatty acids, as are fatty seafood like sardines and salmon (McLean Hospital, 2025).

3. Mood Boosting Nutrients and Foods

Emotional stability and general mental health are greatly supported by some nutrients, which have very potent mood-enhancing qualities. Our feelings and reactions to stress are directly impacted by these nutrients, which also have an impact on hormone balance, neurotransmitter function, and brain chemistry. Consuming enough of such essential nutrients from a balanced diet, or supplementing when needed, can greatly boost mood, increase stress tolerance, and foster a more optimistic view of life. The following are these nutrients, which are depicted in Figure number 2:

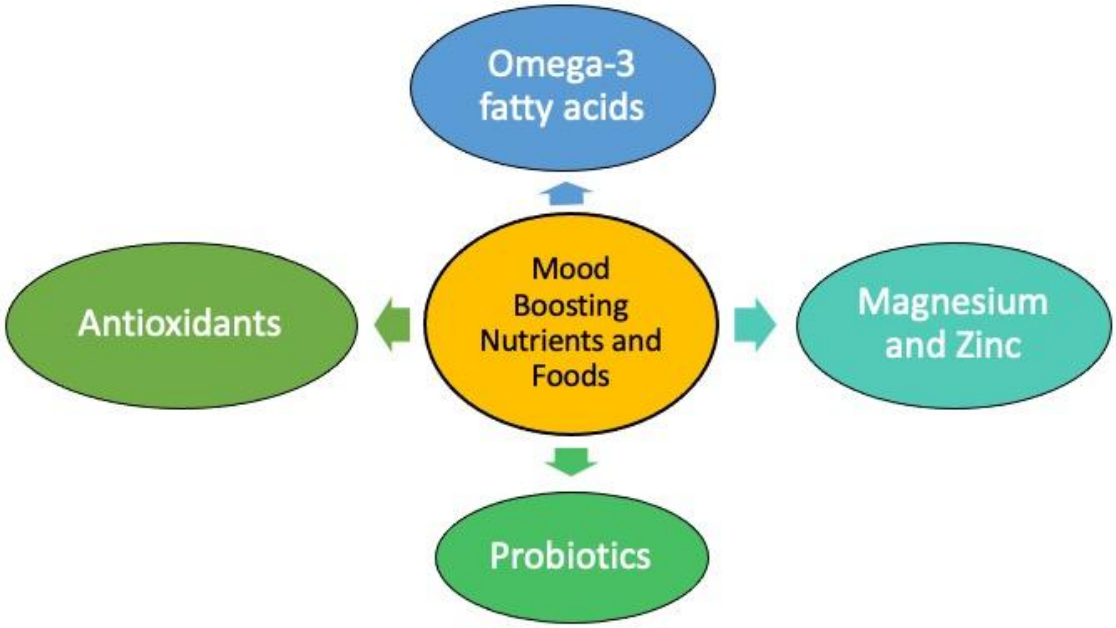

Figure number 2: Mood boosting nutrients and foods.

3.1. Omega-3-fatty acid

Several kinds of marine algae and fish oil are the main sources of omega-3 fatty acids. Nowadays days researchers are gaining interest in studying the mechanism of fish liver oil that helps in treating and preventing mood-related diseases and depression after noting that the rate of depression is lower in populations who consume lots of fish oil in earlier studies. Decosahexanoic acid (DHA) and Eicosapentanoic acid (EPA) are the two major omega-3 fatty acids that are thought to provide an advantage to mental resilience. Strong anti-inflammatory properties are another feature of fatty acids that may help to reduce depressive symptoms and overall enhance mental health (Mischoulon, 2020).

3.2. Magnesium and Zinc

Earlier studies reported that magnesium and zinc play a crucial role in the management of depression. It is reported previously that low serum level of magnesium and zinc is directly linked to increased depression in both animal and human models. According to experimental studies, supplementing with zinc and magnesium may have an antidepressant effect, like lowering depression, stress, and anxiety in human and animal models.

Earlier studies also reported that nutritional therapies play a potential role in promoting and enhancing psychological well-being and mental health (Dickerman and Liu, 2011).

3.3. Probiotics

Probiotics help in managing digestive health and also have a positive association with brain function. The communication channel of the gut-brain axis links the central nervous system with the enteric nervous system in the digestive tract. The Vagus nerve is the longest in the body, is the main link in the channel. The gut is referred to as the "second brain" that produces key regulating neurotransmitters such as serotonin, Gamma-aminobutyric acid (GABA), and dopamine. Surprisingly, 90 percent of the serotonin is produced in the gut. The disruption in one often affects the other because of this close inter-relationship. For example, if stress is set off in the brain, the fight-or-flight response activates, which interacts with the gut and can cause symptoms like nausea or upset stomach. On the other hand, chronic digestive conditions like Irritable Bowel Syndrome (IBS), Crohn's disease, or constipation may worsen anxiety and depression conditions even worse (Harvard Health, 2023).

3.4. Antioxidants

As we know that oxidative stress is a major contributor to mood disorders. It is demonstrated in earlier studies that the supplementation of antioxidants plays a promising role in enhancing mental health conditions like anxiety and depression. Taking antioxidants with conventional antidepressants might improve the therapeutic effect by addressing underlying nutritional imbalances. Increasing the intake of dietary rich antioxidant substances like flavonoids, polyphenols, vitamin C, and E helps in reducing oxidative stress that ultimately helps in promoting emotional health (Wang, 2023).

4. Foods That May Negatively Affect Your Mood

Certain foods are consumed in day-to-day life or become a part of dietary practices, causing emotional instability, exhaustion, or worsening the symptoms of depression and anxiety. These are enumerated below:

4.1. Ultra-Processed Food

According to earlier research, it was reported that eating lots of ultra-processed foods, which are usually high in sugar, salt, unhealthy fats, and artificial additives, may make an individual prone to depression. These foods have the potential to change the harmony of gut microbiota's natural balance, which is important for gut-brain axis regulation of brain function and emotional stability. Additionally, the artificial sweeteners present in processed foods may interfere with the production of neurotransmitters that control mood, may interfere with nerve-brain communication, and reduce the synthesis of "feel-good" brain chemicals like dopamine and serotonin (Salamon, 2024).

4.2. Excess caffeine and alcohol

The main sources of caffeine include tea, coffee, energy drinks, soft drinks, cocoa or chocolate beverages, and so on. Earlier studies showed that the quantity and duration of caffeine consumption showed both positive and negative effects on mental health. Caffeine's psychostimulant effects are handled by the dopaminergic transmission system, that closely connected to depression and mood regulation. Tremors, anxiety, insomnia, gastrointestinal issues, increased psychomotor activity, and, in adverse situations, death are the consequences of overdosing or poisoning with caffeine. It is well well-known fact that alcohol addiction or dependency is

particularly linked to mental health disorders like depression. Drinking alcohol not only decreases life expectancy but also makes episodes of psychotic attacks making life vulnerable.

4.3. Irregular Eating Pattern

Eating is labelled as the basic human activity that affects mental health functioning, and depends on "when and what we are eating". Irregular eating habits lead to multiple metabolic disorders like obesity, anxiety, depression, and so on. The exact biological processes are still unknown, but there seems to be a lot of overlap between the brain nerves that control eating behaviour and mood; due to which dopamine activity (mood, motivation, and pleasure) is influenced by digestive hormones. One study also supported the above-mentioned statement, i.e., unusual eating pattern worsens the mood stability and emotional well-being of people with bipolar disorder, and depression frequently has disturbed dopamine regulations (Koning and Brietzke, 2022).

5. Conclusion

The well-being of the individual is inseparably linked to mental health. An unhealthy lifestyle leads to poor psychological health and mental instability. In order to support good mental health, it is very important to adopt mindful eating practices like keeping regular physical activity and a balanced diet. By choosing simple home-cooked foods that are full of nutrients and whole foods like fresh fruits, colourful vegetables, nuts, seeds, and fermented foods, you nourish the body as well as the mind. Making the body properly hydrated and limiting caffeine intake aids in mood regulation, enhances focus of the mind, and supports emotional stability, which are all needed for a healthy and balanced state of well-being.

References

1. *Mental health*. (2025). World Health Organisation. https://www.who.int/data/gho/data/themes/theme-details/GHO/mental-health
2. Muscaritoli, M. (2021). The Impact of Nutrients on Mental Health and Well-Being: Insights From the Literature. *Frontiers in Nutrition*, *8*. https://doi.org/10.3389/fnut.2021.656290 .
3. *Fueling the Mind: The Powerful Link Between Nutrition and Mental Health*. (2025). Mcleanhospital.org. https://www.mcleanhospital.org/essential/nutrition .
4. Jacka, F. N. (2019). Targeting the gut to achieve improved outcomes in mood disorders. *Bipolar Disorders*, *21*(1), 88–89. https://doi.org/10.1111/bdi.12706.
5. Mischoulon, D. (2020, October 27). *Omega-3 fatty acids for mood disorders*. Harvard Health. https://www.health.harvard.edu/blog/omega-3-fatty-acids-for-mood-disorders-2018080314414 .
6. Dickerman, B., & Liu, J. (2011). Do the micronutrients zinc and magnesium play a role in adult depression? *Topics in Clinical Nutrition*, *26*(3), 257–267. https://doi.org/10.1097/TIN.0b013e3182260d86 .
7. *Probiotics may help boost mood and cognitive function*. (2023a, March 22). Harvard Health. https://www.health.harvard.edu/mind-and-mood/probiotics-may-help-boost-mood-and-cognitive-function .

8. Wang, H., Jin, M., Xie, M., Yang, Y., Xue, F., Li, W., Zhang, M., Li, Z., Li, X., Jia, N., Liu, Y., Cui, X., Hu, G., Dong, L., Wang, G., & Yu, Q. (2023). Protective role of antioxidant supplementation for depression and anxiety: A meta-analysis of randomized clinical trials. *Journal of Affective Disorders*, *323*, 264–279. https://doi.org/10.1016/j.jad.2022.11.072 .
9. Salamon, M. (2024, January 1). *Ultraprocessed foods may raise depression risks*. Harvard Health. https://www.health.harvard.edu/mind-and-mood/ultraprocessed-foods-may-raise-depression-risks .
10. Koning, E., & Brietzke, E. (2022). When you eat matters: How your eating rhythms impact your mental health. In P. Nicholson (Ed.), *The Conversation*. https://doi.org/10.64628/aam.7ttfwa7he .