

# A Triadic Approach: The Role of Gut Health and Microbiome in Suicidal Tendencies: Combining Yoga, Nutritional Therapy and Cognitive Behavioral Therapy for Suicidal Tendencies

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**Abstract:** *We also observed substantial diversity across studies with respects to methodologies and reporting. farther prospective and experimental exploration using new tools and robust guidelines hold pledge for perfecting our understanding of the part of the gut microbiota in internal and brain health and the development of interventions grounded on revision of gut microbiota. In particular, it's really unfortunate that self - murder by student in India has been rising extensively that presents a sad picture of the youthful generation seeking results of their problems in the stage of death. A common point of all depressive diseases is a habitual depressed mood and perversity, accompanied by co - occurring physical and cognitive changes. Accordingly, they significantly reduce a person's quality of life and diurnal functioning. The capability to constantly perform towards the upper range of gift and skill anyhow of competitive circumstances. The marvels that spark these youthful smarts to take such a big step have been honored in the form of failure in academics, class cargo and career query, relationship failure, child abuse, ragging, peer pressure, family disturbances (fast life, depression and loneliness) and last but not the least incapability to manage with the life demands.*

**Keywords:** Gut Health, Depression and Loneliness, Microbiome, Gut Microbiota, Nutritional Therapy.

## 1. Introduction

The common threat factors for depression are poverty, severance, traumatic life events, physical complaint, and medicine and alcohol dependence, although anybody may suffer from depression. The existent who suffers from anxiety or depression loses their sense of tone - worth. In psychiatry, patient observation and medical interviews with the case and their immediate family members are the primary styles for diagnosing stress, anxiety, and depression [1].

Pharmacotherapy is the cornerstone of current curatives for depression. picky serotonin reuptake impediments (SSRIs) are the most popular first - line drug, although monoamine oxidase and serotonin - norepinephrine reuptake impediments are also used. still, the effectiveness of presently available antidepressant specifics used in conventions for symptom relief and forestalment seems inconsistent. In addition, it has been shown that forbearance develops during follow - up care; using the same drug on the same case constantly leads to dropped efficacy. According to the DSM - 5, depressive diseases encompass colourful groups, including major depressive complaint, patient depressive complaint (dysthymia), premenstrual dysphoric complaint, substance - or medicine - convinced depressive complaint, and depressive complaint due to a general medical condition, among others [2].

Depression is a significant threat factor for multitudinous metabolic conditions, including diabetes, rotundity, and habitual heart complaint. It's a fact that eating habits have a significant impact on internal health. perhaps there are bidirectional processes behind how the diet might impact anxiety and depression. The micronutrients, similar as zinc,

magnesium, selenium, iron, and the vitamins B - 6, B - 12, D, E, and folate, are deficient in those who have depression or are at a lesser threat of developing depression and anxiety [3].

## 2. Literature Review

**Sabina Lachowicz - Wiśniewska (2024)** Obesity and depression are interdependent pathological disorders with strong inflammatory effects commonly found worldwide. They determine the health status of the population and cause key problems in terms of morbidity and mortality. The role of gut microbiota and its composition in the treatment of obesity and psychological factors is increasingly emphasized. Published research suggests that prebiotic, probiotic, or symbiotic preparations can effectively intervene in obesity treatment and mood - dysregulation alleviation. An additional purpose is to indicate probiotics, including psychobiotics and prebiotics, potentially beneficial in supporting the treatment of these two diseases [11].

**Akash Kumar (2023)** The gut microbiota is critical for maintaining human health and the immunological system. Several neuroscientific studies have shown the significance of microbiota in developing brain systems. The gut microbiota and the brain are interconnected in a bidirectional relationship, as research on the microbiome-gut-brain axis shows. Significant evidence links anxiety and depression disorders to the community of microbes that live in the gastrointestinal system. Modified diet, fish and omega - 3 fatty acid intake, macro - and micro - nutrient intake, prebiotics, probiotics, synbiotics, postbiotics, fecal microbiota transplanted, and 5 - HTP regulation may all be utilized to alter the gut microbiota as a treatment approach [1].

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**Swati Sagarika Panda (2023)** Obesity is a complex health condition that increases the susceptibility to developing cardiovascular diseases, diabetes, and numerous other metabolic health issues. The effect of obesity is not just limited to the conditions mentioned above; it is also seen to have a profound impact on the patient's mental state, leading to the onset of various mental disorders, particularly mood disorders. Therefore, it is necessary to understand the mechanism underlying the crosstalk between obesity and mental disorders. The gut microbiota is vital in regulating and maintaining host physiology, including metabolism and neuronal circuits. Because of this newly developed understanding of gut microbiota role, here we evaluated the published diverse information to summarize the achievement in the field [12].

**Sydney E. Martin (2023)** The gut microbiome may be both helpful and harmful, and not only is it affected by diet, it has also been shown to affect mental health including personality, mood, anxiety and depression. In this clinical study we assessed dietary nutrient composition, mood, happiness, and the gut microbiome in order to understand the role of diet in the gut microbiome and how that affects mood and happiness. For this pilot study, we enrolled 20 adults to follow this protocol: recording a 2 - day food log, sampling their gut microbiome, and completing five validated surveys of mental health, mood, happiness and well - being, followed by a minimum 1 - week diet change and repeating the food log, microbiome sampling and the 5 surveys. After the diet change, we observed significant changes in measures of anxiety, well - being and happiness, and without changes in gut microbiome diversity [9].

**Dawson, S. L (2022)** The emerging understanding of gut microbiota as 'metabolic machinery' influencing many aspects of physiology has gained substantial attention in the field of psychiatry. This is largely due to the many overlapping pathophysiological mechanisms associated with both the potential functionality of the gut microbiota and the biological mechanisms thought to be underpinning mental disorders. In this systematic review, we synthesised the current literature investigating differences in gut microbiota composition in people with the major psychiatric disorders, major depressive disorder (MDD), bipolar disorder (BD) and schizophrenia (SZ), compared to 'healthy' controls. [13].

#### **Advantages and Limitations of Drug Therapy and Gut Microbiota - Based Approaches**

Tricyclic antidepressants (TCAs), antihistamines, SSRIs, serotonin - norepinephrine reuptake inhibitors (SNRIs), benzodiazepines (BZDs), and monoamine oxidase inhibitors (MAOI) are FDA - approved anti - depressants. still, there are several downsides to popular anti - depressants, including medicine forbearance, delayed action, shy effectiveness, and side goods. thus, it's essential to find new antidepressant approaches to guarantee the quality of life for all cases with depression and anxiety. Microbial dysbiosis has a part in the pathophysiology of several habitual ails, including depression and anxiety [6]. The below - pronounced curatives are grounded on microbiome restoration for treating and precluding depression and anxiety. still, procedures for the restoration of gut microbiota have several pros and cons, which are given below:

#### **Advantages**

- These curatives may correct certain forms of dysbiosis and promote health - promoting microbial loads.
- The effectiveness of the below - pronounced curatives has been proved by trials using beast models and mortal subjects.
- The curatives are fairly effective and produce a long - term cure for the illness [7].

#### **The Role of Intestinal Microbiota**

The mortal gastrointestinal tract hosts a complex ecosystem of microorganisms that profoundly affect the host and maintain overall organismal homeostasis. Several factors impact the development of mortal gut microbiota during immaturity, with diet being the most significant, shaping its composition throughout life. Gut bacteria play pivotal places in maintaining vulnerable and metabolic balance and defending against pathogens. Changes in gut bacteria composition (dysbiosis) are linked to colorful seditious conditions and infections [10].

A healthy mortal gut microbiota comprises a different microbial community of around 5000 species and 7000 strains, generally conforming of the bacterial clusters Firmicutes, Bacteroidetes, Actinobacteria, and Proteobacteria. Recent studies punctuate a close association between gut microbiota and the brain. Probiotics, including psychobiotics, have surfaced as implicit treatments for psychiatric diseases and metabolic issues, suggesting their significance in internal complaint operation. Probiotics, conforming of live microorganisms offering health benefits to the host when consumed in acceptable quantities, substantially belong to rubrics like Lactobacillus, Bifidobacterium, and Saccharomyces [11].

#### **Mental Toughness and Its components**

Describes the extent to which individualities see challenges as openings. individualities who see them as openings will laboriously seek them out and will identify problems as ways for tone - development. At the other end challenges are perceived as problems and pitfalls. occasionally described as "stickability", this describes the capability for an individual to carry out tasks successfully despite any problems or obstacles that arise whilst achieving the thing. Accordingly, an existent who scores at the high end of the scale will be suitable to handle and achieve effects to tough unyielding deadlines. individualities who are high in confidence have the tone - belief to successfully complete tasks, which may be considered too delicate by individualities with analogous capacities but with lower confidence. lower confident individualities are also likely to be less patient and may make further crimes [13].

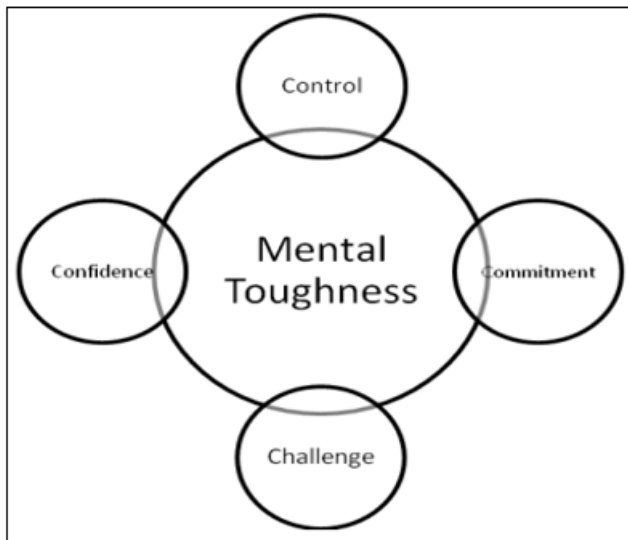


Figure 1: Mental Toughness and its Components

**The Influence of Dietary Patterns on Mental Well - Being, Particularly in Alleviating Depressive Symptoms**

The brain uses a significant proportion of the energy and nutrients it obtains. Its good nutrition requires an acceptable force of amino acids, fats, vitamins, minerals, and trace rudiments. The relationship between depression and salutary habits has been well proved. An integral element among these is the antioxidant medium, which is pivotal in the onset of internal diseases and reliant on the presence of nutrients essential in our diet. Likewise, the position of brain - deduced neurotrophic factor (BDNF), vital for neuroplasticity and rejuvenescence, hinges on nutrient input. Studies have revealed that espousing healthy salutary patterns correlates with reduced cases of depression and self - murder. Clinical trials have explored the efficacy of salutary variations as a remedial approach for depression. Certain nutrient supplements may offer benefits in managing psychiatric conditions. These include composites like S - adenosylmethionine; N - acetylcysteine; zinc; and B vitamins, including folic acid, as well as vitamin D. Omega - 3 polyunsaturated adipose acids, in particular, have different goods, sharing in synaptogenesis, modulating receptor exertion, plyinganti - inflammatory parcels, and impacting neurotransmitter regulation [14].

**3. Research Methodology**

Arising exploration suggests a significant link between gut health, microbiome composition, and internal health,

including conditions like depression, anxiety, and suicidal tendencies. This analysis aims to explore the mechanisms through which gut microbiota influence neurotransmitter situations and contribute to internal health issues. The bidirectional communication pathway between the gut and the brain, involving neural, hormonal, and immunological signals. The community of microorganisms abiding in the gut, which can vary grounded on diet, life, and other factors. Neurotransmitters is Chemical couriers in the brain, similar as serotonin, dopamine, and GABA, that play pivotal places in mood regulation. Conduct a comprehensive review of being studies linking gut health and internal health. Focus on meta - analyses, methodical reviews, and longitudinal studies. elect a different population including individualities with diagnosed internal health issues, those with a history of suicidal tendencies, and a control group with no internal health issues. insure a balanced representation in terms of age, gender, and socio - profitable status. Salutary Analysis is estimate actors' salutary patterns using food frequence questionnaires (FFQ) to assess fiber input, fermented foods, and overall nutritive quality. Microbiome Profiling are Collect coprolite samples for DNA sequencing (e. g., 16S rRNA sequencing) to identify microbial diversity and abundance. However, dissect CSF for neurotransmitter situations in individualities with severe internal health issues, If immorally and logistically doable. Employ statistical models to examine correlations between microbiome composition, neurotransmitter situations, and internal health issues. Use retrogression analyses to control for confounding variables.

**4. Data Analysis**

**Association between Suicidal Tendencies and Mental toughness among Higher Secondary Students:**

To find out whether Suicidal tendencies and Mental Durability among advanced secondary scholars, are associated or they're independent of each - other, the scores on suicidal tendencies and internal durability were calculated. After arranging in descending order, the Z scores were calculated to classify scores as low, Average and high. And also, after arranging in 3 \* 3contingency table, corresponding scores subordinated to Chi - Square test of independence and attendant chi - square value was vindicated at 0.05 position of significance.

Table 1: Association between Mental Toughness and Suicidal Tendencies among Higher Secondary Students

		Mental Toughness			Total	Pearson Chi - Square	Df
		Low	Average	High			
Suicidal Tendencies	Low	21 (10.4%)	135 (67.16%)	45 (22.38%)	201 (100%)	36.327*	4
	Average	11 (31.42%)	21 (60%)	3 (8.57%)	35 (100%)		
	High	3 (23.07%)	10 (76.92%)	1 (7.69%)	13 (100%)		
Total		35 (14%)	166 (66.4%)	49 (19.6%)	250 (100%)		

The minimum expected count is 3.29 and 2 cells (22.38%) have expected count less than 5.

\*Significant at 0.05 level

After an in - depth analysis of the table 1 the researcher found that 201 students out of 250 higher secondary students were revealed low suicidal tendencies among which 21 students were low mentally tough while 135 students showed average

mental toughness and 45 students possessed high mental toughness.35 of 250 higher secondary students manifested average suicidal tendencies among which 11 having low mental toughness, 21 scored as average mentally tough while

3 were highly mentally tough. 3 higher secondary students revealed low suicidal tendencies and high mental toughness while 10 students were of average suicidal tendencies with average mental toughness simultaneously 1 student was found to possess high suicidal tendencies as well high mental toughness.

#### **Association between Suicidal Tendencies and Ego - strength among Higher Secondary Students:**

To study the nature of relation between suicidal tendencies and pride - strength of advanced secondary scholars, the

scores on suicidal tendencies and pride - strength were calculated and after arranging in descending order, the Z scores were calculated to classify scores as low, average and high. And also, after arranging in 3 \* 3 contingency table, corresponding scores subordinated to Chi - Square test of independence and attendant Chi - square value was vindicated at 0.05 position of significance.

**Table 2:** Association between Suicidal Tendencies and Ego - Strength among Higher Secondary Students

		Ego - strength			Total	Pearson Chi - Square	Df
		Low	Average	High			
Suicidal Tendencies	Low	38 (18.90%)	113 (56.21%)	50 (24.87%)	201 (100%)	57.989*	4
	Average	18	17	0 (0%)	35 (100%)		
	High	7 (53.84%)	5 (38.46%)	1 (7.69%)	13 (100%)		
Total		63 (25.2%)	135 (54%)	51 (20.4%)	250 (100%)		

After examining the above tables and graphs the investigator inferred that 201 students revealed low suicidal tendencies out of which 38 found to have low ego - strength, 113 of average ego - strength and 50 manifested high ego - strength. 35 higher secondary students having average suicidal tendencies among which 18 were of low ego - strength, 17 had average ego - strength but no case was found in this category having high - ego - strength. 13 higher secondary students who were found to have high suicidal tendencies out of which 7 were of low ego - strength, 5 had average and only 1 student was found to have both high suicidal tendencies with high ego - strength. The chi square value of present test of independence was found to be above the critical value at 0.05 level of confidence.

## **5. Conclusions**

Numerous studies have examined the gut microbiota in anxiety and depression diseases to interpret underpinning microbial connections and guide implicit individual and remedial approaches for these issues. The gut microbiota and its metabolites could play an important part in internal health through the microbiota – gut – brain axis. The composition and cornucopia of gut microbiota, especially Firmicutes and Bacteroidetes, were associated with several internal diseases, similar as anxiety, depression, bipolar complaint, ASD, and schizophrenia. At present, most studies about gut microbiota with internal diseases concentrated on the rubric position, and further studies on gut microbiota should be carried out at the species position in the future, because the different species in the same rubrics could have different goods (indeed the contrary function) on internal diseases. Worldwide, depression and anxiety are the most current conditions and are associated with a reduction in cases' quality of life. piecemeal from the below - mentioned modalities, vagus whim - whams stimulation is one of the effective styles to devaluate anxiety and depression. Still, detailed studies are needed to demonstrate its effectiveness in perfecting internal health. The relationship between gut health and internal health is complex and multifaceted. Understanding how microbiome imbalances affect neurotransmitter situations could give new perceptivity into precautionary and remedial strategies for internal health issues, including suicidal tendencies.

Continued exploration is essential to unravel these connections and enhance internal health issues. Incorporating strains with proved goods, alongside prebiotic substances and a balanced diet, holds pledge for individualities scuffling with similar diseases. also, in the realm of rotundity, mounting substantiation underscores the mischievous impact of gut microbiota imbalance and compromised gut hedge function.

## **References**

- [1] Akash Kumar, "Gut Microbiota in Anxiety and Depression: Unveiling the Relationships and Management Options", s. Pharmaceuticals, issn: 1424 - 8247, vol.16, 2023, pp.565. <https://doi.org/10.3390/ph16040565>
- [2] Gureje, O. "Use of Mental Health Services for Anxiety, Mood, and Substance Disorders in 17 Countries in the WHO World Mental Health Surveys", Lancet, vol.370, 2007, pp.841–850.
- [3] Nagarjuna Reddy Aturi, "The role of psychedelics in treating mental health disorders - intersection of ayurvedic and traditional dietary practices", International Journal of Science and Research (IJSR), Volume 7 Issue 11, November 2018, pp.2009 - 2012, DOI: 10.21275/SR2491415 1317
- [4] Nagarjuna Reddy Aturi, "Integrating siddha and ayurvedic practices in paediatric care: a holistic approach to childhood illnesses", International Journal of Science and Research (IJSR), Volume 9 Issue 3, March 2020, pp.1708 - 1712, DOI: 10.21275/SR24910085114
- [5] Nagarjuna Reddy Aturi, "Cultural stigmas surrounding mental illness impacting of migration and displacement", International Journal of Science and Research (IJSR), Volume 7 Issue 5, May 2018, pp.1878 - 1882, DOI: 10.21275/SR24914153550
- [6] Nagarjuna Reddy Aturi, "Exploring the benefits of yoga therapy for depression in diverse cultural contexts," Applied Medical Research (AMR), in press
- [7] Vollebergh, W. A. M., "Temporal Sequencing of Lifetime Mood Disorders in Relation to Comorbid Anxiety and Substance Use Disorders—Findings from the Netherlands Mental Health Survey and Incidence

- Study", *Soc. Psychiatry Psychiatr. Epidemiol.*, vol.38, 2003, PP.1–11.
- [8] Vazquez, C. "The Impact of Economic Recessions on Depression and Individual and Social Well - Being: The Case of Spain (2006–2013) ", *Soc. Psychiatry Psychiatr Epidemiol*, vol.53, 2018, pp.977–986.
- [9] Sydney E. Martin, "The Role of Diet on the Gut Microbiome, Mood and Happiness", *medRxiv*, issn: 2563 - 6316, 2023, doi: 10.1101/2023.03.18.23287442
- [10] Mayer EA. "Gut feelings: the emerging biology of gut - brain communication", *Nat Rev Neurosci.*, vol.12 (8), 2011, pp.453–66. doi: 10.1038/nrn3071.
- [11] Sabina Lachowicz - Wiśniewska, "The Role of Gut Microbiota, Nutrition, and Physical Activity in Depression and Obesity—Interdependent Mechanisms/Co - Occurrence", *Nutrients*, vol.16 (7), 2024, <https://doi.org/10.3390/nu16071039>
- [12] Swati Sagarika Panda, "A Systematic Review on the Association between Obesity and Mood Disorders and the Role of Gut Microbiota", *Metabolites*, issn: 2218 - 1989, vol.13 (4), 2023, doi: 10.3390/metabo13040488
- [13] Dawson, S. L., "A systematic review of gut microbiota composition in observational studies of major depressive disorder", bipolar disorder and schizophrenia, *Mol Psychiatry*, vol.27, 2022, Pages.1920–1935. <https://doi.org/10.1038/s41380-022-01456-3>
- [14] Castle D, "Efficacy and safety of fecal microbiota transplantation for the treatment of diseases other than *Clostridium difficile* infection: a systematic review and meta - analysis", *Gut Microbes*, vol.12, 2020, Pages.1–25.
- [15] McGuinness AJ, "FMT for psychiatric disorders: following the brown brick road into the future", *Bipolar Disord.* vol.23, 2021, Pages.651–5.