



EATING BEHAVIOUR AND MENTAL HEALTH: BIOLOGICAL, PSYCHOLOGICAL, AND LIFESTYLE PERSPECTIVES

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ABSTRACT

Eating behaviour and mental health are closely interconnected through complex biological, psychological, and lifestyle processes. Emerging evidence from nutritional psychiatry indicates that dietary habits influence emotional well-being, cognitive functioning, and psychological resilience, while mental health conditions simultaneously affect appetite, food preferences, and eating patterns. Healthy dietary patterns rich in fruits, vegetables, whole grains, legumes, nuts, fish, and fermented foods support brain health by promoting neurotransmitter synthesis, reducing systemic inflammation, and maintaining a healthy gut microbiome. Conversely, unhealthy eating behaviours such as emotional eating, excessive consumption of ultra-processed foods, irregular meal patterns, and high sugar intake are associated with depression, anxiety, stress, and impaired cognitive performance. Psychological characteristics including resilience, self-efficacy, personality, and coping strategies also shape eating behaviours and influence overall well-being. Furthermore, rapid urbanization, sedentary lifestyles, environmental changes, and increasing psychosocial stress have substantially altered dietary habits, particularly in low- and middle-income countries such as India. This review synthesizes current evidence on the biological, psychological, and lifestyle pathways linking eating behaviour and mental health. It also highlights the importance of integrating nutritional counselling, psychological interventions, and public health strategies to promote holistic well-being. By adopting a multidisciplinary perspective, this review emphasizes healthy eating behaviour as a practical and sustainable approach for improving mental health and preventing common psychological disorders.

KEYWORDS: Eating behaviour, Mental health, Nutritional psychiatry, Psychological well-being, Gut-brain axis, Emotional eating, Lifestyle.

INTRODUCTION

Mental health is increasingly recognized as a fundamental component of overall health and well-being. According to the World Health Organization (WHO, 2022), mental health encompasses emotional, psychological, and social well-being, enabling individuals to manage everyday stress, realize their potential, work productively, and contribute to their communities. Mental health is therefore more than the absence of mental illness; it reflects resilience, emotional balance, adaptive functioning, and a positive quality of life. Contemporary psychological research further suggests that psychological well-being is shaped by multiple interacting factors, including personality, coping abilities, resilience, environmental conditions, and health-related behaviours (Bharti, 2020; World Health Organization, 2022).

Nutrition has traditionally been associated with physical growth, metabolic regulation, and disease prevention. However, recent advances in psychology, neuroscience, and nutritional psychiatry have demonstrated that dietary habits also play a significant role in emotional regulation, cognitive functioning, and psychological health (Firth et al., 2020; Jacka, 2017). Rather than viewing food solely as a source of energy, researchers now recognize eating behaviour as an important behavioural determinant of mental well-being. Healthy dietary practices contribute to optimal brain functioning, whereas unhealthy eating patterns may increase susceptibility to psychological disorders.

Eating behaviour is a multidimensional construct involving food selection, consumption, and regulation. Although physiological hunger initiates food intake, eating behaviour is influenced by a wide range of biological, psychological, social, cultural, and environmental factors. Hunger and satiety signals interact with emotions, beliefs, family traditions, socioeconomic status, food availability, and lifestyle practices to shape individual dietary choices (Adan et al., 2019). Consequently, eating behaviour reflects the continuous interaction between biological mechanisms and environmental influences rather than simple physiological need.

Growing scientific evidence supports a bidirectional relationship between eating behaviour and mental health. On one hand, healthy dietary patterns rich in fruits, vegetables, legumes, whole grains, nuts, fish, and fermented foods provide nutrients essential for neurotransmitter synthesis, neuroplasticity, immune regulation, and maintenance of the gut microbiome. These mechanisms contribute to improved mood, reduced psychological distress, and better cognitive functioning (Cryan et al., 2019; Lassale et al., 2019). On the other hand, diets characterized by frequent consumption of ultra-processed foods, excessive sugar intake, emotional eating, and irregular meal patterns have consistently been associated with depression, anxiety, stress, and poorer cognitive performance (Firth et al., 2020; Gómez-Pinilla, 2008).



The relationship is equally influenced by mental health itself. Individuals experiencing chronic stress, anxiety, or depression frequently report changes in appetite, food preferences, and meal timing. Emotional distress often promotes the consumption of highly palatable foods rich in sugar and saturated fat because these foods temporarily activate reward pathways in the brain. Although this may provide short-term emotional comfort, repeated reliance on food for emotional regulation contributes to unhealthy eating habits, obesity, metabolic disorders, and further psychological distress, thereby creating a self-perpetuating cycle (Fu et al., 2025; O'Neil et al., 2014).

These findings have contributed to the rapid development of nutritional psychiatry, an emerging interdisciplinary field that investigates the relationship between diet and mental health. Unlike traditional nutrition research that focused on individual nutrients, nutritional psychiatry emphasizes overall dietary patterns and lifestyle behaviours. It recognizes that foods interact synergistically through multiple biological pathways, including inflammatory regulation, oxidative stress, neurotransmitter metabolism, endocrine function, and the gut–brain axis (Jacka, 2017; Marx et al., 2017; Sarris et al., 2015). This perspective supports dietary modification as an accessible and cost-effective strategy that complements conventional psychological and pharmacological treatments.

Lifestyle and environmental factors further strengthen the relationship between eating behaviour and mental health. Rapid urbanization, increased screen time, sedentary behaviour, inadequate sleep, occupational stress, and widespread availability of ultra-processed foods have substantially altered dietary habits worldwide (Taylor et al., 2020). In addition, environmental conditions influence psychological well-being and health behaviours. Research has increasingly emphasized that environmental and lifestyle factors interact with nutrition to influence both physical and psychological well-being, highlighting the importance of adopting a holistic approach to health promotion (Taylor et al., 2020; World Health Organization, 2022).

The Indian context presents unique challenges and opportunities for understanding this relationship. Traditional Indian diets are generally rich in cereals, pulses, vegetables, fruits, fermented foods, and dairy products, providing nutrients that support both physical and mental health. However, rapid socioeconomic transitions have increased the consumption of processed foods, sugar-sweetened beverages, and convenience meals, particularly among adolescents and young adults. Simultaneously, India has witnessed a growing prevalence of stress, anxiety, depression, obesity, and other lifestyle-related disorders. Indian research has also emphasized the importance of nutrition and healthy lifestyle practices in promoting overall health and psychological well-being (Bharti et al., 2021; Bharti, 2020). These findings underscore the need for multidisciplinary interventions that integrate nutritional education, psychological counselling, and healthy lifestyle practices.

Therefore, this review aims to synthesize current evidence on the biological, psychological, and lifestyle mechanisms linking eating behaviour and mental health. It examines how dietary behaviours influence psychological outcomes, discusses the role of lifestyle and environmental factors, and highlights implications for public health and future research, with particular emphasis on the Indian context.

Conceptualizing Eating Behaviour

Eating behaviour refers to the processes involved in selecting, consuming, and regulating food. While it is driven by the body's need for energy and nutrients, it is also influenced by psychological, social, cultural, and environmental factors such as emotions, beliefs, family practices, socioeconomic status, and food availability (Adan et al., 2019). Thus, eating behaviour is now recognized as a health behaviour that affects both physical and mental well-being.

Biologically, eating is regulated by hormones such as ghrelin, leptin, insulin, PYY, and GLP-1, which interact with the brain to control hunger and satiety. Stress, poor sleep, and irregular eating patterns can disrupt these mechanisms, leading to unhealthy eating habits (Cryan et al., 2019; Firth et al., 2020). Psychological factors, including stress, anxiety, and emotional regulation, also influence food choices, with emotional eating often increasing the risk of obesity and mental health problems (Fu et al., 2025).

Cognitive abilities such as self-control, nutritional knowledge, and decision-making support healthy dietary practices, whereas stress and fatigue may encourage impulsive eating (Adan et al., 2019). Social and environmental influences—including family, peers, culture, media, and the growing availability of fast foods and ultra-processed products—have further transformed dietary habits, especially among adolescents (Taylor et al., 2020).

In India, traditional diets rich in cereals, pulses, vegetables, fruits, and home-cooked meals have gradually been replaced by convenience foods and irregular eating patterns, contributing to rising obesity, metabolic disorders, stress, anxiety, and depression. Consistent with the Biopsychosocial Model of Health, eating behaviour results from the interaction of biological, psychological, and social factors. Research also suggests that psychological resources such as resilience, self-efficacy, and well-being promote healthier eating habits (Bharti & Bhatnagar, 2017). Therefore, improving eating behaviour requires multidisciplinary interventions combining nutrition education, psychological support, stress management, and supportive family and community environments.

Biological and Psychological Mechanisms Linking Eating Behaviour and Mental Health

The relationship between eating behaviour and mental health is complex and influenced by multiple biological and psychological processes that continuously interact with one another. Advances in neuroscience, nutritional psychiatry, and health psychology have demonstrated that dietary habits influence emotional well-being, cognition, and behaviour through interconnected physiological and psychological pathways. Similarly, mental health conditions affect appetite regulation, food preferences, and eating patterns, creating a bidirectional relationship between diet and psychological functioning (Cryan et al., 2019; Firth et al., 2020). Understanding these mechanisms is essential for developing effective interventions that simultaneously promote healthy eating and positive mental health.

**a. Biological Mechanisms****➤ The Gut–Brain Axis**

The gut–brain axis is a bidirectional communication system linking the gastrointestinal tract and the brain through neural, endocrine, immune, and metabolic pathways. A healthy gut microbiome, supported by diets rich in fibre, fruits, vegetables, whole grains, legumes, and fermented foods, produces beneficial compounds that enhance brain function and reduce inflammation. In contrast, diets high in processed foods and saturated fats disrupt gut microbiota, increasing the risk of depression, anxiety, and psychological distress (Cryan et al., 2019; Marx et al., 2017).

➤ Neurotransmitter Synthesis and Brain Function

Nutrition plays a vital role in the production of neurotransmitters that regulate mood and cognition. Nutrients such as tryptophan, tyrosine, B vitamins, magnesium, zinc, iron, and omega-3 fatty acids support neurotransmitter synthesis, neuronal communication, and cognitive functioning. Nutritional deficiencies may impair brain function and increase the risk of mood disorders and cognitive decline (Gómez-Pinilla, 2008).

➤ Inflammation and Oxidative Stress

Poor-quality diets rich in processed foods, refined sugars, and unhealthy fats promote chronic inflammation and oxidative stress, which negatively affect brain function and contribute to depression and anxiety (Lassale et al., 2019). In contrast, diets rich in fruits, vegetables, legumes, nuts, fish, and antioxidant-containing foods reduce inflammation, protect neurons, and support psychological well-being.

➤ Stress Hormones and Appetite Regulation

Chronic stress activates the hypothalamic–pituitary–adrenal (HPA) axis, increasing cortisol levels and stimulating cravings for high-fat and high-sugar foods, leading to emotional eating (O'Neil et al., 2014). Sleep deprivation further disrupts appetite-regulating hormones by increasing ghrelin and decreasing leptin, resulting in overeating and poor dietary choices. Together, stress and inadequate sleep reinforce unhealthy eating patterns and negatively affect mental health (Firth et al., 2020).

These biological mechanisms demonstrate that diet influences mental health through the gut–brain axis, neurotransmitter synthesis, inflammation, stress hormones, and appetite regulation. Maintaining a balanced, nutrient-rich diet supports brain function, emotional well-being, and overall psychological health.

b. Psychological Mechanisms

Although biological pathways explain important physiological processes, psychological factors largely determine how individuals respond to hunger, stress, and environmental influences. These mechanisms help explain why people with similar nutritional needs often develop very different eating behaviours.

➤ Emotional Regulation and Emotional Eating

Emotional regulation is the ability to manage emotions effectively. Individuals with poor emotional regulation often use food, especially high-sugar and high-fat foods, to cope with stress, anxiety, or sadness. Although this may provide temporary relief, frequent emotional eating increases the risk of obesity, depression, anxiety, and reduced psychological well-being (Fu et al., 2025).

➤ Self-Control and Executive Functioning

Healthy eating depends on executive functions such as planning, self-control, decision-making, and self-monitoring. Stress, anxiety, fatigue, and depression can impair these abilities, leading to impulsive eating, meal skipping, binge eating, and increased consumption of unhealthy convenience foods (Adan et al., 2019).

➤ Personality, Resilience, and Coping

Psychological characteristics such as personality, resilience, and coping skills influence eating behaviour and overall well-being. Individuals with greater conscientiousness, emotional stability, resilience, and self-efficacy are more likely to adopt healthy lifestyle habits and cope effectively with stress. Studies by Bharti (2020) and Bharti et al. (2021) indicate that psychological well-being, resilience, and healthy lifestyle practices are closely associated with overall health and may indirectly encourage healthier dietary behaviours.

➤ Body Image and Mindful Eating

Body image plays an important role in eating behaviour, particularly among adolescents and young adults. Negative body image may lead to restrictive dieting, binge eating, and emotional eating. In contrast, mindful eating promotes awareness of hunger and satiety cues, helping individuals make healthier food choices and improve psychological well-being while reducing emotional eating.

Psychological factors such as emotional regulation, self-control, personality, resilience, and body image significantly influence eating behaviour. Strengthening these psychological resources through emotional regulation and mindfulness can promote healthier eating habits and improve mental well-being.

c. Integrating Biological and Psychological Perspectives

Current evidence indicates that eating behaviour and mental health cannot be explained by biological or psychological mechanisms alone. Rather, they emerge from continuous interactions among physiological regulation, emotional functioning, cognition, personality, behaviour, and environmental influences.

For example, chronic stress simultaneously activates the HPA axis, alters gut microbiota, increases inflammatory responses, impairs executive functioning, and promotes emotional eating. Over time, these interconnected processes increase susceptibility to



depression, anxiety, obesity, and metabolic disorders. Conversely, healthy dietary patterns improve gut microbial diversity, support neurotransmitter synthesis, reduce inflammation, enhance emotional regulation, and strengthen resilience, thereby promoting psychological well-being (Cryan et al., 2019; Firth et al., 2020).

This integrated perspective closely aligns with the Biopsychosocial Model, which proposes that health behaviours result from interactions among biological, psychological, and social determinants rather than isolated factors. Indian psychological research further supports this holistic framework by emphasizing the importance of resilience, self-efficacy, health-related behaviours, and nutrition in promoting mental health and overall well-being (Bharti, 2020; Bharti et al., 2021). Therefore, interventions aimed at improving eating behaviour should integrate nutritional education with psychological counselling, stress management, and lifestyle modification to achieve sustainable improvements in mental health.

Eating Behaviour and Mental Health Outcomes

The relationship between eating behaviour and mental health extends beyond the prevention of nutritional deficiencies and physical illnesses. Contemporary research demonstrates that dietary habits influence multiple dimensions of mental health, including depression, anxiety, stress, cognitive functioning, psychological well-being, and overall quality of life. Likewise, mental health conditions often affect appetite, food preferences, and eating patterns, reinforcing the bidirectional relationship between nutrition and psychological health (Firth et al., 2020; Lassale et al., 2019). Although biological mechanisms explain many of these associations, behavioural and psychological factors determine how dietary practices influence mental health across different populations.

➤ **Depression**

Healthy dietary patterns are associated with a lower risk of depression, whereas diets high in ultra-processed foods, refined carbohydrates, and saturated fats increase depressive symptoms. Nutrient-rich foods support neurotransmitter synthesis, reduce inflammation, and promote brain health. Depression can also alter eating behaviour by causing reduced appetite, overeating, or irregular meal patterns, creating a cycle between poor diet and depression (Lassale et al., 2019; Firth et al., 2020).

➤ **Anxiety and Stress**

Chronic stress and anxiety influence appetite by increasing cravings for high-fat and high-sugar foods through activation of the HPA axis. Emotional eating provides temporary relief but often leads to overeating and greater psychological distress. Diets rich in omega-3 fatty acids, vitamins, minerals, fruits, and vegetables help improve emotional regulation and reduce stress-related symptoms (O'Neil et al., 2014; Marx et al., 2017).

➤ **Psychological Well-being and Quality of Life**

Healthy eating supports positive mood, emotional stability, resilience, and overall quality of life. Balanced diets are also linked with other healthy lifestyle behaviours, such as regular physical activity and adequate sleep. Indian studies suggest that resilience, self-efficacy, and positive personality traits further promote psychological well-being and healthy lifestyle choices.

➤ **Cognitive Functioning**

Adequate nutrition is essential for brain development, memory, attention, and executive functioning. Nutrients such as omega-3 fatty acids, iron, zinc, iodine, folate, and B vitamins enhance cognitive performance, while diets high in processed foods and refined sugars impair attention, memory, and academic performance (Gómez-Pinilla, 2008).

➤ **Eating Behaviour Across the Lifespan**

Eating behaviour influences mental health throughout life. Healthy nutrition supports brain development and emotional regulation in children and adolescents, while poor eating habits among adults contribute to stress, anxiety, obesity, and burnout. In older adults, inadequate nutrition is associated with cognitive decline, depression, and reduced quality of life, highlighting the importance of healthy eating across all age groups.

➤ **Implications for Mental Health Promotion**

Eating behaviour is a modifiable factor that can improve mental health. Promoting healthy dietary habits alongside stress management, physical activity, adequate sleep, and psychological counselling can enhance psychological well-being. Integrating nutritional education with psychological interventions offers a comprehensive and sustainable approach to improving both physical and mental health.

Dietary Patterns that Promote Mental Well-being

Recent research in nutritional psychiatry has shifted from examining the effects of individual nutrients to evaluating overall dietary patterns, recognizing that foods are consumed in combination rather than in isolation. Dietary patterns provide a more comprehensive understanding of how nutrition influences mental health because nutrients interact synergistically to regulate neurotransmitter synthesis, inflammation, oxidative stress, and the gut-brain axis. Evidence consistently suggests that diets emphasizing whole, minimally processed foods are associated with better emotional well-being, cognitive functioning, and psychological resilience, whereas diets rich in ultra-processed foods increase the risk of depression, anxiety, and psychological distress (Marx et al., 2017; Firth et al., 2020).

➤ **Mediterranean Diet**

The Mediterranean diet, rich in fruits, vegetables, whole grains, legumes, nuts, olive oil, and fish, is strongly associated with lower rates of depression, improved cognitive function, and better psychological well-being. Its high content of omega-3 fatty acids, antioxidants, fibre, and polyphenols supports brain health by reducing inflammation, improving gut microbiota, and enhancing neurotransmitter production (Lassale et al., 2019).



➤ **DASH and MIND Diets**

The DASH diet emphasizes fruits, vegetables, whole grains, lean proteins, and low-fat dairy while limiting sodium, helping reduce inflammation and support brain health (Sarris et al., 2015). The MIND diet combines Mediterranean and DASH principles and has been associated with slower cognitive decline, better memory, and improved emotional well-being, particularly among older adults.

➤ **Traditional Indian Dietary Patterns**

Traditional Indian diets, rich in cereals, millets, pulses, vegetables, fruits, fermented foods, and dairy products, provide essential nutrients that support gut health, reduce inflammation, and promote mental well-being. However, increasing consumption of fast foods and ultra-processed foods has contributed to rising obesity, stress, anxiety, and depression. Maintaining traditional healthy dietary habits alongside positive lifestyle practices is important for overall well-being.

➤ **Functional Foods and the Gut–Brain Axis**

Functional foods such as probiotics, prebiotics, fermented foods, dietary fibre, and antioxidant-rich foods improve gut microbiota, enhance gut–brain communication, support neurotransmitter production, and reduce inflammation. These benefits contribute to better mood, memory, cognitive function, and reduced symptoms of anxiety and depression (Cryan et al., 2019).

➤ **Practical Implications**

A balanced diet rich in minimally processed foods, fruits, vegetables, whole grains, healthy fats, legumes, and fermented foods supports mental health and cognitive functioning. Effective promotion of healthy eating should combine nutritional education with psychological counselling, family support, healthy environments, and public health initiatives to achieve long-term improvements in mental well-being.

Indian Context and Public Health Implications

India is undergoing a rapid nutritional transition, with traditional diets increasingly being replaced by ultra-processed foods, fast foods, and sugar-sweetened beverages. These changes, driven by urbanization, changing lifestyles, and technological advancements, have contributed to rising rates of obesity, diabetes, depression, anxiety, and stress-related disorders (Firth et al., 2020; WHO, 2022).

Unhealthy eating habits such as meal skipping, emotional eating, and frequent consumption of convenience foods are particularly common among adolescents, students, and working adults, negatively affecting both physical and mental health. Family traditions, cultural practices, socioeconomic conditions, and food environments continue to influence dietary behaviour, highlighting the importance of promoting balanced diets based on locally available foods.

Improving mental health in India requires an integrated approach that combines nutritional education, psychological counselling, stress management, and healthy lifestyle promotion. Schools, workplaces, healthcare systems, and community programmes should encourage healthy eating while strengthening resilience, self-efficacy, and adaptive coping skills. Public health policies should also support healthy food environments, regulate unhealthy food marketing, and improve access to affordable nutritious foods. Such a holistic approach can enhance psychological well-being, cognitive functioning, and overall quality of life.

Future Directions

Despite growing evidence linking eating behaviour and mental health, several research gaps remain. Most studies are cross-sectional, limiting conclusions about causality. Future research should focus on longitudinal and intervention-based studies to better understand the long-term effects of healthy dietary habits on mental health (Firth et al., 2020).

There is also a need for more research from India and other low- and middle-income countries to develop culturally appropriate recommendations that consider regional dietary patterns and socioeconomic diversity. Future studies should adopt multidisciplinary approaches integrating nutrition, psychology, neuroscience, and public health while examining the combined effects of diet, emotional regulation, sleep, physical activity, and lifestyle factors.

Emerging technologies such as mobile health applications, wearable devices, and artificial intelligence can support real-time monitoring of diet and mental health and enable personalized interventions. Integrated programmes combining nutritional counselling with psychological interventions, including stress management, mindfulness, and resilience training, may be especially effective. Strengthening collaboration among psychologists, nutritionists, educators, and public health professionals will help develop sustainable, culturally relevant strategies to improve both dietary habits and mental well-being.

CONCLUSION

Eating behaviour and mental health share a strong bidirectional relationship, with dietary habits influencing emotional regulation, cognition, stress response, and psychological well-being, while mental health conditions also affect eating patterns. Healthy diets rich in fruits, vegetables, whole grains, legumes, nuts, fish, and fermented foods support brain function through mechanisms such as the gut–brain axis, neurotransmitter synthesis, and reduced inflammation. In contrast, unhealthy eating habits are associated with depression, anxiety, stress, obesity, and impaired cognitive performance.

Eating behaviour is shaped by biological, psychological, social, and environmental factors, including emotional regulation, resilience, lifestyle, family, and culture. In India, preserving traditional healthy dietary practices while addressing the growing consumption of ultra-processed foods is essential for improving public health. Integrating nutritional education with psychological support, stress management, and healthy lifestyle promotion can effectively enhance mental well-being. A multidisciplinary approach involving psychologists, nutritionists, educators, healthcare professionals, and policymakers is essential for promoting both physical and mental health and improving overall quality of life.

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