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Review Article

Mindful Eating and Its Role in Physical and Mental Health: A Comprehensive Review

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ABSTRACT

Mindful eating brings nonjudgmental, present-moment awareness to eating, fostering a deeper connection between mind and body. Rooted in Eastern traditions such as mitahara in the Śāṇḍilya Upanishad and the Bhagavad‑Gita's sattvic, rajasic, and tamasic food categories, as well as modern mindfulness practices pioneered by Jon Kabat‑Zinn, it emphasises full sensory engagement and honest recognition of hunger and satiety cues. Neurobiologically, mindful eating modulates both regulatory and reactivity pathways. It strengthens connectivity within prefrontal executive-control networks while reducing amygdala-driven stress responses, thereby lowering cortisol and enhancing stress resilience. Psychologically, by increasing present-moment awareness of goal-incongruent behaviours, it recalibrates the reward value of eating choices, fostering autonomous motivation and self-regulation without reliance on willpower.

Clinically, the practice offers broad therapeutic benefits. In weight management, it reduces binge and emotional eating by developing skills to distinguish physical hunger from emotional triggers. Among individuals with type 2 diabetes and metabolic syndrome, mindfulness-based interventions improve glycemic control, reduce abdominal fat, and alleviate diabetes-related distress. For gastrointestinal disorders, mindful eating activates the parasympathetic "rest and digest" response, improving motility and reducing stress-induced dysbiosis. In mental health, it mitigates anxiety, depression, and stress-related symptoms by interrupting automatic, emotion-driven eating patterns and enhancing interoceptive awareness. Additionally, as a preventive tool against disordered eating, it fosters adaptive coping strategies and self-compassion.

By weaving ancient philosophical insights with contemporary neuroscience and psychology, mindful eating emerges as a sustainable, evidence-based, nonpharmacological intervention that bridges physical and mental well-being across diverse populations.

Keywords: Mindful eating, Feeding behaviour, Stress, Psychological, Obesity, Diabetes mellitus, Type 2, Eating disorders, Meditation

Highlights

- Mindful eating integrates present-moment awareness, sensory engagement, and recognition of hunger and satiety cues.
- Ancient yogic dietary principles and contemporary mindfulness provide complementary foundations for mindful eating.
- Mindful eating engages neurobiological and psychological pathways that support stress regulation, self-regulation, and healthier eating behaviours.
- Evidence highlights its potential as a holistic, non-pharmacological approach for weight management, metabolic and gastrointestinal health, mental well-being, and prevention of disordered eating.

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1. Introduction

Eating while in a nonjudgmental state of awareness and focused on the food and the connection between the mind and body is referred to as mindful eating (1). The term "mindfulness" refers to a psychological process, an approach or state of awareness, a psychological attribute, or a method of developing mindfulness (such as mindfulness meditation). By understanding the state of mind and the interrelated processes within the body, it plays a significant role in maintaining health and curing ailments (2).

Stress, emotional triggers, busy lives, and distractions from technology all have an influence on eating habits in the modern world. This has induced issues with mental health like depression and anxiety in addition to lifestyle problems like eating disorders, diabetes, and obesity. This shows out that mindful eating constitutes an effective, non-pharmacological tool for dealing with these kinds of problems (3). By encouraging thoughtful choice of foods and an understanding of satiety and hunger cues, mindful eating supports healthier digestion, weight management, and metabolic health on the level of physical health. By cultivating a nonjudgmental relationship with food, it helps mentally diminish emotional eating, stress, and the signs of depression and anxiousness (4). While a growing body of literature highlights the therapeutic effects of mindful eating, most studies focus narrowly on weight loss or binge eating. There is a lack of comprehensive synthesis integrating philosophical, neurobiological, and clinical perspectives. This review bridges that gap by combining ancient yogic insights with emerging scientific evidence to propose mindful eating as a holistic intervention for both physical and mental health.

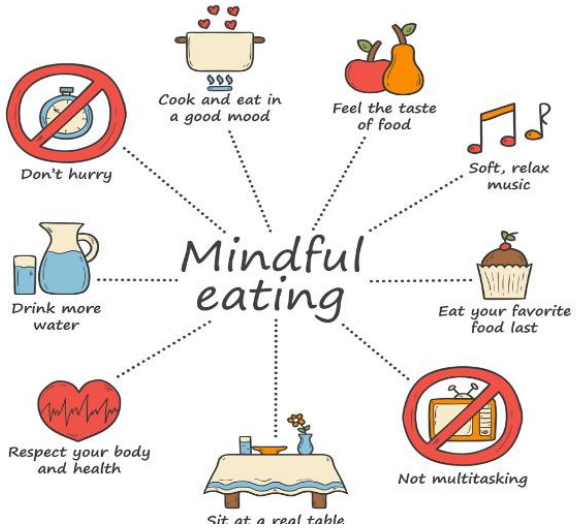

Figure 1. Factors Influencing Mindful Eating

2. Historical and Philosophical Foundations of Mindful Eating

Traditional yoga systems emphasize dietary guidelines as an integral part of spiritual and physical well-being. This is evident in texts like the Bhagavad Gita and the Hatha Yoga Pradipika, which advocate mitahara (moderation in diet) and classify food into Sattvik, Rajasic, and Tamasic categories, each influencing the mind and body differently (5). Food is similarly categorized into three different groups by the Bhagavad-Gita: Sattvik, Rajasik, and Tamasic. It provided insight into all three kinds of food and how these impact the body and psychological state of individuals. According to these Sattvik foods (e.g., fresh fruits, vegetables, whole grains, milk, honey) promote clarity, vitality, and inner peace, Rajasic foods (e.g., spicy foods, coffee, onions) stimulate activity, restlessness, and emotional turbulence, Tamasic foods (e.g., stale, overcooked, fermented foods, meat, alcohol) are said to increase inertia, confusion, and lethargy (6). Engaged Buddhism places a strong emphasis on the practice of mindfulness, which is being totally present and conscious of one's thoughts, feelings, and behaviors at all times. By practicing mindfulness, people can cultivate inner serenity, clarity, and compassion - all of which are necessary for interacting with the outside world in an effective manner (7).

3. Principles and Practices of Mindful Eating

Being conscious of the present when eating and paying great attention to one's senses, including emotional and physical ones, is the idea behind mindful eating. Although being an innovative approach to dieting, mindful eating emphasises the whole process of eating rather than the food that is consumed, and there are no strict guidelines to follow. Observing all of the senses, tastes, smells, and textures of the food consumed is the first stage, according to Albers. The second is identifying recurrent behaviours, including eating automatically and without conscious awareness, or eating while multitasking. The third is understanding what causes one to start and stop eating (8).

Jon Kabat-Zinn, the founder of the Mindfulness-Based Stress Reduction (MBSR) program at the University of Massachusetts Medical School, defines mindfulness as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally." Drawing from his experiences since launching MBSR in 1979, he authored Full Catastrophe Living in 1990 to offer practical guidance for living more consciously.

One of the foundational practices he introduced is the raisin meditation, which serves as a clear illustration of mindful eating. In this practice, individuals are invited to engage all their senses- sight, smell, touch, taste, and even hearing- while slowly observing and consuming a single raisin. This exercise encourages heightened awareness and presence during the act of eating. Rather than directing specific outcomes, the practice simply encourages noticing one's

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own moment-to-moment experience with curiosity and without judgment (9).

4. Mindful Eating vs. Conventional Eating Approaches

Work pressure, a busy schedule, and a lack of knowledge about wholesome diet are all contributing to psychological problems in addition to physical and mental health problems. As a result of improper eating habits, improper meals, and improper sleep schedules, our biological clock becomes out of sync. Because to the modern world's disruption of our natural cycles, we are falling into the trap of serious illnesses including cancer, diabetes, obesity, high blood pressure, and hyperlipidemia (10). Numerous studies have demonstrated that while bad diets, late eating, and an unhealthy lifestyle have detrimental long-term impacts, healthy eating choices and time-restricted diets (TREs) are good for health and aid in the body's healing (11). The National Heart, Lung, and Blood Institute (NHLBI) states that one of the main reasons why teenagers gain weight is their propensity to eat fast food frequently. They run the danger of developing insulin resistance as a result of their frequent fast-food consumption (12).

After consuming a certain food, the level of pleasure is directly correlated with its palatability. Taste, texture, fragrance, appearance, and other factors all have a role. Palatability improves food intake, although it's unclear how palatability affects apatite. Taste is the complete sensory experience brought on by eating. Factors such as convenience (time-saving), palatability (delicious taste), and strong flavour stimulation make junk food highly appealing, especially under stress or time constraints. High levels of sugar, salt, and fat enhance the reward response in the brain, promoting overconsumption. The ease of access and immediate gratification these foods provide make them difficult to resist, reinforcing habitual intake despite poor nutritional value (13).

5. Neurobiological and Psychological Mechanisms

a. Neurobiological Mechanism:

Observing the sensory qualities of one's food while eating is a crucial part of mindful eating ("sensory eating"). Increased sensory-specific satiety or priming of health-related goals were not able to account for the decrease in second snack consumption caused by sensory eating (14). According to research, mindfulness interventions can train the brain's two stress resilience pathways:

- ✓ The regulatory pathway, which increases activity and functional connectivity in the prefrontal cortex's stress regulatory regions
- ✓ The reactivity pathway, which decreases activity and functional connectivity in the areas that gate the brain's stress alarm system.

In terms of the regulatory pathway, we and others have demonstrated that mindfulness interventions strengthen the connectivity between regions within the executive control network and increase the coupling of the resting brain (also known as the default mode network) with regulatory regions of the prefrontal cortex (15).

According to the mindfulness stress buffering framework, mindfulness therapies also inhibit the reactivity pathway, which is responsible for gating the brain's fight-or-flight response during stress, as well as its activity and functional connectivity. Recent research indicates that mindful awareness and mindfulness therapies are linked to changes in the structure and function of the amygdala. The amygdala's central nucleus has long been thought to be a crucial node for gating the central stress response. For instance, we have demonstrated lately that mindfulness training reduces the functional connectivity of the amygdala with the subgenual anterior cingulate cortex during the stress-related resting state. This route may be crucial for orchestrating the brain's primary fight-or-flight stress response (16).

b. Psychological Mechanism:

According to Ludwig et al. (2020), when present-moment awareness is applied to all aspects of goal-incongruent behaviors, it eventually increases autonomous motivation for goal-congruent behaviors, enabling the individual to manage their behavior without exerting effort. According to them, this occurs because being aware of the current moment helps one judge the reward value of certain acts more accurately. When an activity goes against one's aims, the unpleasant emotion connected to that conflict gets encoded in the action, which lowers the action's reward value. According to Ludwig et al., this process consists of seven steps: recognizing the goal-incongruent behavior and its effects; exploring new, autonomously motivated behaviors and their effects; and observing the outcomes of behavior that has been carefully managed (17).

The ability to perceive, decipher, and integrate interior body impulses is known as interoception. Interoception deficits have been linked to eating problems and elevated body mass index. The ability to accurately identify internal physiological sensations may not usually be enhanced by mindfulness training, although it may assist focus attention on interoceptive information. Cues pertaining to hunger, fullness, and satiety will be the most directly pertinent interoceptive information for eating behavior. Therefore, paying more attention to them may be a key way that mindful eating techniques affect eating habits (18).

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6. Therapeutic Applications of Mindful Eating in Physical Health and Mental Health

Being mindful is being totally present at all times, fully conscious of one's own bodily and mental state as well as one's environment. Increasingly, mindfulness exercises are being used to treat chronic illnesses. There have been encouraging outcomes in the treatment of chronic pain, physical function, obesity, and quality of life (19).

a. Role in Weight Management and Obesity Treatment:

Weight gain and weight regain following successful weight reduction have been associated with binge eating, emotional eating, external eating, and eating in response to food cravings. Loss of control over eating and excessive food consumption are hallmarks of binge eating. There is evidence that binge eating is a significant problem among obese people, despite varying prevalence estimates for this behaviour (20).

The goal of mindfulness training is to develop the abilities needed to recognize and accept one's thoughts and feelings as well as to discriminate between physical hunger indicators and emotional excitement. These techniques focus on a person's capacity to manage psychological discomfort in healthy ways, which eventually reduces binge eating. A promising strategy for the prevention and treatment of obesity is to teach people mindfulness techniques that will help them alter their eating habits, create more adaptive reactions to emotional distress, and enhance their relationships with food (21).

c. Management of Diabetes and Metabolic Syndrome

Type 2 diabetes mellitus (T2DM) is a major global public health issue, primarily driven by factors such as insulin resistance, excess abdominal fat, sedentary lifestyle, and poor dietary habits. Among these, insulin resistance and central obesity are key contributors to the development and progression of the disease. Managing these risk factors through sustainable lifestyle modifications plays a critical role in both prevention and treatment. Regular physical activity, balanced nutrition, and healthy weight management are foundational strategies recommended to improve glycemic control and reduce the risk of complications (22).

In recent years, mindfulness-based interventions have emerged as valuable complementary approaches in managing diabetes and metabolic syndrome. Research suggests that practicing mindfulness can significantly alleviate psychological symptoms commonly associated with chronic illness, including depression, anxiety, and diabetes-related emotional distress. Additionally, individuals report improvements in overall well-being and health-related quality of life. Mindfulness practices encourage greater awareness of bodily sensations, thoughts, and emotions, which can lead to healthier behavioral choices, especially around eating and stress management.

Moreover, some studies have linked mindfulness training to favorable biological outcomes such as reduced abdominal adiposity, lower body weight, and decreased levels of telomerase activity—a marker associated with cellular aging. These findings suggest that integrating mindfulness into standard diabetes care may not only support emotional resilience but also positively influence physical health markers in individuals with metabolic conditions (23).

d. Supportive Care in Gastrointestinal Disorders:

Mindful eating practices have a significant impact on the parasympathetic branch of the autonomic nervous system (ANS), which governs the body's "rest and digest" functions. During meals, when individuals engage in mindful practices—such as slow eating, focused attention on food, and deep, conscious breathing—the vagus nerve is activated. This vagal stimulation enhances parasympathetic nervous system (PNS) activity, promoting a calm physiological state marked by reduced heart rate, lower blood pressure, and improved digestive function.

Activation of the PNS supports digestion by increasing gastrointestinal motility, stimulating the secretion of digestive enzymes, and enhancing nutrient absorption. Simultaneously, it helps reduce cortisol, the primary stress hormone, thereby decreasing stress-induced cravings and emotional eating tendencies. This balanced physiological state not only improves the overall eating experience but also contributes to better metabolic and emotional regulation.

Mindful eating has shown particular therapeutic value in conditions like irritable bowel syndrome (IBS), where vagal tone and stress play crucial roles in symptom exacerbation. By calming the stress response and modulating the gut-brain axis, mindful eating helps alleviate gastrointestinal discomfort and promotes digestive harmony. Furthermore, emerging research indicates that mindfulness practices, including mindful eating, may aid in the management of hypertension. This is achieved through a combination of stress reduction, improved autonomic balance, and increased adherence to healthier dietary patterns. (24)

e. Management of Anxiety, Depression, and Stress-Related Disorders:

Mindful eating offers substantial therapeutic benefits for individuals struggling with depression, anxiety, and stress-related disorders. By encouraging awareness of the present moment and breaking free from automatic, emotionally driven eating patterns, this approach fosters a

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more conscious and intentional relationship with food. Rather than using food as a coping mechanism for emotional distress, individuals learn to pause, observe, and respond thoughtfully, reducing the tendency to eat in response to negative emotions.

This shift in awareness contributes to a reduction in sympathetic nervous system arousal and lowers cortisol levels—the hormone associated with stress. At the same time, mindful eating strengthens activity in the prefrontal cortex, a region of the brain involved in emotional regulation and decision-making. This neural shift enhances one's ability to manage emotional impulses more effectively and with greater clarity (25).

Additionally, mindful eating supports emotional healing by fostering a non-judgmental attitude toward one's eating behaviours. It helps individuals move away from cycles of guilt, shame, or self-criticism and instead cultivate self-compassion and acceptance. Through the deliberate use of all five senses during eating—sight, smell, taste, touch, and even sound—practitioners develop a deeper connection to their food and bodily sensations.

A key outcome of consistent mindful eating practice is improved interoceptive awareness—the ability to accurately detect internal bodily cues such as hunger and fullness. This heightened awareness not only improves eating regulation but also contributes to better mood stability and energy levels throughout the day (26)

f. Prevention of Eating Disorders

Studies have shown that individuals who engage in binge eating often exhibit poor responsiveness to conventional obesity treatments and tend to regain weight rapidly following initial weight loss. This pattern highlights the complex psychological underpinnings of binge eating behaviors, which are not solely driven by physiological hunger. The escape theory and affect regulation models suggest that binge eating serves as a maladaptive strategy to manage or temporarily escape from emotional pain, negative self-perceptions, or psychological distress.

Mindfulness-based interventions aim to address these underlying emotional and cognitive patterns. Through regular practice, individuals learn to observe their thoughts, feelings, and bodily sensations without judgment or immediate reaction. This increased awareness helps distinguish between genuine physical hunger and emotional triggers that prompt overeating. Instead of using food to avoid discomfort, mindfulness encourages individuals to sit with their emotions, process them consciously, and choose healthier, more adaptive responses (27).

7. Conclusion

Unlike traditional diet-based strategies that often emphasize calorie counting and strict behavioural control, mindful eating takes a deeper approach by addressing underlying factors such as emotional imbalance, stress, and confusion about internal bodily cues. By cultivating awareness, nurturing self-kindness, and reducing mental resistance, it encourages lasting lifestyle changes. This approach supports long-term commitment and helps prevent relapse—common pitfalls in conventional methods.

In summary, mindful eating—drawing from both Eastern philosophies and contemporary psychological practices—shows promise as a non-pharmacological approach to improving both physical and mental health. Evidence points to its potential in supporting healthy weight management, enhancing metabolic and digestive function, and improving emotional well-being. However, as this review is narrative in nature, it may not encompass all existing research. Future studies may provide further insights, and current conclusions should be interpreted as evolving rather than definitive.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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