

Relationship Between Stress and Emotional Eating

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Abstract. In contemporary society, stress is a ubiquitous experience, with well-documented effects on health and well-being. Stress can significantly impact eating habits, leading to changes such as overeating, undereating, or choosing unhealthy foods. Nonetheless, the nexus between stress and eating habits remains less elucidated. The aim of this paper is to explore the intricate relationship between stress and eating habits, delving into the psychological mechanisms that underpin this connection. Recent research highlights that stress can wield a significant impact on eating habits, leading to shifts in food preferences, heightened consumption of calorie-rich foods, and an increased susceptibility to obesity and related health issues. Furthermore, studies suggest that stress-induced alterations in eating behavior may be orchestrated by a complex interplay of psychological factors, including emotional regulation, reward processing, and cognitive control. This paper synthesizes the latest research on the relationship between stress and eating habits, with a particular focus on the underlying mechanisms.

Keywords: Stress, diet, emotional eating.

1. Introduction

Stress can significantly impact eating habits, leading to changes such as overeating, undereating, or choosing unhealthy foods. Various factors, including work, school, relationships, and financial difficulties, can trigger stress, which in turn may lead to emotional eating, binge eating, or restrictive eating patterns. Over time, these stress-related changes in eating habits can result in weight gain, obesity, and other health issues.

However, there are healthy coping strategies that can help manage stress, such as regular exercise, meditation, and seeking social support. Additionally, there are techniques for improving eating habits, including meal planning, practicing mindful eating, and seeking professional help when necessary. Research in this area can further explore ways to promote healthy dietary habits to reduce the risk of obesity and related health problems.

This paper will be organized into sections that correspond to the psychological mechanisms underlying stress-induced changes in eating behavior. Each section began with a brief overview of the mechanism under consideration, followed by a summary of the latest research findings and a discussion of their implications for understanding the relationship between stress and eating habits. The paper concluded the main findings and discussing their implications for future research and interventions aimed at promoting healthy dietary habits.

2. Emotional Eating

Emotional eating frequently arises as a response to stress, anxiety, and other adverse emotions. Instead of addressing physical hunger, it involves consuming food to manage emotional distress. This behavior often serves as a distraction from negative emotions or an attempt to seek comfort and pleasure. For instance, individuals facing work-related stress might resort to snacks or desserts temporarily to alleviate their mood. However, emotional eating can yield detrimental effects on overall health and well-being.

Research indicates that emotional eating correlates with heightened cortisol levels, the stress hormone [1]. This suggests that emotional eaters might experience increased stress and that stress might fuel their emotional eating tendencies. Furthermore, emotional eating can contribute to weight gain, obesity, and a range of health issues. In contrast, binge eating involves consuming substantial

quantities of food in a short span, often in an uncontrollable and secretive manner. Negative emotions like stress, anxiety, or depression frequently trigger binge eating, leading to feelings of guilt, shame, and a sense of lost control. People under relationship stress, for instance, might resort to binge eating as a way to cope. Brain activity studies suggest that binge eating could be linked to stress-triggered alterations highlighting stress as a potential catalyst for binge eating episodes [2]. Moreover, binge eating is linked to physical health concerns such as high blood pressure, heart disease, and diabetes. Another disordered eating pattern, restrictive eating, can also be influenced by stress. This involves limiting food intake to control weight or body shape. Negative emotions like stress, anxiety, or low self-esteem often drive restrictive eating, which can lead to malnutrition, eating disorders, and health complications.

Some people concerned about their appearance, for example, might engage in restrictive eating to regain a sense of control. Studies reveal associations between restrictive eating and elevated levels of anxiety and, suggesting that negative emotions contribute to the development of restrictive eating habits [3]. Furthermore, research demonstrates that stress is a common trigger for both binge eating and restrictive eating underscoring stress as a pivotal factor in the emergence and persistence of disordered eating patterns.

3. Stress and Health

In today's fast-paced world, stress has become a prevalent phenomenon, significantly influencing gut health and metabolism. The gut-brain axis serves as a two-way communication system between the central nervous system and the enteric nervous system, which regulates gastrointestinal tract functions. Stress can disrupt this communication, resulting in alterations in gut motility, secretion, and permeability [4]. Often referred to as the "second brain," the enteric nervous system houses as many neurons as the spinal cord. Responsible for overseeing digestion, it controls activities such as enzyme secretion, smooth muscle contractions within the gut wall, and blood flow to digestive organs.

Operating via a complex interplay of neurotransmitters, hormones, and immune cells, the gut-brain axis is integral to this process. Stress hormones like cortisol and adrenaline exert an impact on gut motility and function. Cortisol, released during stress, heightens gut motility and secretion, while adrenaline reduces gut motility and blood flow. These shifts can lead to gastrointestinal issues like diarrhea, constipation, and abdominal discomfort [5].

The gut microbiota, a vital component of gut health and overall well-being, consist of a diverse community of microorganisms performing various roles, from food breakdown to immune system regulation. Research indicates that stress can disturb the equilibrium between beneficial and harmful gut bacteria, leading to dysbiosis, greater susceptibility to infections, and illnesses [6].

Moreover, stress can influence nutrient absorption and metabolism, potentially resulting in weight gain, obesity, and related health complications. The production and secretion of essential digestive enzymes, crucial for nutrient breakdown and absorption, can be impacted by stress. This can extend to the absorption of specific nutrients such as iron, calcium, and magnesium, potentially leading to deficiencies and associated health issues [6].

Beyond its effects on gut health and metabolism, stress can detrimentally impact mental well-being. Chronic stress has the potential to trigger anxiety, depression, and other mental health concerns. Therefore, effective stress management techniques should be adopted as part of a healthy lifestyle. These encompass activities like exercise, meditation, deep breathing, and spending time in nature. A balanced diet and adequate sleep further play a pivotal role in nurturing gut health and overall vitality.

In summary, the ramifications of stress are far-reaching, impacting both gut health and metabolism. By managing stress effectively, individuals can promote their overall well-being, safeguard their gut health, and support optimal bodily [7].

4. Stress and Nutrition

Nutrition assumes a pivotal role in managing stress and nurturing gut health. A well-rounded and balanced diet offers the potential to mitigate stress, enhance gut well-being, and foster overall health (Fig. 1). A study conducted by Penninx et al. revealed that a diet abundant in fruits and vegetables correlated with lower stress levels [8]. Similarly, a randomized controlled trial by Dinan et al. demonstrated that adopting a Mediterranean-style diet substantially alleviated symptoms of depression and anxiety in individuals grappling with irritable bowel syndrome [8].

The DASH diet, which accentuates whole grains, fruits, vegetables, and lean protein, has also exhibited the capacity to alleviate stress and elevate gut health [9]. The inclusion of fruits and vegetables enriches the diet with antioxidants, vitamins, and minerals, which can help mitigate oxidative stress and inflammation—hallmarks associated with an elevated risk of chronic ailments and mental health disorders [9]. Vitamin C, for instance, found abundantly in citrus fruits, has demonstrated the ability to lower cortisol levels and enhance mood in healthy individuals [9]. Correspondingly, the flavonoids inherent in berries and dark chocolate have been documented to bolster cognitive function while alleviating symptoms of anxiety and depression [10].

Whole grains, as a source of dietary fiber, contribute to bowel regularity and encourage the proliferation of beneficial gut bacteria. De Filippis et al. unearthed a correlation between whole grain-rich diets and elevated levels of butyrate—a short-chain fatty acid synthesized by gut bacteria with anti-inflammatory properties [11]. Butyrate's multifaceted benefits encompass enhancing gut barrier function, quelling inflammation, and affording protection against colon cancer [11].

Lean protein, encompassing fish, chicken, and legumes, supplies essential amino acids vital for neurotransmitter production. These neurotransmitters, including serotonin and dopamine, play pivotal roles in mood regulation [12]. A study by Stilling et al. detected that a protein-rich, low-carbohydrate diet correlated with diminished stress and anxiety levels in mice [12].

In addition to the above, prebiotics, probiotics, and fermented foods contribute to gut health enhancement and stress reduction. Prebiotics, non-digestible fibers stimulating beneficial bacterial growth, have shown potential in improving stress response and lowering cortisol levels in healthy individuals [13]. Probiotics, live bacteria fostering diverse gut microbiota, have garnered attention for their ability to alleviate symptoms of anxiety and depression according to a meta-analysis by Ng et al. [13]. The consumption of fermented foods, like yogurt, kefir, and sauerkraut, is also associated with fostering gut health and diminishing stress. Research conducted by Tillisch et al. underscored the connection between consuming fermented foods over four weeks and reduced activity in brain regions associated with emotional processing [14].

Stress can have a significant impact on both eating habits and digestive health. When under stress, the body releases cortisol, a hormone known to increase appetite and cravings for calorie-dense foods. Additionally, sleep patterns are often disrupted, further exacerbating unhealthy eating habits. Research indicates that insufficient sleep is associated with poorer food choices and overconsumption. By alleviating stress, individuals are more likely to make mindful decisions about their diet. Moreover, this reduction in stress levels can lead to a slower pace of eating, which in turn reduces the risk of obesity associated with rapid consumption. Furthermore, stress triggers the body's 'fight-or-flight' response, diverting blood flow away from the digestive system and potentially leading to digestive issues. By effectively managing stress, individuals can enhance their digestion and lower their risk of developing such problems.

In summary, there is a close relationship between nutrition, stress management, and gut health. Employing a diet rich in fruits, vegetables, whole grains, lean protein, and gut-friendly components like prebiotics, probiotics, and fermented foods can significantly contribute to alleviating stress, enhancing gut well-being, and promoting holistic health.

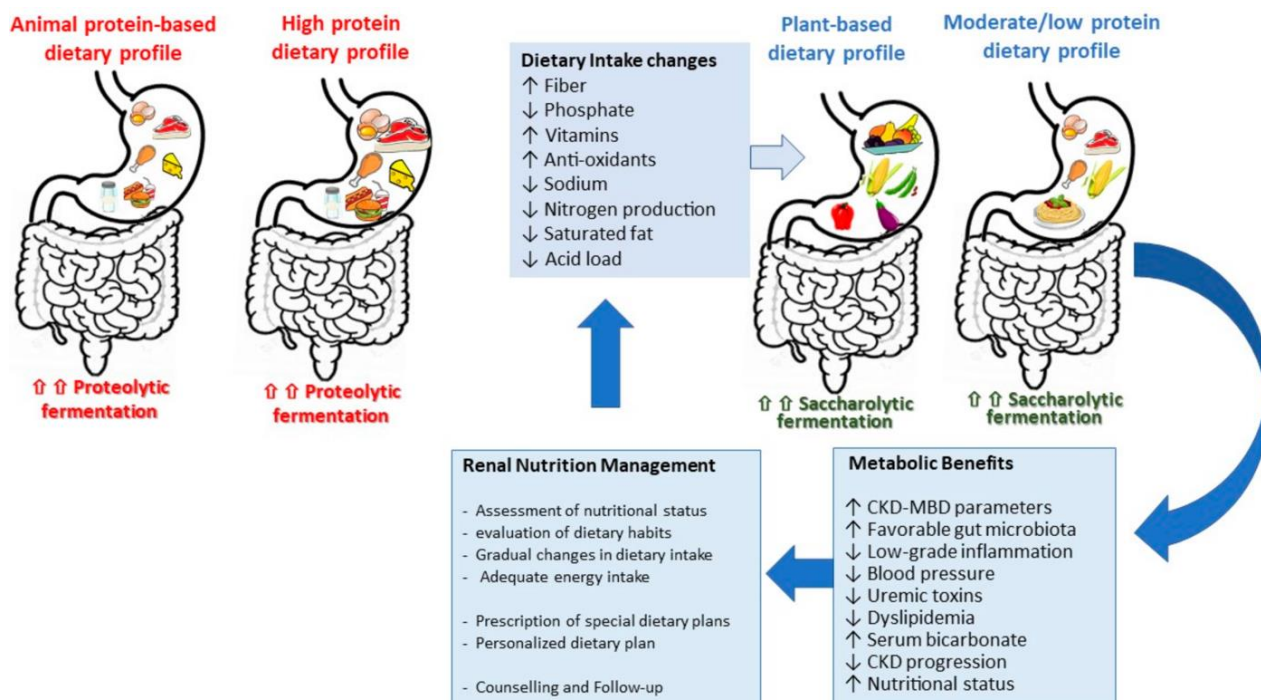


Figure 1. Macro/Micronutrients gained by different dietary patterns [3].

5. Suggestions for Emotional Eating

Enhancing eating habits and effectively managing stress can pose challenges, yet a range of strategies exists to facilitate these goals. The practice of meal planning and preparation serves as a valuable approach to elevate eating habits and alleviate stress. Research published in the *Journal of Nutrition Education and Behavior* underscores that individual who premeditated their meals enjoyed a higher diet quality and consumed fewer calories from fast food establishments compared to non-planners [15]. This emphasizes that meal planning fosters healthier food choices. A separate study published in the *American Journal of Preventive Medicine* highlights that those dedicating more time to meal preparation exhibited healthier diets and a lower propensity for obesity in contrast to those spending less time in such endeavors [15]. This underscores how investing time in meal preparation facilitates the utilization of wholesome, fresh ingredients and minimizes reliance on calorie-dense, nutrient-sparse processed foods. Proactively arranging meals in advance not only ensures access to balanced, nourishing choices but also mitigates the allure of unhealthy fare. Furthermore, it streamlines busy weekday routines, minimizing stress and permitting focus on other vital tasks.

Another potent strategy is mindful eating—a practice that not only elevates eating habits but also mitigates stress. This approach involves attentiveness to the sensory dimensions of food, encompassing taste, texture, and aroma, while remaining present in the moment during meals. Study underscores that mindful eating interventions yield improvements in eating behaviors, such as curbing binge and emotional eating, while simultaneously enhancing psychological well-being by reducing stress and anxiety [16]. Practicing mindful eating fosters heightened awareness of hunger and fullness cues, aiding in the avoidance of overconsumption. This cultivates sound food choices and curtails overindulgence in less healthful snacks.

The pursuit of professional guidance stands as another pivotal avenue for refining eating habits and stress management. An investigation featured in the *Journal of the Academy of Nutrition and Dietetics* accentuates that individual who receive nutrition counseling from registered dietitians exhibit improved diet quality and a higher likelihood of adhering to dietary recommendations compared to their non-counseled counterparts [17]. This underscores the value of professional input in fostering judicious dietary choices. Additionally, a review published in the *Journal of Clinical Psychology* underscores the efficacy of cognitive-behavioral therapy in addressing eating disorders

and curtailing stress-triggered eating behaviors [17]. Seeking professional aid enables individuals to develop coping mechanisms for managing stress and emotions, while identifying triggers underlying disordered eating patterns.

6. Conclusion

In conclusion, stress can have a significant impact on eating habits, leading to changes such as emotional eating, binge eating, or restrictive eating habits. These changes can have negative consequences and health risks, including weight gain, obesity, and other health problems. The impact of stress on gut health and metabolism is also significant, with stress hormones affecting gut motility and function, gut microbiota composition and diversity, as well as digestive enzymes, nutrient absorption, metabolism, and energy expenditure. However, there are strategies for improving eating habits and managing stress, such as meal planning, mindful eating, and seeking professional help. By incorporating these strategies into daily life, individuals can promote healthy dietary habits, reduce the risk of obesity and related health problems, and improve their overall well-being. It is important for future research and interventions to continue exploring the relationship between stress and eating habits, as well as the role of nutrition in stress management and gut health. Overall, the relationship between stress and eating habits is complex, and there are many factors that can influence it. However, by incorporating healthy coping mechanisms, improving eating habits, and making other lifestyle changes, individuals can promote healthy dietary habits, reduce the risk of obesity and related health problems, and improve their overall well-being. It is important for future research and interventions to continue exploring the relationship between stress and eating habits, as well as the most effective strategies for promoting healthy eating habits and reducing the negative effects of stress on overall health.

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