Implications of the Gut-Brain-Microbiome Axis and Stress Response for Maladaptive Eating Behavior: A Literature Review

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Objectives (purpose) Several areas of research are revealing that the gut microbiome, or the bacteria colonized in human intestines, can have a significant impact on specific disease states, including maladaptive eating behaviors and eating disorders. Specifically, the gut microbiome can influence signaling pathways that affect brain regions related to emotion and behavior regulation. This connection between the gut and brain suggests that there may be mechanisms by which the gut influences behavior. If these mechanisms can be understood, interventions can be developed to improve gut health as well as eating behavior regulation. **Design** This paper reviews the current literature pertaining to the gut microbiome, the gut-brain axis, and behavior regulation interventions specifically in populations with eating disorders. **Results** Findings suggest that eating behavior is strongly influenced by the hypothalamic-pituitary-adrenal (HPA) axis, which produces the stress hormone cortisol. Cortisol can be influenced by alterations in gut hormones caused by a dysregulated gut microbiome. If the gut microbiome is dysregulated, HPA axis activation will be dysregulated and the body will respond to physical and psychological stressors with abnormal amounts of cortisol, which in turn influences hunger and satiety hormone levels and alters subsequent eating behavior. **Conclusion** Studies indicate that when the stress response is attenuated by mindfulness practices, behavior regulation improves, suggesting implications for food intake and eating behavior. This paper also explores gaps in available data related to stress response and eating behavior, future research directions, and ways to further implement existing mindfulness-based interventions in the field of nutrition.