

Brain Imaging Findings Could Lead to New Eating Disorder Treatments

By Michelle Brubaker | December 20, 2017

Through a series of neuroimaging studies, researchers at University of California San Diego School of Medicine have discovered differences in how the brain responds to food rewards in individuals with a history of bulimia nervosa and anorexia. We asked [Walter Kaye, MD](#), director of the [UC San Diego Eating Disorders Center for Treatment and Research](#) and Christina Wierenga, PhD, professor of psychiatry at UC San Diego School of Medicine and co-director of research at the UC San Diego Eating Disorders Center for Treatment and Research, to explain how these findings further define specific brain mechanisms involved in eating disorders that could lead to new therapies.

Question: What differences did the neuroimaging studies find in the brains of patients with bulimia and anorexia?

Answer: The brains of individuals with anorexia nervosa and bulimia nervosa process reward, food and hunger/satiety differently than healthy peers. For example, women recovered from anorexia nervosa tend to show decreased brain response to both food and money in brain reward regions, whereas women recovered from bulimia nervosa tend to show increased brain reward response. Because the reward response remains low, this may help explain why women with anorexia nervosa are not motivated to eat and can starve themselves.

Our findings in bulimia nervosa show that the amplified brain reward response is not diminished when the person is full as it is in healthy women. They suggest that the brain may not devalue food in bulimia nervosa, thus sending signals to continue to eat, which may underlie the propensity to binge eat.

Q: How can these results improve the future of care for this patient demographic?

A: Eating disorders still have the highest mortality rate of any mental health illness — approximately 10 percent of patients die from their eating disorders. The history of medicine is that a better understanding of the causes of an illness often leads to more effective treatment. We really know very little about the causes and factors that maintain eating disorders, which has hampered our ability to effectively treat these disorders. Not only do results from these imaging studies provide support for a brain basis of eating disorders — just as other psychiatric disorders

have been linked to altered brain function — they are beginning to help us identify treatment targets to guide development of medication or behavioral therapies specific to eating disorders.

For example, we are developing strategies to help patients learn skills to manage or compensate for temperament characteristics, such as altered reward processing and sensitivity to hunger and satiety. One way we do this is by involving family members in treatment and building external structures that reduce uncertainty and provide helpful feedback to promote recovery behaviors.

We also use contingency management strategies to help motivate patients during treatment and are currently testing the effectiveness of different medications to directly target these aberrant neural systems.

Q: What should physicians know when addressing anorexia/bulimia?

A: Anorexia nervosa and bulimia nervosa are often missed by physicians because patients frequently do not disclose their symptoms and are ambivalent about treatment. It is important for physicians to be aware of the fact that their patients may have an undiagnosed eating disorder and they may be the first provider to discuss the illness with the patient.

Taking a non-judgmental stance is very important. For years, these patients were told their illness was a choice and that their behavior was “vain,” “willful” or “manipulative.” Recent research shows this is not the case. By physicians communicating with the patient that there is a biological basis for his or her disorder, blame and stigma can be reduced, the patient’s experience is validated and they are motivated to seek treatment while instilling hope that recovery is possible.

Q: What does it take to manage the UC San Diego Eating Disorder Center, especially with a research element?

A: What sets UC San Diego apart is the strong commitment to evidence-based practice and the close integration of science and practice to guide our treatment approach. We are committed to closing the research-practice gap. We adhere to a scientist-practitioner model that fosters synergy by urging clinicians to allow empirical research to influence their applied practice, while simultaneously allowing their clinical experiences to shape future research questions.

We take this a step further by including the patients and families in this dialogue. For example, we integrate psycho-education on the neurobiological mechanisms of eating disorders into our curriculum for all our treatment programs. These sessions not only improve our patients’ understanding of the disorder and validate their experiences, they also provide an opportunity for patients and family members to provide feedback on research findings and raise new research questions to ensure the relevancy of our research.

Our clinicians are well-versed in the research literature, and our researchers are well-versed in clinical presentations and treatment approaches. Our staff is rigorously trained and supervised and

continually evaluates the program's treatment outcomes to adapt curriculum that meets our patients' needs and ensures best practices.

Our goal is to develop and deliver the most effective and least expensive treatments for these chronic and often fatal disorders.

UC San Diego School of Medicine Imaging Studies

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