Investigating how genetic and environmental factors influence the risk and course of eating disorders

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Eating disorders are debilitating conditions characterized by dysregulated eating and/or weight-control behaviors leading to

significant impairment of psychosocial functioning and/or physical health. Both environmental factors and variation in multiple genetic variants influence eating disorder etiology and maintenance.

In a new thesis from Karolinska Institutet, Jet Termorshuizen, Ph.D. student at the Department of Medical Epidemiology and Biostatistics, contributed to unraveling the intricate web of genetic and environmental factors influencing eating disorders.

Jet began her studies just as the world plunged into the COVID-19 pandemic, and her research group quickly hypothesized that this global disruptive event may pose unique challenges for people with an eating disorder. This is why Jet dove into this research topic while simultaneously focusing on her work on eating disorder genetics with the Psychiatric Genomics Consortium. Her work underscores the relevance of understanding how both environmental and genetic factors contribute to the onset and maintenance of eating disorders.

Jet's first and second studies investigated how individuals with pre-existing eating disorders were affected by the COVID-19 pandemic. The studies demonstrated more frequent engagement in eating disorder behaviors, increased levels of anxiety, and a switch to online instead of face-to-face treatment during the early phase of the pandemic (April–May 2020). Furthermore, participants frequently reported concerns about certain aspects of the pandemic negatively affecting their eating disorder. Notably, a subset of the participants remained negatively affected by the pandemic one year after the initial urgent phase.

Jet's third study is a global collaboration that included the first genome-wide association study (GWAS) of the transdiagnostic symptom binge-eating behavior—including almost 40,000 cases—and a more powerful GWAS of anorexia nervosa. Jet and her colleagues identified multiple genetic loci for binge-eating behavior, and the results suggest that, on a

genetic level, binge-eating behavior shares characteristics with AN but is also genetically distinct.

What are the most important results in your thesis?

My thesis contains several important results. First, the GWAS has the potential to inform multiple eating disorder presentations simultaneously, as it focuses on the transdiagnostic symptom binge-eating behavior. The results indicate that distinct eating disorder presentations can potentially be distinguished on a genetic level.

Second, we have shown that individuals with an eating disorder are vulnerable to the consequences of the COVID-19 pandemic. The studies furthermore highlight that everybody's response to such a global disruptive event is different, and that the response may depend on each individual's situation. For example, while many reported a lack of social support (e.g., when living alone), others reported increased social support (e.g., by having more help from family members around mealtime).

Altogether, these studies highlight that genetic factors influence eating disorders, and that global disruptive events—such as the COVID-19 pandemic—may affect the course of an eating disorder.

Why did you become interested in this topic?

This topic combines two of my main interests—medicine and neuroscience. Eating disorders are highly clinically relevant conditions, and intriguing from a neuroscientific and psychiatric perspective. Contributing to both fundamental research—identifying genetic variation related to eating disorders—and simultaneously to a more directly relevant public health concern taught me about different aspects

of research.

Another reason to choose this topic, and this research group, was the opportunities to collaborate on a global level. Leading analytic teams has been pivotal in my development as a researcher, as it has taught me about leadership and teamwork.

What do you think should be done in future research?

I think the main focus should be on combining genetic with non-genetic factors to better understand the risk and course of eating disorders. Related to my specific thesis topic, for example, it would be interesting to know how genetic vulnerability for an eating disorder may interact with experiences during the pandemic. On a more general level, understanding the contribution of a wide range of factors (e.g., genetic, metabolic, psychologic) to eating disorder risk and course is relevant.

Potentially, prediction models that integrate all these factors could be a helpful tool for clinicians: for example, by providing the probability of developing a favorable or unfavorable illness course. This is a promising avenue where genetic studies can demonstrate their clinical relevance; in addition to updating our understanding of the biology of eating disorders and identifying potential treatment targets.

More information: Genetic and environmental factors influencing the risk and course of eating disorders.
openarchive.ki.se/xmlui/handle/10616/48881

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