

Even with higher education, obese women run greater risk of depression

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This is an image of a weight scale. Credit: CDC/Debora Cartagena

Even with higher education, women with a body mass index (BMI) of 30-34.9 (obese I) have double the risk of depression compared with women of normal weight and same educational attainment, according to a new study conducted by a sociologist at Rice University.

The study was published this month by the journal *Obesity Research and*

Clinical Practice.

The researchers used the standard weight categories: [normal weight](#) (BMI 18.5-24.9), overweight (BMI 25-29.9), obese I (30-34.9), obese II (35-39.9) and obese III (BMI greater than 39.9). They found similar results for obese II and III participants; however, not enough participants were available for statistical validation. The BMI classifications are related to body-fat levels and predict the likelihood of developing obesity-related health problems.

"Previous research has shown an association of depression and obesity with low education, but we're showing it also exists with [women](#) who have higher education as well," said Ashley Kranjac, lead author and Rice postdoctoral fellow in population health in Rice's Department of Sociology and Rice's Kinder Institute for Urban Research. "I was surprised by the finding. Usually [higher education](#) is associated with all the good things, like higher income, better neighborhoods, greater access to [health care](#) and better overall health, and you'd never think education and obesity combined could have this effect on mental health."

The study, "Depression and Body-Mass Index, Differences by Education: Evidence from a Population-based Study of Adult Women in the U.S. Buffalo-Niagara Region," involved a random sample of 1,928 healthy women ages 35-80. Researchers used New York State Department of Motor Vehicle records and information from the Health Care Finance Association to identify potential participants.

Trained professional interviewers took physical measurements for [body-mass index](#) and conducted standardized, in-person interviews. The detailed interviews included questions dealing with demographic traits, medical history, diet and several aspects of alcohol consumption throughout the person's lifetime. All participants also completed the Center for Epidemiologic Studies Depression Scale questionnaire, a tool

designed to measure depression status among the general population.

Kranjac said recent research indicates that women have significantly more chronic difficulties and face more cumulative disadvantages compared with men. "Our study provides evidence that in the examination of ongoing strain and cumulative stressors leading to depressive symptoms in women's lives, considering weight status and other factors concurrently may be informative," she said.

"What this means in terms of treatment programs for clinicians is that they need to consider education and obesity and depressive symptoms in combination when considering treatment options. You can't think of these things in isolation, because they don't work independently of each other," Kranjac said.

The study also confirms previous research that found BMI was significantly different for those who reported being depressed compared with those who were not depressed. It found:

- Depressed women were more likely to be obese.
- Depressed women were more often older, not married, less educated, a former- or current-smoker, less physically active, consumed more calories, averaged less than eight hours of sleep and had a lower income.
- Obese I women's odds of [depressive symptoms](#) were 43 percent higher than normal-weight women, and the odds for obese II/ III women were approximately 57 percent higher than for women of normal weight.

All of the women who participated in the study provided written informed consent. The research team pointed out that the study does have some limitations, including not knowing if a participant's depression resulted from weight gain or vice versa, weight fluctuation,

geographical influencers (local economy) and the small number of racial and ethnic minority group members sampled in the study.

However, Kranjac said the findings are significant and are applicable to a subset of the larger society who have a BMI of obesity I in the United States.

"To our knowledge, no study has used a large, population-based sample of women to study the association between depression, weight status and education level," Kranjac said. "By studying this association in healthy women without other chronic diseases or disorders, we are better able to understand the associations between depression, increased [weight status](#) and the impact of [educational attainment](#)."

Provided by Rice University

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