

Being overweight linked to excess stress hormones after eating

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Overweight and obese men secrete greater amounts of stress hormones after eating, which may make them more susceptible to disease, a new observational study finds. The results will be presented Saturday at The Endocrine Society's 95th Annual Meeting in San Francisco.

Excess weight and obesity are a global health problem, and medical researchers are seeking different approaches to reduce the burden of disease. One way to do this is by identifying differences in hormonal regulation between overweight and lean people in response to various situations, including food intake.

The hormone cortisol is secreted by the adrenal gland in response to stressful situations, as well as after [food consumption](#). Previous studies have demonstrated that overweight people secrete more of the hormone in response to stress, compared to their leaner counterparts, so investigators wanted to determine whether they secrete more after food intake, as well.

What they found was that overweight and [obese men](#) had a significantly greater increase in salivary cortisol levels after consuming a meal, compared to men who were not overweight. Among the overweight and obese group, salivary [cortisol levels](#) increased by 51 percent, compared to 5 percent among the normal-weight group.

"This research indicates that when we are carrying excess fat stores, we may also be exposing our bodies to increased levels of the [stress](#)

[hormone cortisol](#) every time we have a meal," said study lead author Anne Turner, Ph.D., senior lecturer at Deakin University in Melbourne, Australia. "If overweight and [obese individuals](#) have an increase in cortisol every time they ingest food, they may be at a greater risk of developing stress-related diseases."

[Study participants](#) included 19 normal-weight men with a body mass index of 20-25, and 17 overweight or obese men with a body-mass index of 27-35. All were between the ages of 50 and 70 years.

Participants were given foods, including bread, margarine, cheese, processed meat, tomatoes, cucumbers, nuts, fruit bars, and fruit juice to prepare their own lunch. Regardless of [body mass index](#), participants consumed meals with comparable amounts of calories, as well as protein, carbohydrates, and fats.

Investigators took saliva samples to test for cortisol concentrations every 15 minutes for 30 minutes before participants ate the prepared lunch, and then, again, for 90 minutes after eating. They then used a sensitive test, called an enzyme immunoassay, which uses antibodies to detect the presence of a specific compound, which, in this case, was cortisol.

"Greater exposure of the body to cortisol may in turn, increase our risk of developing stress-related diseases such as cardiovascular disease, type 2 diabetes, depression and anxiety," Turner said. "Here is one more reason to shed any excess weight."

The Centre for Physical Activity and Nutrition Research at Deakin University funded the study.

Provided by The Endocrine Society

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