

## Individual Stress Linked to Adolescent Obesity

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Stress may indeed be a direct contributor to childhood obesity. That's according to a new Iowa State University study finding that increased levels of stress in adolescents are associated with a greater likelihood of them being overweight or obese.

The study of 1,011 adolescents (aged 10-15) and their mothers from low-income families living in three cities – Boston, Chicago and San Antonio – is posted on the website of the *Journal of Adolescent Health*, and will be printed in its August issue. Forty-seven percent of the teens in the sample were overweight or obese, but that percentage increased to 56.2 percent among those who were impacted by four or more stressors.

"We found that an adolescent or youth who's more stressed – caused by such things as having poor grades, mental health problems, more aggressive behavior, or doing more drugs and alcohol – is also more likely to be overweight or obese," said lead author Brenda Lohman, an Iowa State assistant professor of human development and family studies (HDFS).

Susan Stewart, an ISU associate professor of sociology; and Steven Garasky, a professor of HDFS at Iowa State; joined Lohman on the research team. Former ISU faculty members Craig Gundersen, a member of the agricultural and consumer economics faculty at the University of Illinois; and Joey Eisenmann, a member of the kinesiology and pediatrics faculty at Michigan State University, also contributed to the study.

### **Data collected from noted three-city study**

The study analyzes data obtained from the "Welfare, Children and Families: A Three-City Study" – a six-year longitudinal investigation. Researchers measured the height and weight of the adolescents to determine their body mass index, which was subsequently used to determine weight status based on two widely used classification systems. Adolescent food insecurity status and individual, maternal, and family stressors were also determined through interviews.

The five factors used to determine the individual stressor index for the adolescents were:

- Academic problems
- Consumption of drugs and alcohol
- Depression or poor mental health levels
- Acting out or aggressive behaviors
- Lack of future orientation.

The researchers wrote that the adolescents' relationship with stress and becoming overweight may be a result of biological (perturbed hypothalamic-pituitary-adrenal glands) as well as behavioral responses to stress, such as overeating and lack of exercise. "It could possibly be that the obesity is leading to these stressors too," Lohman said. "And so the work that we're doing right now looks at which one of these is really coming first: the stressors or the obesity. We know that it is cyclical and that all of these factors just compound on each other."

The study also found that a mother's stress, coupled with food insecurity in the household – a situation in which an individual cannot access enough food to sustain active, healthy living – contributes to a child's chances of becoming overweight or obese.

"In our past research, we did not find this association for older youth (ages 11-17), we only found it for young children (ages 3-10) who were in a house that had enough food or were food-secure," Lohman said. "But it may be that the adolescents are more cognitively aware of what's going on in the household and they take on their mothers' stress as well. This may be exacerbated in houses where there's not enough food."

### **Mothers receive the initial focus**

While this study singles out mothers, fathers aren't immune to their child's weight status either.

"My own research focuses on fathers and shows that fathers, too, have an effect on children's eating habits and obesity," said Stewart, author of the book "Brave New Stepfamilies," who had another study posted by the Journal of Adolescent Health last month on nonresident father involvement and adolescent eating patterns.

"In our latest study, we found that kids who are involved with nonresident dads eat better – more vegetables, less fast food," she said. "However, similar to the Lohman study, living with a single mom was associated with worse eating habits."

Lohman says the new research should emphasize the need for health care professionals to take a more holistic approach in their treatment of obese teens. "We absolutely have to focus on their (teens) health, well-being, nutrition and exercise – and education of these things for them," she said. "But we really need to also look holistically at their life and work toward reducing stress and rates of food insecurity for those adolescents as well."

Gunderson, Garasky and Lohman also published a study on the relationship between food insecurity and adolescent obesity. Among 2,516 participants (1,239 girls, 1,277 boys) drawn from the 2001-2004 National Health and Nutrition Examination Survey, 37 percent of families were considered food insecure. Using five different measures of obesity – BMI, waist circumference, triceps skinfold thickness, trunk fat mass, and percent body fat – the researchers determined that 15 percent to 45 percent of children were classified as obese. Yet they found no statistically significant relationship between food insecurity and obesity, regardless of which indicator was used. The study is online and published in the June 2009 issue of the Journal of Nutrition.

Lohman is part of another team of ISU researchers that just submitted a new grant proposal to develop family intervention strategies to reduce childhood obesity.

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