

Regular consumption of sugary beverages linked to increased genetic risk of obesity

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(Medical Xpress)—Researchers from Harvard School of Public Health have found that greater consumption of sugar-sweetened beverages (SSBs) is linked with a greater genetic susceptibility to high body mass index (BMI) and increased risk of obesity. The study reinforces the view that environmental and genetic factors may act together to shape obesity risk.

The study appears September 21, 2012 in an advance online edition of the [New England Journal of Medicine](#).

"Our study for the first time provides reproducible evidence from three prospective cohorts to show genetic and dietary factors—sugar-sweetened beverages—may mutually influence their effects on body weight and obesity risk. The findings may motivate further research on interactions between genomic variation and environmental factors regarding human health," said Lu Qi, assistant professor in the Department of Nutrition at HSPH and senior author of the study.

In the past three decades, consumption of SSBs has increased dramatically worldwide. Although widespread evidence supports a link between SSBs, obesity and [chronic diseases](#) such as diabetes, there has been little research on whether environmental factors, such as drinking sugary beverages, influence [genetic predisposition](#) to obesity.

The research was based on data from three large cohorts, 121,700 women in the Nurses' Health Study, 51,529 men in the Health

Professionals Follow-up Study and 25,000 in the Women's Genome [Health Study](#). All of the participants had completed food-frequency questionnaires detailing their food and drink consumption over time.

The researchers analyzed data from 6,934 women from NHS, 4,423 men from HPFS, and 21,740 women from WGHS who were of [European ancestry](#) and for whom genotype data based on genome-wide association studies were available. Participants were divided into four groups according to how many [sugary drinks](#) they consumed: less than one serving of SSB per month, between 1-4 servings per month, between 2-6 servings per week, and one or more servings per day. To represent the overall genetic predisposition, a genetic predisposition score was calculated on the basis of the 32 single-nucleotide polymorphisms known to be associated with BMI (weight in kilograms divided by the square of the height in meters).

The results showed that the genetic effects on BMI and obesity risk among those who drank one or more SSBs per day were about twice as large as those who consumed less than one serving per month. The findings suggest that regular consumption of sugary beverages may amplify the genetic risk of obesity. In addition, individuals with greater genetic predisposition to obesity appear to be more susceptible to harmful effects of SSBs on BMI. "SSBs are one of the driving forces behind the obesity epidemic," says Frank Hu, professor of nutrition and epidemiology at HSPH and a coauthor of this study. "The implication of our study is that the genetic effects of obesity can be offset by healthier food and beverage choices."

More information: "Sugar-Sweetened Beverages and Genetic Risk of Obesity," Qibin Qi, Audrey Y. Chu, Jae H. Kang, Majken K. Jensen, Gary C. Curhan, Louis R. Pasquale, Paul M. Ridker, David J. Hunter, Walter C. Willett, Eric B. Rimm, Daniel I. Chasman, Frank B. Hu, Lu Qi, New England Journal of Medicine, online Sept. 21, 2012

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