Medical Xpress

Sodas, other sugary beverages linked to increased risk of type 2 diabetes, metabolic syndrome

October 27 2010

A new study has found that regular consumption of soda and other sugar-sweetened beverages is associated with a clear and consistently greater risk of metabolic syndrome and type 2 diabetes. According to the Harvard School of Public Health (HSPH) researchers, the study provides empirical evidence that intake of sugary beverages should be limited to reduce risk of these conditions.

The study appears online October 27, 2010, in the journal *Diabetes Care* and will appear in the November print edition.

"Many previous studies have examined the relationship between sugar-sweetened beverages and risk of diabetes, and most have found positive associations but our study, which is a pooled analysis of the available studies, provides an overall picture of the magnitude of risk and the consistency of the evidence," said lead author Vasanti Malik, a research fellow in the HSPH Department of Nutrition.

Consumption of sugary drinks, the majority of which are sodas, has increased substantially in the U.S. and across the globe and previous scientific studies have shown consistent associations with weight gain and risk of obesity. However, this study is the first meta-analysis to quantitatively review the evidence linking sugar-sweetened beverages with type 2 diabetes and metabolic syndrome. (Metabolic syndrome is a group of risk factors, such as high blood pressure and excess body fat

around the waist, that increase the risk of coronary artery disease, stroke and diabetes.)

The researchers, led by Malik and senior author Frank Hu, professor of nutrition and epidemiology at HSPH, did a meta-analysis that pooled 11 studies that examined the association between sugar-sweetened beverages and those conditions. The studies included more than 300,000 participants and 15,043 cases of type 2 diabetes and 19,431 participants and 5,803 cases of metabolic syndrome.

The findings showed that drinking one to two sugary drinks per day increased the risk of type 2 diabetes by 26% and the risk of metabolic syndrome by 20% compared with those who consumed less than one sugary drink per month. Drinking one 12-ounce serving per day increased the risk of type 2 diabetes by about 15%.

"The association that we observed between soda consumption and risk of diabetes is likely a cause-and-effect relationship because other studies have documented that sugary beverages cause weight gain, and weight gain is closely linked to the development of type 2 diabetes," said Hu.

While a number of factors are at work in the development of type 2 diabetes and metabolic syndrome, sugar-sweetened beverages represent one easily modifiable risk factor that if reduced will likely make an important impact, say the researchers. "People should limit how much sugar-sweetened beverages they drink and replace them with healthy alternatives, such as water, to reduce risk of diabetes as well as obesity, gout, tooth decay, and cardiovascular disease," said Malik.

Other HSPH authors include Walter Willett, chair of the Department of Nutrition and Frederick John Stare professor of nutrition and epidemiology.

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More information: "Sugar-Sweetened Beverages and Risk of Metabolic Syndrome and Type 2 Diabetes," Vasanti S. Malik, Barry M. Popkin, George A. Bray, Jean-Pierre Despres, Walter C. Willett, Frank B. Hu, *Diabetes Care*, vol. 33, no. 11, online Oct. 27, 2010.

Provided by Harvard School of Public Health

Citation: Sodas, other sugary beverages linked to increased risk of type 2 diabetes, metabolic syndrome (2010, October 27) retrieved 26 April 2024 from https://medicalxpress.com/news/2010-10-sodas-sugary-beverages-linked-diabetes.html

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