

Soda Consumption Tied to Metabolic Syndrome

BY LEANNE SULLIVAN
Associate Editor

Drinking at least one soda a day is associated with a significantly higher risk of developing metabolic syndrome, compared with drinking less than one soft drink a day, according to an observational study of participants in the Framingham Heart Study.

After adjusting the data for other risk factors, the prevalence of metabolic syndrome in those who drank one or more 12-ounce soft drinks a day was 48% higher than in those who drank fewer than one of these beverages daily, wrote Dr. Ravi Dhingra of Harvard Medical School, Boston, and his colleagues.

The soda drinkers had a 44% higher risk of developing new-onset metabolic syndrome after adjusting for intake of saturated and trans fats, dietary fiber, total calories, smoking, and physical activity.

Metabolic syndrome was defined as the presence of three or more of the following: waist circumference of 35 inches or more for women and 40 inches or more for men; fasting blood sugar of 100 mg/dL or higher, or treatment with insulin; blood pressure of 135/75 mm Hg or higher, or treatment for hypertension; serum triglyceride levels of 150 mg/dL or higher; and HDL cholesterol levels of less than 50 mg/dL in women and less than 40 mg/dL in men.

Consumption of soft drinks has increased over the past 3 decades, so the findings have far-reaching ramifications. The results are consistent with those of previous studies that reported an association between soft drink consumption and increased risk of metabolic syndrome, obesity, high blood pressure, and diabetes (Circulation 2007 [Epub doi: 10.1161/CIRCULATIONAHA.107.689935]).

The study, which spanned the years 1987-2001, included 8,997 person-observations made via physical examinations, physician-administered questionnaires, and a self-administered food-frequency questionnaire. The study population was white Americans, aged 42-66 years, about half of whom were men.

When each marker of metabolic syndrome was analyzed separately using multivariate logistic regression, the researchers found that the frequent soda drinkers had a 25%-32% higher adjusted risk for each trait, with the exception of high blood

pressure, which had an 18% higher risk that was of borderline significance.

Dietary behavior may be a factor in the higher risk, as individuals who drink more soda also tend to have a higher-calorie diet that includes more fat and less fiber than the diets of those who are not soda drinkers, and tend to be sedentary and have higher rates of smoking. Yet despite adjusting the data to account for these other risk factors, the researchers still found a significant association between soda

drinking and the risk of developing metabolic syndrome. They acknowledged, however, that "there may be residual confounding caused by lifestyle factors not adjusted for in the present analysis."

Both regular and diet soda consumption resulted in increased risk of metabolic syndrome and its individual traits, which suggests that factors other than calorie and sugar content contribute to the higher risk. The authors theorized such factors may include a greater desire for sweet foods stimulated

by the sweetness of soft drinks, and the caramel content of these beverages, which may be a source of glycation end products; these complexes of sugars may promote insulin resistance and inflammation. Similar results also were seen for caffeinated and uncaffeinated soft drinks. The data also "raise the possibility that public health policy measures to limit the rising consumption of soft drinks may be associated with a lowering of the burden of metabolic risk factors in adults," they said ■



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Reference: 1. IMS Health, IMS MIDAS [12 months ending September 2005].

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