Diet low in added sugars significantly improves fatty liver disease in children

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A randomized clinical study of adolescent boys with nonalcoholic fatty liver disease (NAFLD) found that a diet low in free sugars (those sugars added to foods and beverages and occurring naturally in fruit juices) resulted in significant improvement in NAFLD compared to a usual diet.

The study was conducted at Emory University School of Medicine and the University of California San Diego School of Medicine (UC San Diego) and published in *JAMA* on Jan. 22. Senior author of the study is Miriam Vos, MD, MSPH, professor of pediatrics at Emory and director of the Pediatric Fatty Liver Program at Children's Healthcare of Atlanta, and first author is Jeffrey B. Schwimmer, MD, professor of clinical pediatrics at UC San Diego.

NAFLD is the most common liver disease in children, and it significantly increased from 1988 to 2010. NAFLD is associated with increased risk of type 2 diabetes, end-stage liver disease, liver cancer and cardiovascular disease, thus diagnosis and prompt treatment is very important to long-term health.

"Although pediatric guidelines for managing non-alcoholic fatty liver disease recommend a healthy diet, focused reduction of sugary foods and beverages was an unproven treatment," says Vos. "Our results show that if a child with NAFLD consumes a very low amount of sugars in their diet, both fat and inflammation in the liver improves. We are excited by the highly significant results but also realize that a longer study will be needed in order to understand if sugar reduction is sufficient to "cure" NAFLD."

The clinical study, conducted from August 2015 to July 2017, included 40 boys ages 11 to 16 years with NAFLD, 95 percent of whom were Hispanic. The participants were randomized into two groups. Half the boys, along with their families, were provided a diet low in free sugars (less than three percent of daily caloric intake), and half ate their usual

diets. Twice-weekly telephone calls assessed adherence to the diet. The boys with a reduced free sugar diet had a reduction in NAFLD from 25 percent to 17 percent, while the boys with a usual diet had a reduction in NAFLD from 21 percent to 20 percent. Reducing free sugars in the diet involves decreasing glucose, fructose, and sucrose commonly consumed in sweetened foods and beverages and in naturally sweet fruit juices.

The primary outcome measured was change in hepatic steatosis, estimated by magnetic resonance imaging proton density fat fraction measurement—a precise, state-of-the-art method to quantify lipids in liver. Twelve secondary outcomes also were measured, with several having significant changes as well. The decrease in alanine aminotransferase level (a test used to measure liver enzymes and liver function) was significantly greater for the intervention diet group than for the usual diet group, and decrease in cholesterol levels was significantly greater in the intervention group. In addition, adherence to the diet was high, with 18 of 20 participants/families reporting intake of fewer than three percent of calories from free sugar during the intervention. There were no adverse events related to participation in the study.

"Despite the counseling provided by physicians to patients and families, implementing an effective sugar-reducing diet, along with long-term adherence and sustainability are often very challenging," notes Schwimmer. "Our study shows that children and their families can follow a diet low in free sugars for up to eight weeks when the research team plans, purchases and provides all meals. Although this would not be widely practical, it shows that this kind of intervention reduces NAFLD biomarkers at least in the short term."

The authors note that further studies will be needed to demonstrate longer-term clinical benefit in both girls and boys and all ethnicities, and to solve the challenges of implementing a low free sugar diet for patients

in clinical practice.

More information: *JAMA* (2019).
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