

Sweetened drinks linked to atrial fibrillation risk

March 5 2024



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Adults who reported drinking two liters (about 67 ounces) or more of sugar- or artificially sweetened drinks per week had a higher risk of an irregular heart rhythm known as atrial fibrillation than adults who drank

fewer such beverages, according to new research published today in *Circulation: Arrhythmia and Electrophysiology*.

The study also found that drinking one liter (about 34 ounces) or less per week of pure, unsweetened juice, such as orange or vegetable juice, was associated with a lower risk of [atrial fibrillation](#) (AFib). However, the study could not confirm whether the sweetened drinks caused AFib, yet the association remained after accounting for a person's genetic susceptibility to the condition.

Consuming sweetened drinks has been linked to Type 2 diabetes and obesity in previous research. This large study of health data in the UK Biobank is among the first to assess a possible link between sugar- or artificially sweetened beverages and AFib. Atrial fibrillation is a condition in which the heart beats irregularly, increasing the risk of stroke five-fold. More than 12 million people are expected to have AFib by 2030, according to the American Heart Association's [2024 Heart Disease and Stroke Statistics](#).

"Our study's findings cannot definitively conclude that one beverage poses more health risk than another due to the complexity of our diets and because some people may drink more than one type of beverage," said lead study author Ningjian Wang, M.D., Ph.D., a researcher at the Shanghai Ninth People's Hospital and Shanghai Jiao Tong University School of Medicine in Shanghai, China.

"However, based on these findings, we recommend that people reduce or even avoid artificially sweetened and sugar-sweetened beverages whenever possible. Do not take it for granted that drinking low-sugar and low-calorie artificially sweetened beverages is healthy; it may pose [potential health risks](#)."

Researchers reviewed data from dietary questionnaires and genetic data

for more than 200,000 adults free of AFib at the time they enrolled in the UK Biobank, between 2006 and 2010. During the nearly 10-year follow-up period, there were 9,362 cases of AFib among the study participants.

The analysis found:

- Compared to people who did not consume any sweetened drinks, there was a 20% increased risk of atrial fibrillation among people who said they drank more than 2 liters per week (about 67 ounces or more, or roughly one 12-ounce drink 6 days a week) of artificially sweetened beverages; and a 10% increased risk among participants who reported drinking 2 liters per week or more of sugar-sweetened beverages.
- People who said they drank 1 liter (about 34 ounces) or less of pure fruit juice each week had an 8% lower risk of atrial fibrillation.
- Participants who consumed more artificially sweetened beverages were more likely to be female, younger, have a higher body mass index and a higher prevalence of Type 2 diabetes.
- Participants who consumed more sugar-sweetened beverages were more likely to be male, younger, have a higher body mass index, a higher prevalence of heart disease and lower socioeconomic status.
- Those who drank sugar-sweetened beverages and pure juice were more likely to have a higher intake of total sugar than those who drank artificially sweetened drinks.
- Smoking may have also affected risk, with smokers who drank more than two liters per week of sugar-sweetened beverages having a 31% higher risk of AFib, whereas no significant increase risk was noted for former smokers or people who never smoked.

"These novel findings on the relationships among atrial fibrillation risk and sugar- and artificially sweetened beverages and pure juice may prompt the development of new prevention strategies by considering decreasing sweetened drinks to help improve heart health," Wang said.

Researchers also evaluated whether a genetic susceptibility to AFib was a factor in the association with sweetened beverages. The analysis found the AFib risk was high with the consumption of more than 2 liters of artificially sweetened drinks per week regardless of genetic susceptibility.

"Although the mechanisms linking sweetened beverages and atrial fibrillation risk are still unclear, there are several possible explanations, including insulin resistance and the body's response to different sweeteners," Wang said. "Artificial sweeteners in food and beverages mainly include sucralose, aspartame, saccharin and acesulfame."

A 2018 [science advisory](#) from the American Heart Association noted that there is a scarcity of large, long-term, randomized trials on the efficacy and safety of artificial sweeteners. The writing group advised against prolonged consumption of low-calorie sweetened beverages by children; however, they noted artificially sweetened drinks may be a useful replacement strategy to reduce consumption of sugar-sweetened beverages among adults who habitually drink a high number of sugar-sweetened drinks.

American Heart Association nutrition committee member Penny M. Kris-Etherton, Ph.D., R.D., FAHA, said these findings on artificially sweetened beverages are surprising "given that two liters of artificially sweetened beverages a week is equivalent to about one 12-ounce diet soda a day."

Kris-Etherton, an emeritus professor of nutritional sciences at Penn State

University, was a co-author of the association's science advisory on artificial sweeteners.

"This is the first study to report an association between no- and low-calorie sweeteners and also sugar-sweetened beverages and increased risk of atrial fibrillation," she said. "While there is robust evidence about the adverse effects of sugar-sweetened beverages and cardiovascular disease risk, there is less evidence about adverse health consequences of artificial sweeteners.

"We still need more research on these beverages to confirm these findings and to fully understand all the health consequences on heart disease and other health conditions. In the meantime, water is the best choice, and based on this study, no- and low-calorie sweetened beverages should be limited or avoided."

The American Heart Association's [2016 dietary guidelines](#) align with the U.S.D.A.'s 2020-2025 Dietary Guidelines for Americans in suggesting sugar-sweetened beverage consumption be minimized; they also note there is unclear evidence of the role of no- and low-calorie sweeteners on many health outcomes.

The American Heart Association recommends limited intake of [sugar-sweetened beverages](#), such as such as soft drinks, fruit drinks, sports drinks, energy drinks, sweetened teas and coffee drinks. Healthy beverage options noted are water and fat-free or low-fat milk, while unsweetened fresh, frozen or packaged fruit juice is recommended instead of fruit juice with added sugar. A half cup of pure juice (such as orange juice or grapefruit juice) is recognized as one fruit serving.

Study background and details:

- The UK Biobank is a large, biomedical database with health

records for about 500,000 adults—enrolled from 2006 until 2010—who lived in the U.K. and received health care through the U.K.'s National Health Service.

- Data was reviewed for 201,856 participants of the U.K. Biobank, ranging in age from 37 to 73 years old, and 45% were male.
- Participants were followed for an average of nearly 10 years.
- Blood samples were collected to measure genetic risk for AFib, and participants answered more than one 24-hour questionnaire about their diet on five repeated occasions between April 2009 and June 2012.

The limitations of this study include that the findings were observational and cannot prove causation between consumption of certain types of beverages and AFib risk. In addition, the findings relied on participants to recall their own diets, so there may have been memory errors or bias. It is also unknown if the sugar- and artificially sweetened drinks contained caffeine.

More information: Sweetened Beverages, Genetic Susceptibility, and Incident Atrial Fibrillation: A Prospective Cohort Study, *Circulation Arrhythmia and Electrophysiology* (2024). [DOI: 10.1161/CIRCEP.123.012145](https://doi.org/10.1161/CIRCEP.123.012145)

Provided by American Heart Association

Citation: Sweetened drinks linked to atrial fibrillation risk (2024, March 5) retrieved 27 April 2024 from <https://medicalxpress.com/news/2024-03-sweetened-linked-atrial-fibrillation.html>

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