

Coffee drinking tied to lower risk of heart failure

A large analysis looked at hundreds of factors that may influence the risk of heart failure, and found one dietary factor in particular that was associated with a lower risk: drinking coffee.

Heart failure, sometimes called congestive heart failure, occurs when the heart muscle becomes weakened and can no longer pump blood efficiently. It can be caused by high blood pressure, heart valve disease, heart attack, diabetes and other diseases and conditions.

The analysis included extensive, decades-long data from three large health studies with 21,361 participants, and used a method called machine learning that uses computers to find meaningful patterns in large amounts of data.

"Usually, researchers pick things they suspect would be risk factors for heart failure — smoking, for example — and then look at smokers versus non-smokers," said the senior author, Dr. David P. Kao, an assistant professor of medicine at the University of Colorado. "But machine learning identifies variables that are predictive of either increased or decreased risk but that you haven't necessarily thought of."

Using this technique, Kao and his colleagues found 204 variables that are associated with the risk for heart failure. Then they looked at the 41 strongest factors, which included, among others, smoking, marital status, body mass index, cholesterol, blood pressure and the consumption of various foods. The analysis is in *Circulation: Heart Failure*.

In all three studies, coffee drinking was associated more strongly than any other dietary factor with a decreased long-term risk for heart failure.

Drinking a cup a day or less had no effect, but two cups a day conferred a 31% reduced risk, and three cups or more reduced risk by 29%. There were not enough subjects who drank more than three cups daily to know if more coffee would decrease the risk further.

This is not the first study to find health benefits in coffee drinking. "In other studies, coffee drinking has been associated with a reduced risk for stroke and coronary heart disease as well," Kao said, though "we didn't find this in our study."

The study was not able to account for different types of coffee or brewing



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methods, or the use of additives like sugar or cream. There was no association of a decreased risk of heart failure with drinking decaffeinated coffee — in fact, one study suggested it might increase the risk.

Caffeine may be an important factor, the authors suggested, but the mechanism for the effect is not known. The study did not examine the effect of tea or other caffeine-containing foods.

Unlike conventional observational studies that begin with a hypothesis and then develop evidence for it, this machine learning analysis started with no initial hypothesis. Dr. Harlan Krumholz, a professor of medicine at Yale University who was not involved in the work, called the approach "innovative" but noted one limitation was that "many other behaviors likely track with coffee consumption, and it is difficult to disentangle the specific effect of coffee from other things that may go along with it."

Should you start drinking coffee or increase the amount you already drink to reduce your risk for heart failure? "We don't know enough from the results of this study to recommend this," said Kao, adding that additional research would be needed. "It would be helpful if we could figure out whether drinking an extra cup would prevent certain complications."