

Alcohol in moderation may help the heart by calming stress signals in the brain

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Moderate alcohol intake—defined as no more than one alcoholic drink for women and two for men per day—has been associated with a lower risk of dying from cardiovascular disease when compared with

individuals who abstain from drinking or partake in excessive drinking, according to a new study being presented at the American College of Cardiology's 70th Annual Scientific Session. It's also the first study to show that drinking moderate amounts of alcohol may be heart protective, in part, by reducing stress-related brain signals based on a subset of patients who underwent brain imaging.

"We found that stress-related activity in the brain was higher in non-drinkers when compared with people who drank moderately, while people who drank excessively (more than 14 drinks per week) had the highest level of stress-related brain activity," said Kenechukwu Mezue, MD, a fellow in nuclear cardiology at Massachusetts General Hospital and the study's lead author. "The thought is that moderate amounts of alcohol may have effects on the brain that can help you relax, reduce stress levels and, perhaps through these mechanisms, lower the incidence of [cardiovascular disease](#)."

While Mezue was quick to caution that these findings should not encourage alcohol use, he said they could open doors to new therapeutics or prescribing stress-relieving activities like exercise or yoga to help minimize stress signals in the brain.

"The current study suggests that [moderate alcohol intake](#) beneficially impacts the brain-heart connection. However, alcohol has several important side effects, including an increased risk of cancer, liver damage and dependence, so other interventions with better side effect profiles that beneficially impact brain-heart pathways are needed," Mezue said.

In a related study by the same research team (which is also being presented at ACC.21), exercise was found to have a similar effect on brain activity as well as on the incidence of cardiovascular disease and events. The authors said exercise is associated with decreased stress-

associated brain activity in a dose-dependent manner. While the connection between stress and heart disease is widely accepted, the authors said relatively little research has been done on how modifying stress may help protect heart health.

Data were obtained from the Mass General Brigham Biobank health care survey of 53,064 participants, of which 59.9% were women and the average age was 57.2 years. Alcohol intake was based on self-report and was classified as low (14 drinks/week). Major adverse cardiovascular events, including heart attack, stroke or related hospitalizations, were determined using diagnostic (ICD) codes.

Of the patients included, 752 underwent 18F-fluorodeoxyglucose positron emission tomography, or PET imaging, which is often used as part of cancer screening but can also show areas in the brain that have increased activity. The scans allowed researchers to objectively measure activity in regions of the brain known to be associated with stress. Researchers assessed stress-related brain activity by measuring the activity of the amygdala (the part of the brain associated with fear and stress) and dividing it by activity in the frontal cortex (the part of the brain involved in executive functions). They then grouped patients based on the extent of brain stress activity.

Of the 53,064 participants, 7,905 (15%) experienced a major adverse cardiovascular event: 17% in the low alcohol intake group and 13% in the moderate alcohol intake group. People who reported moderate alcohol intake were found to have a 20% lower chance of having a major event compared to low alcohol intake (in adjusted analysis), and also had lower stress-related brain activity. This remained significant even after controlling for demographic variables, cardiovascular risk factors, socioeconomic variables and psychological factors.

"Previous studies by our group and others have shown a robust

association between heightened amygdalar activity and a higher risk of major adverse cardiovascular outcomes, such as heart attack, stroke or death. In the current study, path analyses showed that the link between moderate alcohol intake and lowered cardiovascular event risk is significantly mediated though reductions in amygdalar activity," Mezue said.

The study is limited due to the self-reporting of alcohol intake based on the average consumption of drinks per week. The data is also from a single center, and each participant in the imaging sub-study only received a single brain scan. Further study would be needed to show that the observed reductions in [brain activity](#) are the direct result of moderate alcohol intake through repeated [brain](#) scans and more detailed [alcohol](#) intake assessments over time.

More information: Mezue will present the study, "Alcohol's Beneficial Effect on Cardiovascular Disease is Partially Mediated through Modulation of Stress-Associated Brain Activity," on Monday, May 17, at 8 a.m. ET / 12:00 UTC.

Provided by American College of Cardiology

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