

# Marijuana use linked with increased risk of heart attack, heart failure

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Using marijuana regularly may raise the risk for heart failure, stroke or heart attack even after accounting for other cardiovascular risk factors such as Type 2 diabetes, high blood pressure and obesity, according to

two preliminary studies to be presented at the American Heart Association's [Scientific Sessions 2023](#). The meeting, to be held Nov. 11–13, in Philadelphia, is a premier global exchange of the latest scientific advancements, research and evidence-based clinical practice updates in cardiovascular science.

The use of marijuana, medically known as [cannabis](#), is gaining popularity across the U.S. as more states legalize it for recreational and [medical use](#). However, how marijuana affects the [heart](#) and [brain health](#) is still not completely known. Two new studies, by separate research groups, shed light on the association for regular marijuana use with risk for heart failure, [heart attack](#) and stroke.

### **Daily marijuana use is associated with incident heart failure: 'All of Us' Research Program ([Poster Abstract MDP250](#))**

More than 150,000 adults in the U.S. participated in the All of Us Research Program, a National Institutes of Health-sponsored program. Researchers focused on the relationship between lifestyle, biology and environment in diverse populations and analyzed the association between daily marijuana use and heart failure.

"Prior research shows links between marijuana use and [cardiovascular disease](#) like [coronary artery disease](#), heart failure and atrial fibrillation, which is known to cause heart failure," said lead study author Yakubu Bene-Alhasan, M.D., M.P.H., a resident physician at Medstar Health in Baltimore. "Marijuana use isn't without its [health concerns](#), and our study provides more data linking its use to cardiovascular conditions."

Bene-Alhasan and colleagues followed 156,999 individuals who were free from heart failure at the time they enrolled in the research program. Study participants completed a survey about the frequency of their marijuana use and were followed for nearly 4 years (45 months). The

analysis was adjusted to account for individual demographic and economic factors, alcohol use, smoking and other cardiovascular risk factors linked with heart failure, such as Type 2 diabetes, high blood pressure, high cholesterol and obesity.

The analysis found:

- During the study period, 2,958 people (almost 2%) developed heart failure.
- People who reported daily marijuana use had a 34% increased risk of developing heart failure, compared to those who reported never using marijuana. This risk was the same regardless of age, sex at birth or smoking history.
- In a secondary analysis, when coronary artery disease was added to the investigation, the risk of heart failure dropped from 34% to 27%, suggesting that coronary artery disease is a pathway through which daily marijuana use may lead to [heart failure](#).

"Our results should encourage more researchers to study the use of marijuana to better understand its health implications, especially on cardiovascular risk," Bene-Alhasan said. "We want to provide the population with high-quality information on marijuana use and to help inform policy decisions at the state level, to educate patients and to guide health care professionals."

Study details:

- The definition of marijuana use was using marijuana when not prescribed for a health condition, or, if prescribed for medical purposes, using it beyond that purpose.
- The median participant age was 54 years; 60.9% of participants were female at birth; 70.7% self-identified as white adults; 21.8% were Black or African American adults; 4.2% were Asian

adults; 2.2% were identified as more than one race/ethnicity; and 1.1% were from other races/ethnicities.

- The study enrollment began in June 2016. Participants were followed from when they enrolled until June 2022, a maximum of approximately 4 years (45 months).

A limitation of the study is that it relied on data that did not specify whether the marijuana was inhaled or eaten. According to researchers, how marijuana is ingested may influence cardiovascular outcomes.

### **Increased risk of major adverse cardiac and cerebrovascular events in elderly non-smokers who use cannabis ([Poster Abstract MDP249](#))**

In a second study, different researchers evaluated data from the 2019 National Inpatient Sample, the largest nationwide database of hospitalizations, to investigate whether hospital stays were complicated by a cardiovascular event, including heart attack, stroke, cardiac arrest or arrhythmia in patients who used marijuana. Researchers extracted records on adults older than age 65 years with cardiovascular risk factors who reported no tobacco use (cigarettes or other tobacco products). This group of patient records were then divided into two groups: marijuana users and non-marijuana users. The marijuana user's hospital records were coded for cannabis use disorder which can vary from hospital to hospital.

"Since 2015, cannabis use in the U.S. has almost doubled, and it is increasing in older adults, therefore, understanding the potential increased cardiovascular risk from cannabis use is important," said lead study author Avilash Mondal, M.D., a resident physician at Nazareth Hospital in Philadelphia. "What is unique about our study is that patients who were using tobacco were excluded because cannabis and tobacco are sometimes used together, therefore, we were able to specifically examine cannabis use and cardiovascular outcomes."

The study found of the 28,535 cannabis users with existing cardiovascular risk factors (high blood pressure, Type 2 diabetes or high cholesterol):

- 20% had an increased chance of having a major heart or brain event while hospitalized, compared to the group who did not use cannabis.
- 13.9% of cannabis users with [cardiovascular risk factors](#) had a major adverse heart and brain event while hospitalized compared to non-cannabis users.
- Additionally, the cannabis users in comparison to non-cannabis users had a higher rate of heart attacks (7.6% versus 6%, respectively) and were more likely to be transferred to other facilities (28.9% vs. 19%).
- High blood pressure (defined as greater than 130/80 mm Hg) and high cholesterol were predictors of major adverse heart and brain events in marijuana users.

"We must be mindful about major heart and stroke events in [older adults](#) with cannabis use disorder. At this point, we need more studies to understand the long-term effects of cannabis use," Mondal said. "Health care professionals should include the question, "Are you using cannabis?" when taking a patient's history. If you ask patients if they are smoking, people think cigarette smoking. The main public message is to be more aware of the increased risks and open the lines of communication so that cannabis use is acknowledged and considered."

A limitation of the analysis is that the data is from a large database, which may have coding errors in the patients' health records. In addition, the electronic health record code for cannabis use disorder may vary from hospital to hospital, thereby skewing the results of the analysis.

Study details:

- 2019 National Inpatient Sample health records were reviewed for 28,835 adults with cannabis use disorder and [high blood pressure](#), Type 2 diabetes or high cholesterol. The comparison group included 10,680,000 adults with the same risk factors who did not use [marijuana](#).
- Researchers examined hospitalization records to analyze the incidence of in-hospital cardiovascular disease events for adults in both groups.
- 69.5% of participants in the [cannabis use disorder](#) group were male and 30.5% were female. In contrast, 45.8% were males in the non-cannabis use group versus 54.2 in the female non-use group.
- Health records of race according to cannabis use versus non-use, respectively was: 70.2% versus 76.4 among white adults; 20.1% versus 10.8% among Black adults; 5.6% versus 7.4% among Hispanic adults; 0.70% versus 2.7% among Asian or Pacific Islander adults; and 1% versus 0.40% among Native American adults.

"The latest research about cannabis use indicates that smoking and inhaling cannabis increases concentrations of blood carboxyhemoglobin (carbon monoxide, a poisonous gas), tar (partly burned combustible matter) similar to the effects of inhaling a tobacco cigarette, both of which have been linked to heart muscle disease, chest pain, heart rhythm disturbances, heart attacks and other serious conditions," said Robert L. Page II, Pharm.D., M.S.P.H., FAHA, chair of the volunteer writing group for the 2020 [American Heart Association Scientific Statement: Medical Marijuana, Recreational Cannabis, and Cardiovascular Health](#). "Together with the results of these two research studies, the cardiovascular risks of cannabis use are becoming clearer and should be carefully considered and monitored by health care professionals and the public."

Provided by American Heart Association

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