

# Pot may restrict blood flow to brain: study

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(HealthDay)—Marijuana appears to hamper blood flow to the brain, which theoretically could affect your memory and ability to reason, a new study suggests.

Brain scans of nearly 1,000 past and present marijuana users revealed abnormally low blood flow throughout their brains, compared with a smaller control group of 92 people who'd never used pot.

"The differences were astonishing," said lead researcher Dr. Daniel Amen, a psychiatrist and founder of the U.S.-based Amen Clinics. "Virtually every area of the [brain](#) we measured was lower in blood flow and activity in the marijuana smokers than in the healthy group."

Blood flow was lowest in the hippocampus of marijuana users, which Amen found most troubling.

"The hippocampus is the gateway to memory, to get memories into long-term storage," Amen said. "That area distinguished healthy people from pot smokers better than any other area of the brain."

For this study, Amen and his colleagues evaluated brain scan data collected at nine outpatient neuropsychiatric clinics across the United States. The patients had sought treatment of complex psychological or neurological problems.

The brain scans relied on a technology called single-photon emission computed tomography, or SPECT, which can be used to track blood flow throughout the body.

The researchers found 982 patients in the database who had been diagnosed with cannabis use disorder. People with this diagnosis have used marijuana so heavily that it has affected their health, their work or their family life.

The researchers found they could reliably distinguish the brains of marijuana users by checking blood flow to the hippocampus. Marijuana use is believed to interfere with memory formation by inhibiting activity

in the hippocampus, which is the brain's key memory and learning center.

"The growing lore in our country is that marijuana is innocuous, it's good medicine and it should be legalized," Amen said. "This research directly challenges that notion."

Twenty-six states and the District of Columbia now have laws legalizing marijuana in some form, primarily for medical purposes.

Although smoking is bad for the brain, Amen said blood flow was reduced even in marijuana users who ingest the drug rather than smoke it.

"We've also seen it with people who don't smoke, who get marijuana in cookies or ingest it in other ways," he said.

While the study doesn't establish a direct cause-and-effect relationship, the researchers concluded that doctors should think twice before recommending marijuana in the treatment of someone with Alzheimer's disease.

The findings "raise important questions about the impact of marijuana use on normal function in areas of the brain important to memory and thinking," said Maria Carrillo, chief science officer for the Alzheimer's Association.

"Sustained inadequate [blood flow](#) can damage and eventually kill cells anywhere in the body," Carrillo said. "Since the brain has one of the body's richest networks of blood vessels, it is especially vulnerable. These vessels deliver nutrients to the brain and carry away waste, which is vital for normal cognitive function."

However, Carrillo added, "we cannot tell from this study whether marijuana use increases a person's risk for cognitive decline or Alzheimer's."

Other experts raised concerns that the marijuana users who underwent the [brain scans](#) had been seeking treatment for psychiatric problems. They said this could skew the results.

For example, the study reports that 62 percent of the marijuana group had attention deficit/hyperactivity disorder, 47 percent had [traumatic brain injury](#), and 35 percent had major depressive disorder.

"It looks as if the cannabis users were all referred to the clinic for some problem while the healthy controls were not," said Mitch Earleywine, an advisory board member for NORML, which advocates for marijuana legalization. He's also a professor of psychology at the State University of New York at Albany.

Neurologist Dr. Terry Fife of Phoenix, Ariz., agreed with Earleywine.

"You really want to know that the only thing different between the two groups is the use of marijuana, and we can't tell that here," said Fife, a fellow of the American Academy of Neurology.

Fife added that the study does not show the extent of the participants' marijuana use, outside of their diagnosis for cannabis use disorder. "It's unclear how much of a user these users were," he said.

Fife concluded that the possible link between [marijuana](#) and Alzheimer's disease will need further research.

"I wouldn't say it's a risk factor, but it could be an aggravator of the disorder," Fife said. "If it's true that it reduces the function of the

hippocampus, it could in theory make the memory a little worse, but Alzheimer's is much more complicated than just memory."

The report was published recently in the *Journal of Alzheimer's Disease*.

**More information:** For more on cannabis use disorder, visit the [U.S. Substance Abuse and Mental Health Services Administration](#).

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