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## **Tobacco smoking – not long-term marijuana use – associated with build-up of plaques in heart arteries**

**Tobacco smoking, but not marijuana use over time, was associated with plaque build-up in heart arteries in a study that followed men and women for over 25 years, according to a study led by the University of Bern.**

“We knew the effect of tobacco smoke, but not of marijuana smoke on subclinical plaque build-up in heart arteries (a marker of future heart attacks). We sought to determine the association between lifetime exposure to marijuana and measures of plaque build-up in mid-life,” says study lead author, Reto Auer, MD, MAS, of the University of Bern, Switzerland.

Many previous studies have shown that smoking tobacco builds up plaques and increases heart attack risk, but no study had asked if low-intensity or occasional marijuana use also builds up plaques in the arteries over time, placing marijuana users at comparable risk.

### **Tobacco is more harmful for the heart than marijuana**

The longitudinal Coronary Artery Risk Development in Young Adults (CARDIA) study included 25 years of multiple measures of marijuana and tobacco exposure, starting in early adulthood. In year 25, CARDIA measured coronary and abdominal artery calcium with computed tomography. Funded by the U.S. National Heart, Lung and Blood Institute, [CARDIA](#) has since 1985 been following more than 5,000 participants from across the United States, with sites in Birmingham, Chicago, Minneapolis and Oakland.

“Our study confirms the strong and consistent association between tobacco use and plaques build-up. The broader public health implications of high prevalence of tobacco use among marijuana users is alarming,” says co-author [Stephen Sidney, MD](#), principal investigator of the CARDIA study’s Kaiser Permanente Oakland site.

The study investigators used those measurements to study the association between cumulative years of exposure to marijuana use and tobacco smoking, and subclinical plaque build-up in middle-aged participants who had typical marijuana and tobacco exposure for the community in which they live.

Of the 3,489 participants assessed at the year 25 visit, 89% (3’117) underwent computed tomography. Computed tomography detected plaques among 60% of those. Marijuana and

tobacco use were both common, but participants smoked tobacco more intensely and consistently than marijuana over their lifetime. Of the 3,117 participants with plaque data, 2,627 (84%) reported past marijuana use, but only 156 (6%) reported daily use. In contrast, 1,536 (49%) reported daily tobacco use.

As expected, past exposure to tobacco smoking was strongly associated with plaques build-up in the coronary and abdominal arteries. Cumulative marijuana use was not associated with plaque build-up in middle-aged adults never exposed to tobacco. In contrast, the authors found a trend towards increased risk of atherosclerosis among those with very high marijuana exposure.

“We need to interpret these results carefully because few participants had such a high level of exposure,” cautions lead study author Auer. Among those who had used tobacco, authors found a small but significant association between marijuana use and abdominal aortic calcifications, even after we extensively adjusted for exposure to tobacco smoke. This association may be a product of residual confounding by tobacco smoking. The lack of association between marijuana use and plaque build-up in the heart arteries confirms earlier findings within the same cohort, that marijuana use and heart attacks were not associated.[1]

“The use of marijuana was surprisingly common. So far, we are seeing the adverse effects due to tobacco smoking or in other words the company marijuana keeps. We feel these are important and timely findings, however continued research in this area is warranted,” says senior author Jamal S. Rana MD, PhD, cardiologist and researcher with Kaiser Permanente Oakland Medical Center.

**Publication details:**

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[1] Reis, J.P., et al., *Cumulative Lifetime Marijuana Use and Incident Cardiovascular Disease in Middle Age: The Coronary Artery Risk Development in Young Adults (CARDIA) Study*. *Am J Public Health*, 2017. **107**(4): p. 601-606, doi:10.2105/AJPH.2017.303654

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