

**EMBARGOED UNTIL: June 1, 2016 at 11 AM EST****PAPER TITLE:**

Associations between cannabis use and physical health problems in early midlife: A longitudinal comparison of persistent cannabis versus tobacco users

**PUBLICATION SOURCE:**

JAMA Psychiatry, to appear online the week of June 1, 2016.

**THE FINDINGS:**

A research team led by Madeline Meier at Arizona State University, and Avshalom Caspi and Terrie Moffitt at Duke University reports that long-term cannabis use is associated with few physical health problems in midlife. The researchers followed 1,000 people from birth to age 38 and collected detailed information about each person's cannabis use over a twenty-year period from ages 18 to 38. Study participants also underwent comprehensive physical health exams when they were 26 and 38 years old, allowing the researchers to test associations between cannabis use and a variety of physical health outcomes in midlife, including periodontal health, lung function, systemic inflammation, and metabolic health. The team found that study participants who used cannabis for up to 20 years had poor periodontal health, putting them at risk for tooth loosening and loss. However, cannabis users showed no other signs of ill health. By comparison, tobacco users showed poor periodontal health, lung function, systemic inflammation, and metabolic health.

1. Study participants who smoked cannabis for up to 20 years had poor periodontal health at age 38 and showed decline in periodontal health from ages 26 to 38.
2. Poor periodontal health among cannabis users could not be explained by tobacco smoking, alcohol abuse, or by less tooth brushing and flossing.
3. Study participants who smoked cannabis for up to 20 years did not show worse health on the other health outcomes, including lung function, systemic inflammation, metabolic syndrome, waist circumference, high density lipoprotein cholesterol, triglycerides, systolic and diastolic blood pressure, glucose control, obesity, and self-reported health.
4. The lack of physical health problems among cannabis users was not attributable to cannabis users having better health to begin with or to healthier lifestyles.

**WHY ARE THESE FINDINGS IMPORTANT?**

There is increasing support for cannabis legalization in the United States, and policy makers, health care professionals, and the general public should be informed about the potential consequences of cannabis use. Unlike tobacco smoking, cannabis smoking is associated with few physical health problems in midlife, with the exception of periodontal disease. Physicians should convey to patients that their cannabis use puts them at risk for tooth loss.

**CAVEATS:**

1. We did not examine important health outcomes that tend to emerge later in life, such as cancer.
2. Although we found little evidence of physical health problems among cannabis users, prior reports from this cohort and others have shown that persistent cannabis use is

associated with cognitive decline, increased risk of psychotic illness, and downward socio-economic mobility.

### **SUPPORTING DETAILS:**

Participants are members of the Dunedin Multidisciplinary Health and Development Study, which tracks the development of a representative birth cohort of 1,037 children born in 1972-1973 in Dunedin, New Zealand. This birth cohort's families represent the full range of socioeconomic status and health in the general population. Follow-ups have been carried out at ages 3, 5, 7, 9, 11, 13, 15, 18, 21, 26, 32, and most recently at age 38 years, when 95% of the living cohort members took part. We examined 947 participants who completed physical health exams at age 38.

#### **How we measured cannabis use.**

We measured cannabis use in three ways: cannabis joint-years, persistent cannabis dependence, and persistent regular cannabis use.

**Cannabis joint-years**, which indexes the number of years a person smoked cannabis on a daily basis, was estimated using self-reported frequency of cannabis use over the past year at ages 18, 21, 26, 32, and 38.

**Persistence of cannabis dependence** was defined as the total number of study waves out of five (ages 18, 21, 26, 32, and 38) at which a study member met criteria for cannabis dependence. Study members were grouped according to their number of dependence diagnoses: (a) those who never used cannabis at any study wave and thus could not have become dependent; (b) those who used cannabis at least once at one or more study waves but never diagnosed; (c) those who diagnosed at one wave; (d) those who diagnosed at two waves; and (e) those who diagnosed at three or more waves.

Cannabis dependence is a substance-use disorder as defined in the Diagnostic and Statistical Manual of the American Psychiatric Association. The purpose of the DSM diagnosis is to predict a patient's future prognosis, and to identify which patients are most in need of scarce treatment resources. A diagnosis of cannabis dependence generally reflects an individual's continued use of cannabis despite experiencing significant health, social, and/or legal problems related to cannabis use.

**Persistence of regular cannabis use.** Because some people use cannabis on a regular basis but never develop problems, we also examined physical health problems as a function of persistent regular cannabis use. This was defined as the total number of study waves out of five at which a study member reported using cannabis four or more days per week (the majority of days in a week). Study members were grouped as those who: (a) never used cannabis; (b) used but never regularly; (c) used regularly at one wave; (d) used regularly at two waves; and (e) used regularly at three or more waves.

Results were similar for cannabis joint years, persistent cannabis dependence, and persistent regular cannabis use.

### **How we assessed physical health.**

Physical health examinations were completed by clinicians at the Dunedin Study Research Unit when study members were age 26 and again when study members were age 38. We reported on the twelve health outcomes shown below, selected based on prior research, demonstrated capacity to predict disease morbidity and mortality, and biological plausibility of an effect of cannabis by midlife.

1. Periodontal health – assessed as clinical attachment loss.
2. Lung function (airway obstruction) – assessed using the ratio of forced expiratory volume in the first second of expiration (FEV1) to forced vital capacity (FVC).
3. Systemic inflammation – assessed by c-reactive protein level, a risk factor for cardiovascular disease.
4. Metabolic syndrome – 3 or more of the following 5 risks: high waist circumference, low high density lipoprotein cholesterol, triglycerides, high blood pressure, and high glycated hemoglobin.
5. Waist circumference
6. High density lipoprotein (HDL) cholesterol
7. Triglycerides
8. Systolic blood pressure
9. Diastolic blood pressure
10. Glycated hemoglobin (HbA1c)
11. Body mass index
12. Self-reported health – study members’ ratings of their health as excellent, very good, good, fair, or poor.

### **UNIVERSITIES INVOLVED:**

Arizona State University, Tempe, AZ; Duke University, Durham, NC; University of Otago, Dunedin, NZ; Institute of Psychiatry, King’s College London, UK; University of California Davis, Sacramento, CA.

### **FUNDING AGENCIES:**

This research was supported by the New Zealand Health Research Council, New Zealand MBIE, US National Institute of Aging (R01AG032282, R01AG048895), UK Medical Research Council (MR/K00381X), and ESRC (ES/M010309/1). Additional support was provided by the Jacobs Foundation.

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