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Minimal Physical Health Risk Associated With Long-term Cannabis Use—But Buyer Beware

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Associations Between Cannabis Use and Physical Health Problems in Early Midlife: A Longitudinal Comparison of Persistent Cannabis vs Tobacco Users

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IMPORTANCE After major policy changes in the United States, policymakers, health care professionals, and the general public seek information about whether recreational cannabis use is associated with physical health problems later in life.

OBJECTIVE To test associations between cannabis use over 20 years and a variety of physical health indexes at early midlife.

DESIGN, SETTING, AND PARTICIPANTS Participants belonged to a representative birth cohort of 1037 individuals born in Dunedin, New Zealand, in 1972 and 1973 and followed to age 38 years, with 95% retention (the Dunedin Multidisciplinary Health and Development Study). We tested whether cannabis use from ages 18 to 38 years was associated with physical health at age 38, even after controlling for tobacco use, childhood health, and childhood socioeconomic status. We also tested whether cannabis use from ages 26 to 38 years was associated with within-individual health decline using the same measures of health at both ages.

EXPOSURES We assessed frequency of cannabis use and cannabis dependence at ages 18, 21, 26, 32, and 38 years.

MAIN OUTCOMES AND MEASURES We obtained laboratory measures of physical health (periodontal health, lung function, systemic inflammation, and metabolic health), as well as self-reported physical health, at ages 26 and 38 years.

RESULTS The 1037 study participants were 51.6% male ($n = 535$). Of these, 484 had ever used tobacco daily and 675 had ever used cannabis. Cannabis use was associated with poorer periodontal health at age 38 years and within-individual decline in periodontal health from ages 26 to 38 years. For example, cannabis joint-years from ages 18 to 38 years was associated with poorer periodontal health at age 38 years, even after controlling for tobacco pack-years ($\beta = 0.12$; 95% CI, 0.05-0.18; $P < .001$). Additionally, cannabis joint-years from ages 26 to 38 years was associated with poorer periodontal health at age 38 years, even after accounting for periodontal health at age 26 years and tobacco pack-years ($\beta = 0.10$; 95% CI, 0.05-0.16; $P < .001$). However, cannabis use was unrelated to other physical health problems. Unlike cannabis use, tobacco use was associated with worse lung function, systemic inflammation, and metabolic health at age 38 years, as well as within-individual decline in health from ages 26 to 38 years.

CONCLUSIONS AND RELEVANCE Cannabis use for up to 20 years is associated with periodontal disease but is not associated with other physical health problems in early midlife.

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Cannabis use in the United States has doubled in the past 10 years,¹ with an estimated 22 million people using the drug in 2014.² In addition, an increasing number of states now allow the use of medical cannabis or are considering legalizing recreational cannabis. Health care professionals are frequently asked by patients and their families about using cannabis and how it may affect health. Given these trends, it has become important to obtain longitudinal data on the health effects of long-term cannabis use.

Both short-term and long-term cannabis use adversely affect cognitive and motor processes, functional outcomes, and mental health.³ Short-term cannabis use is associated with impaired memory and motor coordination and, coupled with poor judgment, may lead

to risky behaviors. Long-term cannabis use is associated with adverse consequences in a number of important domains. Regular cannabis use can hinder brain development and is associated with poor educational outcomes, diminished life satisfaction, and decreased achievement.³ Long-term cannabis use leads to cannabis dependence in 9% of adult users and 16% of adolescent users.³ Daily or near-daily use associated with cannabis dependence also increases the risk for developing psychotic disorders.

Little is known about long-term cannabis use and physical health. In *JAMA Psychiatry*, Meier et al⁴ assessed associations between cannabis use for more than 20 years and various domains of physical health in early midlife. They examined results from the Dunedin Multidisciplinary Health and Development Study of New Zealand, which followed up a cohort of 1037 participants over a 38-year span.

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The frequency of cannabis use and cannabis dependence was assessed at 5 time points during the study. Physical health was measured with laboratory measures and by self-report at ages 26 and 38 years. Biochemical indices of periodontal health, lung function, systemic inflammation, metabolic syndrome, waist circumference, high-density lipoprotein (HDL) cholesterol, triglycerides, blood pressure, glycated hemoglobin concentration, and body mass index (BMI) were chosen due to their demonstrated capacity to predict morbidity and mortality. Cannabis use was compared with tobacco smoking, for which adverse effects on health outcomes are well described.⁵

The results were striking. Cannabis use (characterized by the duration and intensity of use) and the persistence of cannabis dependence were associated with worse health outcomes in only 1 of 12 measures, periodontal health. Periodontal disease was found in 55.6% of people with more than 15 joint-years of marijuana use compared with only 13.5% for people who never used cannabis. Furthermore, cannabis use was only associated with a decline in periodontal health for a given individual aged 26 to 38 years, meaning that cannabis use increased the likelihood of periodontal disease at age 26 years with the disease worsening over time. In contrast, tobacco smoking was unsurprisingly associated with worse health outcomes for most (8/12) health measures, including periodontal health, lung function, systemic inflammation, and metabolic health.

Another noteworthy finding in this study was that cannabis use was correlated with slightly better metabolic health. Over time, cannabis use was associated with smaller waist circumference; lower BMI; and, after adjusting for tobacco use, better HDL cholesterol, triglycerides, and glycated hemoglobin levels. These effects, while small, support previous cross-sectional findings that suggest that endocannabinoids are involved in the regulation of metabolism.^{6,7} Meier et al,⁴ however, state that the current overall evidence suggests that recreational cannabis use is unlikely to improve metabolic health because cannabis use was not associated with reduced risk of metabolic syndrome.

Studies of the effects of cannabis use and cannabis policy are resulting in unexpected findings. Many physicians would have expected

the analyses by Meier et al⁴ to show an array of adverse physical effects stemming from long-term cannabis use. Unexpected results underscore the importance of carrying out rigorous scientific research to test hypotheses rather than building health policy on myths and dogma that have long characterized this subject: marijuana is either perfectly safe and even beneficial or globally harmful. While there are many reasons to be concerned about the proliferation of both medical cannabis and recreational cannabis legalization policies, at the current time, these data suggest that worsening physical health resulting from long-term cannabis use may not be one of them. It must be pointed out, however, that this study, while carefully conducted, is just 1 study, with a racially homogeneous population in 1 country, ending at age 38 years; it is possible that some medical problems could emerge at a later age. Moreover, increasing levels of tetrahydrocannabinol in cannabis products may lead to more adverse physical consequences. Furthermore, as cannabis becomes more widely used as a result of legalization and greater availability, other unintended health consequences, such as automobile accidents related to cannabis intoxication and accidental pediatric exposure, may be more likely to occur.^{8,9}

Health care professionals should continue to discourage most cannabis use among patients. Medical cannabis has been shown to be helpful for a few medical indications such as chronic pain, neuropathic pain, or spasticity associated with multiple sclerosis, but many patients use medical cannabis for medical conditions for which there is little or no scientific evidence.¹⁰ The adverse effects on brain function and mental health in both short-term and long-term recreational cannabis use are well documented, particularly among those who initiate use at a young age, and therefore should remain an important piece of a risk-benefit discussion about cannabis between health care professionals and their patients.³ However, research has yet to show adverse effects of long-term cannabis use on multiple areas of physical health, and when counseling patients about cannabis use, health care professionals should acknowledge this. But buyer beware: there are still many significant dangers and adverse effects resulting from cannabis use, so health care professionals should counsel patients to avoid cannabis use if they can.

ARTICLE INFORMATION

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