

# Moderate lifetime marijuana smoking linked to airway irritation but not lung function

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A research study based on analysis of publicly available data has found that recent marijuana use was associated with symptoms of airway inflammation, but that moderate lifetime use was not associated with clinically significant changes in measures of lung function. The study is the largest cross-sectional analysis of the relationship between marijuana use and measures of lung health to date.

Researchers at Emory University analyzed data from the 2007-2010 National Health and Nutrition Examination Survey (NHANES)—an ongoing nationally representative survey conducted through the National Center for Health Statistics. The data included survey questions and standardized spirometry, a screening tool physicians use to look for pulmonary disease.

The NHANES conducts high quality, standardized spirometry to measure lung function through recording the volume of air a person can force out of his or her lungs (forced vital capacity, or FVC) and the volume of air forced out in the first second of the maneuver (forced expiratory volume, or FEV1).

The research results are published online in the *Annals of the American Thoracic Society*, and will be published in an upcoming print edition.

In the more than 5,000 adult survey participants with data regarding recent marijuana usage and symptoms, 59.1 percent reported having used marijuana at least once in their lifetime, and 12.2 percent reported

using marijuana in the prior month.

Increasing frequency of marijuana usage over the prior month was associated with increases in self-reported respiratory symptoms of bronchitis (coughing, wheezing, etc.) but not with clinically significant changes in measures of lung function as measured by spirometry.

In the nearly 3,000 adult participants with data regarding patterns of lifetime marijuana use, cumulative exposure of less than 20 joint-years (one joint year = smoking an average of one joint per day for a year) was not associated with deleterious changes in lung function, as measured by the FVC and FEV1.

Greater than 20 joint-years of exposure, however, was associated with measurable and clinically significant changes in lung function, but the changes displayed a different pattern than those observed in [obstructive lung disease](#) from tobacco use and are of uncertain clinical significance to overall lung health, according to the researchers.

"While over 20 joint-years is significantly associated with a change in lung function, it is inconclusive whether or not this represents early [lung function](#) impairment similar to long-term tobacco use," says lead author Jordan A. Kempker, MD, MSc, clinical research fellow in the Division of Pulmonary and Critical Care Medicine in Emory University School of Medicine.

These results may also be due to a relatively low amount of smoke exposure in marijuana smokers compared to tobacco smokers, Kempker explains. Tobacco smokers generally are at risk of pulmonary disease after 20 pack-years of exposure (one pack-year = smoking an average of one pack of cigarettes a day for a year), which represents significantly more smoke exposure than 20 marijuana joint-years.

"Furthermore, smoking marijuana seems to increase symptoms of respiratory irritation, such as bronchitis, and our study was inconclusive about whether those effects are permanent. We also did not study the association of marijuana smoking with the development of cancer," says Kempker.

Other authors were Eric G. Honig, MD, and Greg S. Martin, MD, MSc, both professors in Emory's Division of Pulmonary and Critical Care Medicine.

The authors conclude: "With current marijuana smokers reporting a mean joint-year exposure of 15.8 joint-years, these data represent important public health implications. With the shifting political climate in the U.S. these are important public health concerns that necessitate further inquiry into this growing field. Future research directions may potentially target study populations in those states in the U.S. where [marijuana](#) is now legally consumed and it will now be more feasible to longitudinally follow users' consumption patterns, pulmonary function and symptoms."

Provided by Emory University

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