Dunedin Multidisciplinary Health & Development Study

Concept Paper Form

Provisional Paper Title: Cannabis and small airway function in mid-adult life
Proposing Author: Bob Hancox/Hua ShinTan
Author's Email: **bob.hancox@otago.ac.nz**
P.I. Sponsor: (if the proposing author is a student or colleague of an original PI) Bob Hzncox
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Objective of the study:
To assess the effect of cumulative cannabis use on peripheral airway lung function in mid-adult life.

Data analysis methods:
Linear regression of Impulse oscillometry lung function variables on cumulative joint-years of cannabis at age 45. These will be adjusted for tobacco use, standard predictors of lung function (depending on measure: height, sex, weight (or BMI)), and asthma diagnosis.

Variables needed at which ages:
IOS Lung function – at ages 38 and 45
Cannabis use – all adult ages
Tobacco use, height, weight, asthma diagnosis.

Significance of the Study (for theory, research methods or clinical practice):
The effect of cannabis on lung function is a controversial but topical issue. This has relevance to the upcoming referendum about legalising cannabis use in NZ and similar debates around the world, to clinicians treating people with lung disease, to public health advice attempting to prevent development of chronic lung disease, and to a very interested general public. The evidence so far suggests that cannabis may have quite different effects from tobacco, which also raises scientific questions about how inhaling these slightly different forms of smoke could produce such different effects.

We recently reviewed the evidence of cannabis and lung disease (1) and it is clear that some of the world's best evidence on cannabis and lung disease comes from earlier reports from the Dunedin study. However, important questions remain about the effects of cannabis. One area of interest is the effect of small (<2mm diameter) airways in the lung periphery. We can assess these airways using IOS measures at 38 and 45. At age 38, we found preliminary evidence that cannabis impacted on the small airways – but only in women.[4] We plan to reassess these associations at age 45. Tis will also allow us to assess the effects of changes in cannabis use between ages 38 and 45 and the small airways and whether a sex difference persists.

References:

1. Gracie K, Hancox RJ. Cannabis use disorder and the lungs. Addiction. 2020.
2. Hancox RJ, Poulton R, Ely M, Welch D, Taylor DR, McLachlan CR, et al. Effects of cannabis on lung function: a population-based cohort study. Eur Respir J. 2010;35(1):42-7.
3. Hancox RJ, Gray AR, Poulton R, Sears MR. Effects of quitting cannabis on respiratory symptoms. Eur Respir J. 2015:1-8.
4. Robinson PE, King GG, Sears MR, Hong CY, Hancox RJ. Determinants of peripheral airway function in adults with and without asthma. Respirology. 2017, doi: 10.1111/resp.13045