



The limitations associated with measuring cannabis dependence, a response to Budney and colleagues

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Dear Sir,

It is important to take stock of what we really know about the dependency profile of cannabis. There is much that I would agree with in the review of this topic by Budney and colleagues [1]; however, I think there are some important factors that were missing from their analysis. First, it is not surprising that incidence and prevalence rates vary over time as most of the data these rates are derived from rely on self-reported observational surveys, with well-documented limitations associated with these methods [2]. This is amplified by the problems of disclosure and recall when interviewing people about use of cannabis.

A further concern is the bias at play in the diagnostic manuals used to assess cannabis use disorder, for example, the Diagnostic and Statistical Manual has used criteria such as asking participants about operating machinery or driving trucks while under the influence of cannabis [3]. This sets the abuse criteria lower for men than women, so these male-orientated questions could account for some of the difference between male and female dependence. Gender differences are not limited to social factors as recent biological investigation offers some insights as to why women progress for cannabis exposure to dependence quicker than men [4]. The gender differences in pharmacokinetics for cannabis are still to be fully revealed and could inform the way dependence is assessed and defined in a more gender-sensitive way.

Demonstrating how much cannabis dependence is influenced by consequences of use as much as the physiological effects of the drug, significant international differences in prevalence exist, a point which Budney and colleagues acknowledge. Overall, higher income countries also have higher population rates of dependence compared to lower income ones [5]. Regulatory approaches vary between

countries as do enforcement measures applied when access to cannabis is restricted [6]. This adds to the distorted view we have of cannabis and the risks of dependence observed so far.

The trend observed in some countries of increasing demand for treatment due to cannabis use could be due to several factors including rising potency, increasing acceptance of cannabis-related problems including dependence among users and treatment staff [7]. There appears to be a perception among many of those not in treatment but using cannabis frequently that treatment is not necessary to reduce cannabis use, with females significantly more likely than males to hold this view in one study [8]. This image of cannabis as a relatively benign drug is a view held not only by those using cannabis but also some treatment staff [9].

These are just some examples of the limitations associated with constructing accurate prevalence data on cannabis dependence. It is important that we collectively acknowledge these and ensure that they are given a more public airing otherwise we risk losing credibility on this issue with the public and those who use cannabis. There is more that we could do to improve the reliability of counting the number of people developing cannabis dependency at a time when many jurisdictions are reviewing and changing their regulatory approach to cannabis for medicinal and recreational reasons.

References

1. Budney AJ, Sofis MJ, Borodovsky JT (2019) An update on cannabis use disorder with comment on the impact of policy related to therapeutic and recreational cannabis use. *Eur Arch Psychiatry Clin Neurosci* 269(1):73–86
2. Guyatt GH, Oxman AD, Vist G, Kunz R, Brozek J, Alonso-Coello P, Montori V, Akl EA, Djulbegovic B, Falck-Ytter Y, Norris SL (2011) GRADE guidelines: 4. Rating the quality of evidence—study limitations (risk of bias). *J Clin Epidemiol* 64(4):407–415
3. Agrawal A, Lynskey MT (2007) Does gender contribute to heterogeneity in criteria for cannabis abuse and dependence? Results

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- from the national epidemiological survey on alcohol and related conditions. *Drug Alcohol Depend* 88(2–3):300–307
4. Farquhar CE, Breivogel CS, Gamage TF, Gay EA, Thomas BF, Craft RM, Wiley JL (2019) Sex, THC, and hormones: effects on density and sensitivity of CB1 cannabinoid receptors in rats. *Drug Alcohol Depend* 194:20–27
 5. World Health Organisation (2018) WHO expert committee on drug dependence, critical review, cannabis and cannabis resin. <http://www.who.int/medicines/access/controlled-substances/Cannabis-and-cannabis-resin.pdf?ua=1>. Accessed 13 Feb 2019
 6. Rogeberg O, Bergsvik D, Phillips LD, Van Amsterdam J, Eastwood N, Henderson G, Lynskey M, Measham F, Ponton R, Rolles S, Schlag AK (2018) A new approach to formulating and appraising drug policy: a multi-criterion decision analysis applied to alcohol and cannabis regulation. *Int J Drug Policy* 1(56):144–152
 7. Hamilton I, Monaghan M, Lloyd C (2018) Rising numbers of older and female cannabis users seeking treatment in England and Wales. *Drugs Educ Prev Policy* 8:1–3
 8. Gates P, Copeland J, Swift W, Martin G (2012) Barriers and facilitators to cannabis treatment. *Drug Alcohol Rev* 31(3):311–319
 9. Monaghan M, Hamilton I, Lloyd C, Paton K (2016) Cannabis matters? Treatment responses to increasing cannabis presentations in addiction services in England. *Drugs Educ Prev Policy* 23(1):54–61