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COMMENTARIES

Commentaries on Wilkins & Rychert

LEGAL CANNABIS—WHAT'S IN IT?

Current labelling and testing standards for legal cannabis are inadequate. Development of understandable labels including standard units and accessible and reliable testing services are required.

New Zealand is on the verge of legalizing cannabis, with the public voting on the novel Cannabis Legislation and Control Bill (CLCB) in September 2020 [1]. From a public health perspective, product safety is crucial and the consumer should at all times know what is in the product. A legal cannabis market has prospects of better product control, including required product testing for cannabinoid profiles and pesticides and required product labels with active ingredients, such as Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD). In their discussion of the prospects and challenges of the CLCB, Wilkins & Rychert rightly point towards the paradox in the CLCB's objectives to reduce cannabis use and cannabis use-related harms through a largely commercial market [2]. They argue that a reduction in cannabis use is unlikely, but product safety could be improved by lowering the proposed 15% THC cap for cannabis plants. Moreover, there is more to cannabis product safety than THC, and significant regulatory challenges warrant a slow transition to a legal cannabis market. Expanding on these issues, the time has come to significantly invest in a transparent product with informative and reliable labels that will benefit public health and science, and New Zealand's route towards a legal cannabis market may present an excellent opportunity in this.

What is a safe cannabis product? There is, as yet, no simple answer to this question. While legal cannabis markets are emerging, the science behind it is troubled by unclear evidence regarding the long-term positive and negative effects on health [3]. This partly stems from difficulties in quantifying exposure history due to the variable routes of administration and cannabinoid profiles of cannabis products, methodological limitations of objective quantification methods, lack of standardized cannabis units and terminology and legislative research barriers [3]. Despite the underdeveloped evidence base and uncertainties concerning the public health impact of cannabis legalization, it is clear that THC dose and route of administration matter and harm reduction strategies should aim at discouraging the use of high THC dosages and combustion methods [4]. Moreover, although findings are mixed, there is initial evidence that CBD may reduce some of THC's negative health effects [5].

Informative and reliable product labels contribute to cannabis product safety and proper dose titration [6]. Current labelling requirements in legal cannabis markets include THC and often also CBD potency in milligrams, percentages and/or ratios. These quantitative labels are poorly understood, and symbols or simpler units of measurement are preferable [7]. Freeman & Lorenzetti's recently proposed standard unit of 5 mg THC [8] represents an excellent starting-point for improving labels, and while it is perhaps too early for a standard CBD unit, supplemental information about the THC and CBD ratio may be the closest alternative.

Besides the need for improved product labels and standardized units, an important barrier towards a transparent cannabis product is the questionable reliability of the dose on product labels. In a US study investigating edible cannabis products only 17% was correctly labelled for THC [9], and in a US study investigating CBD extracts sold on-line only 31% was correctly labelled [10]. High variability in cannabinoid profile between and within cannabis products [11], high variability in the test results from different testing services [12] and limited regulatory control may play an important role in this. Accessible and reliable testing services for commercial and non-commercial stakeholders should therefore be a key area of concern in further cannabis policy development.

A difficult road thus lies ahead, where close collaborations between science and society will hopefully lead to evidence-based labelling and reliable and accessible testing services for cannabis products. Further policy developments following a positive public vote for New Zealand's CLCB could be crucial in this.

Declaration of interests

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References

1. Little H. A. Proactive release—2020. Cannabis Referendum: Documents relating to the public release of the exposure draft Cannabis Legalisation and Control Bill 2020. Available at: https://www.referendums.govt.nz/materials/Cabinet-paper-Summary-of-policies-Cabinet-minutes-Exposure-draft-Cannabis-Legalisation-and-Control-Bill.pdf

2. Wilkins C., Rychert M. Assessing New Zealand's Cannabis Legalisation and Control Bill: prospects and challenges. *Addiction* 2021; **116**: 222–30.
3. Cousijn J., Núñez A. E., Filbey F. M. Time to acknowledge the mixed effects of cannabis on health: a summary and critical review of the NASEM 2017 report on the health effects of cannabis and cannabinoids. *Addiction* 2018; **113**: 958–66.
4. Hall W., Stjepanović D., Caulkins J., Lynskey M., Leung J., Campbell G., *et al.* Public health implications of legalising the production and sale of cannabis for medicinal and recreational use. *Lancet* 2019; **394**: 1580–90.
5. Freeman A. M., Petrilli K., Lees R., Hindocha C., Mokrysz C., Curran H. V., *et al.* How does cannabidiol (CBD) influence the acute effects of delta-9-tetrahydrocannabinol (THC) in humans? A systematic review. *Neurosci Biobehav Rev* 2019; **117**: 696–712.
6. Hammond D. Communicating THC levels and 'dose' to consumers: implications for product labelling and packaging of cannabis products in regulated markets. *Int J Drug Policy* 2019; https://doi.org/10.1016/j.drugpo.2019.07.004
7. Leos-Toro C., Fong G. T., Meyer S. B., Hammond D. Cannabis labelling and consumer understanding of THC levels and serving sizes. *Drug Alcohol Depend* 2020; **208**: 107843.
8. Freeman T. P., Lorenzetti V. 'Standard THC units': a proposal to standardize dose across all cannabis products and methods of administration. *Addiction* 2020; **115**: 1207–16.
9. Vandrey R., Raber J. C., Raber M. E., Douglass B., Miller C., Bonn-Miller M. O. Cannabinoid dose and label accuracy in edible medical cannabis products. *JAMA* 2015; **313**: 2491–3.
10. Bonn-Miller M. O., Loflin M. J. E., Thomas B. F., Marcu J. P., Hyke T., Vandrey R. Labeling accuracy of cannabidiol extracts sold online. *JAMA* 2017; **318**: 1708–9.
11. Sexton M., Ziskind J. *Sampling cannabis for analytical purposes*. Los Angeles, CA: BOTEC Analysis Corporation; 2013.
12. Jikomes N., Zoorob M. The cannabinoid content of legal cannabis in Washington State varies systematically across testing facilities and popular consumer products. *Sci Rep* 2018; **8**: 1–15.

MINIMUM THC UNIT PRICING: AN OPPORTUNITY FOR HARM REDUCTION

New Zealand's draft Cannabis Legalisation and Control Bill (CLCB) lacks appropriate regulation of price. Minimum THC unit pricing has the potential to reduce consumption among the heaviest consumers, supporting the CLCB objective of harm reduction.

The draft Cannabis Legalisation and Control Bill (CLCB) [1] provides a regulatory framework to legalise and control the production, possession and use of cannabis with the overarching aim of reducing cannabis harms in New Zealand. To what extent might this be possible? As highlighted by Wilkins and Rychert [2], there are several limitations of the CLCB at present, and a key issue is the pricing of cannabis products.

The CLCB [1] states that tax on legal cannabis sales will be based on tetrahydrocannabinol (THC) potency and weight, and that tax will vary according to different products. It is unclear exactly what this might mean in practice. The complexity of this question is compounded by the CLCB definition of 'potency limits' [1] that includes a combination of information on potency (% THC) and dose (mg THC). It proposes limits of 15% THC (dried or fresh cannabis), 5 mg THC per package (edibles), 10 mg of THC per unit and 1000 mg per package (extracts) and 1000 mg per package (topicals). The use of these different metrics for varying products creates challenges for regulators and consumers because it hinders direct comparison between cannabis products and their prices.

Consistency in product taxation and pricing could be achieved by implementing a 5-mg standard THC unit [3]. This is a low dose that can produce intoxicating effects among infrequent consumers with minimal risk of acute adverse effects and can be applied to all cannabis products [3]. There is a strong rationale to use THC as the unit of taxation, because it causes harms to the consumer in a dose-dependent manner [4]. Conversely, product weight is not associated with risk of harms and should not be used to guide taxation. Taxation by weight could also incentivise the production of cannabis products with higher THC concentrations to increase profits.

An important application of the standard THC unit is minimum pricing—a key issue identified by Wilkins and Rychert [2]. Previous experience in the field of alcohol use may offer some indication as to how minimum unit pricing might influence consumption. The introduction of a minimum alcohol unit price in Scotland in 2018 (50p per 8 g UK unit) was associated with an immediate reduction in alcohol purchased, estimated at 328 g (41 UK units) per adult per household per year [5]. These changes were driven by a reduction in the top fifth of alcohol consumers [5]. It is reasonable to expect that the effects of minimum THC unit pricing might also be driven by the heaviest consumers of cannabis, who are an important population to target. For example, it is estimated that one of six people who use cannabis in Australia are daily users, but they consume more than 80% of all cannabis used in Australia [6].

Minimum alcohol unit pricing has been difficult to implement despite strong evidence for its potential benefits to public health [7]. The alcohol industry have played a vocal role in opposing such measures and have successfully positioned themselves as key stakeholders engaging with the highest level of government throughout the policy making process [8]. The potential for lobbying by the cannabis industry should be carefully scrutinized in policy decisions around cannabis legalisation and regulation. Influence from the cannabis industry may increase following the referendum in New Zealand and as legal cannabis markets continue to expand internationally.

