

Cannabis Legalisation and Control Bill: should doctors be concerned?

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ABSTRACT

A referendum on the Cannabis Legalisation and Control Bill was held in New Zealand. The Bill was meant to oversee government control over the production, supply and use of cannabis and reduce cannabis-related harm. Public health control was proposed over cannabis market by imposing licenses and cultivation, the quality and strength of marketed cannabis, and sale restrictions. Under this Bill, cannabis was only meant to be available to adults aged over 20 years through licenced stores. The potency of cannabis was to be limited. Cannabis use and was going to be permitted in private homes and specifically licensed premises. The Electoral Commission announced on 6 November 2020 that 50.7% of voters opposed the Bill and 48.4% supported it. Despite the outcome of the referendum, legalisation of cannabis may remain a live issue for many people, and doctors need to have an informed view about the impact of legalisation on mental health conditions. Experience from other countries shows that access to and potency of cannabis increased with legalisation. Despite the intent to prevent harm, cannabis legislation has been associated with adverse effects on mental health, emergency hospital presentations and crime. Public health strategies, including educating public about harm associated with cannabis, surveillance of potency and labelling, increasing minimal age for legal recreational cannabis use and bolstering treatment capacity for problematic cannabis use, including those with psychiatric disorders, should be funded by revenue generated from cannabis legislation.

Cannabis is the most commonly used illegal drug in New Zealand, even though the unauthorised possession of any amount of cannabis is a crime under the Misuse of Drugs Act 1975. A non-binding referendum was held on 17 October 2020 regarding a proposed Cannabis Legalisation and Control Bill (the Bill).¹ The Bill outlined government control over the production, supply and use of cannabis, with the intent to reduce cannabis-related harm to individuals, families/whānau and communities. It did not cover medicinal cannabis, hemp, driving while impaired or workplace health and safety issues, which were already covered by existing laws.¹ The Electoral Commission of New Zealand released official results of the referendum on 6 November 2020, with 50.7% of voters opposing the legalisation and 48.4% in support. The referendum is over but the issue of cannabis policy reform remains and deserves critical appraisal. Proponents of legalising cannabis may revisit the issue in the future

and doctors will need to have an informed view on whether legalising cannabis can result in increased access, usage and harm to vulnerable sections of society. This article examines data relevant to the health of New Zealanders who are potentially most at risk.

A recent paper has stated New Zealand has one of the highest rates of cannabis use in the Western world, and that rates nearly increased one-and-half times from 2011/2012 to 2016/2017.² We also know from two world-class New Zealand longitudinal studies that a dose-dependent relationship exists between cannabis use and a range of adverse health outcomes, including loss of cognitive capacity, increased respiratory and periodontal disease, poor educational and occupational outcomes, higher rates of criminal convictions, poor relationships and driving impairments.³ Furthermore, Māori are not only disproportionately represented among the population using it,² but also among those facing legal complications associated with cannabis usage.^{2,4}

While prevalence of cannabis use in the general population for 2018/2019 was 15%, the figure for the same period jumped to 32% for Māori.⁴ These trends are already worrying, and any risk of their potential worsening needs to be carefully assessed while considering the appropriateness or need for legalisation of cannabis.

These statistics^{3,4} are based on the availability of cannabis in the illegal market, which could potentially change if cannabis is to be legalised. We acknowledge the vast majority of people who use cannabis in New Zealand do not suffer any serious health or social consequences. But the negative effects on people who do suffer harm from cannabis is significant. Among people who use cannabis, those with mental illnesses are particularly vulnerable. This paper primarily focusses on this subgroup of the population.

Currently, the majority of cannabis users in New Zealand access cannabis from an uncontrolled, illicit market. Criminal and antisocial activities are associated with the illicit cannabis market. Measures to legalise and control cannabis, as outlined in the Bill,¹ would have put strict public-health controls over this market by imposing licenses and regulation over the cultivation, quality and strength of products made, and by restricting the sale of cannabis products. Under the Bill, cannabis would have only been available to adults aged 20 years or older through specialist stores licensed by the Government. Cannabis would not have been sold to teenagers. The potency of cannabis was to be limited. Cannabis use was to be permitted in private homes and specifically licensed premises, and it could not have been used in public. Marketing and advertising would have been banned to help prevent and reduce youth use and consumer, and health warnings would have been required. In essence, the Government was to control the cannabis market from seed to sale and proposed to use the revenue to fund mental health and addiction services, freeing up resources currently used in fighting criminal activities associated with cannabis.¹

It is our view legalising cannabis correlates with heightened acceptance, reduced perception of risks and an increase in cannabis use in both adults and adolescents. The proposal in the Bill¹

to not allow sale of cannabis to adolescents was positive because this group is at higher risk of experiencing impairment in psychological, social and/or occupational functioning and suffering negative psychiatric consequences.³ It is possible that taking a health-focused approach driven by legislation may encourage people with complications associated with cannabis use to seek treatment and give them access to regulated cannabis products without adulterants. The exact impact of legalisation on help-seeking behaviour may not become evident immediately.

We do, however, know that a substantial proportion of people with mental illnesses in New Zealand already use cannabis and suffer adverse mental health outcomes.⁴ There was no provision in the Bill¹ to restrict people with existing mental illnesses from buying cannabis. With easier and increased access to cannabis, the subgroup of the population with existing mental illnesses, or at risk of developing mental illnesses, will use more cannabis and may suffer greater harm. The relationship between cannabis use and harm to mental health is well documented,⁵ and yet activism and commercial interests have contributed to legalisation of cannabis in many parts of the world. Murray and Hall (2020) recently noted, “the legalisation of cannabis production and sale has created a rapidly growing industry with a strong financial interest in promoting cannabis use.”⁶ Emerging data from the USA show cannabis legalisation could indeed be linked with increased usage and increases in motor vehicle accidents, alcohol use and incidents of overdose injuries.⁷ It remains unknown whether legalisation of cannabis, by affecting availability, access and restrictions on usage, can truly disempower well-established black markets.²

The prevailing belief behind the New Zealand referendum was that controlled access to cannabis can be associated with better outcomes. It is highly likely that legalisation would make access to cannabis easier for many New Zealanders, and that its overall use could increase along with adverse effects on mental health. In this paper we review the experience of other countries who have legalised cannabis, in terms of its effect on access, usage and mental health. We will not examine the

impact on mental health of New Zealand's medicinal cannabis scheme, which has been in effect from 1 April 2020.⁸

Increased access to cannabis under a legalised model

The Netherlands decriminalised recreational cannabis in 1976 by permitting its sale in approved outlets and possession of up to five grams for personal use. Contrary to expectations, changes in cannabis use in Netherlands developed rather independently of cannabis policy.⁹ Korf (2002) examined nearly four decades of post-decriminalisation data and described two waves of changes in cannabis use, which first peaked around 1970, fell to a low during the late 1970s and early 1980s and then peaked again in the mid-1990s. Cannabis use among youth in the Netherlands occurred in parallel to four identified stages in the availability of cannabis: peaking when cannabis was distributed through an underground market (late 1960s and early 1970s), decreasing when the number of house dealers superseded the underground market in the post-decriminalisation period, but again stabilised or slightly decreased by the end of the 1990s when the number of coffee shops was reduced. The Dutch experience, therefore, shows questionable effects of changes in cannabis policy on trends in cannabis use. Indeed, it has been questioned whether legalisation and easy access to cannabis can reduce the overall usage of cannabis in a given country.²

In other countries that have legalised cannabis, the prevalence of cannabis use has increased over time along with associated complications. For example, in the USA legalisation was followed by increased emergency department visits for cannabis-related presentations (cannabis intoxication and cannabis-related hyperemesis).¹⁰ In New Zealand, the Bill¹ was criticised for being vague about the cannabis production and supply chain, despite proposing that a wide range of cannabis products will be available, including raw (fresh and dried) cannabis, resin, cannabis concentrates and cannabis infused products such as edibles and drinkables.² A study from Northern America found the prevalence of daily, weekly and

monthly use of cannabis in states that had legalised cannabis increased compared to states where it was not legalised.¹¹ Furthermore, cannabis was used in a greater variety of forms, including concentrate, vaped oils, edibles and drinks in states that had legalised it.¹¹ Similarly, another American study reported legalisation of cannabis was associated with increased prevalence of cannabis-use disorder.⁷ It is highly likely that with legalisation and an availability of a wider range of products (eg, for smoking, in edible form etc) cannabis use would increase in New Zealand, as has occurred in other countries.

Most proponents of legalising cannabis identify the benefits of reducing criminal activities, minimising the harm associated with cannabis use and protecting the youth, who are especially at a higher risk, from the harmful effects of cannabis. The impact of legalisation, however, varies on these parameters and data are still emerging. For instance, legalisation of cannabis created a stronger illicit market for cannabis sales and associated criminal activity in Canada.¹² Early post-legalisation data from a subsequent nationally representative study¹³ of cannabis use and related behaviours, conducted in the months immediately before and after cannabis was legalised in Canada, indicated that cannabis use among youth had not increased. Cannabis use in the older age group increased in the short and longer term post legalisation. Driving after using cannabis did not change post legalisation. The survey acknowledged post-legalisation users had continued to procure cannabis from, and share it with, family and friends. The overall risk of developing cannabis use disorder post legalisation increased in Canada.¹³ The findings of this survey suggest that, while criminal activities associated with cannabis may reduce with legalisation, other associated harms may not.

Furthermore, the concentration of tetrahydrocannabinol (THC) in cannabis has steadily increased with legalisation, from approximately 3% in many traditional herbal forms to anywhere between 10% and 70% in Europe and North America.^{14,15} The wider availability of cannabis in the 29 states of the USA that had 'Medical Marijuana Laws' was associated with increased

cannabis potency between 1990 and 2014, more unintentional childhood exposures between 2000 and 2013 and greater adult cannabis use and adult cannabis use disorder between 2002 and 2014.¹⁵ These changes were reported over a period of two decades, from 1990 to 2010.¹⁵ This trend is worrying because use of high-potency cannabis is associated with increased risk of developing psychotic disorders. A multi-centre case control study spread across Europe and Brazil found that if high-potency cannabis were no longer available, 12.2% of cases of first-episode psychosis could be prevented across all the 11 sites.¹⁶ Placing a cap on potency can be helpful given the harmful effects of potent cannabis. Experience from countries that have legalised cannabis does suggest potency increased over time.^{14,15} Canada has experienced significant policy changes post legalisation, including legal sale of more potent products and edibles (both with their own associated special risks) and the opening of the market for retail cannabis by removing the cap on the number of private stores in some states, like Ontario.¹³ This could also occur in New Zealand even if a cap on potency was to be placed in any future law.

Thus legalisation in some countries has resulted in increased access to cannabis, in a diverse range of preparations and in increased potency, especially in the highly commercialised markets. The impact of any attempts to legalise and/or to control cannabis in New Zealand will have to have provisions to rigorously monitor the potency of cannabis post legalisation, given the relationship between use of potent cannabis and the risk of adverse outcomes, including escalation to other drug use, especially in the younger population.³

Cannabis use and mental illnesses

If it is true that with legalisation access to and use of cannabis increases, then any negative effects on mental illnesses need to be considered carefully. The relationship between cannabis use and the risk of developing psychotic symptoms has been well documented.³ In countries that have legalised or decriminalised cannabis, its price has fallen while dependence and the

risk of psychosis has increased.⁶ Increasing access to cannabis, especially to potent cannabis, may increase the risk of developing psychosis, particularly in the younger age group. The Dunedin Multidisciplinary Health and Development Study found age-related associations between cannabis use and mental disorder. Mental disorder at age 15 led to a small but significantly elevated risk of cannabis use at age 18. By contrast, cannabis use at age 18 elevated the risk of mental disorder at age 21. These findings suggest that the primary causal direction leads from mental disorder to cannabis use among adolescents and the reverse in early adulthood¹⁷—findings echoed by Meier et al.¹⁸ Despite the proposed controls around age in the Bill, people at greater risk of experiencing adverse mental health outcomes may still be vulnerable, although how legalisation will affect mental health parameters and usage of cannabis may be difficult to predict.

The impact of cannabis use, especially use of high-potency varieties, on adverse mental health outcome is worth examining in greater detail. A cohort study (n= 1,087) found that use of high-potency cannabis was associated with a significant increase in the frequency of cannabis use, cannabis problems and anxiety disorder. The likelihood of psychotic experiences increased among users of high-potency cannabis, but the risk was attenuated after adjustment for frequency of cannabis use.¹⁹ An Australian study, on the other hand, found cannabis use precipitated the onset of psychosis in the vulnerable and exacerbated the course in people with existing psychosis.²⁰ Individuals with psychosis who are regular cannabis users have more positive symptoms, more frequent relapses and require more hospitalisations.²¹ Regular cannabis use predicts an increased risk of schizophrenia, even after controlling for confounding variables.²¹ In a meta-analysis, the pooled estimate for the time course between regular cannabis use initiation and age at onset of psychosis was 6.3 years.²² This meta-analysis challenged the popular notion that cannabis is initiated by many as a form of self-medication for the positive symptoms of psychosis, although cannabis may have some anxiolytic effects.²² With such a well-established relationship between cannabis use and risk of developing

or aggravating psychosis, the potential of increased harm among people with existing, or at risk of developing, mental illnesses needs to be considered if cannabis were to become widely available with no safeguards to limit access to cannabis for people in the high-risk category.

It is not just the risk of psychosis that increases with cannabis use. A range of potential harms in patients with psychotic and mood disorders secondary to cannabis have been increasingly documented in other countries.⁵ A greater level of depressive symptoms are also reported in heavy cannabis users compared to light users and nonusers.²³ Associations between cannabis use and negative outcomes in bipolar affective disorder, such as worsened affective episodes, psychotic symptoms, rapid cycling, suicide attempts, decreased long-term remission, poorer global functioning and increased disability, have been reported.^{5,24} After controlling for multiple confounders, cannabis use predicted the development of anxiety disorders, depression, suicidal ideation (nearly threefold), personality disorders and interpersonal violence, especially in adolescents relative to adults, and a younger age of initiation increases the risk of developing mental health disorders.²⁵

In summary, cannabis is known to disproportionately harm people who are either at risk of mental illnesses or who have an existing mental illness.⁵ Current data from England, Denmark and Portugal indicate the incidence of schizophrenia and hospitalisation rates for psychotic conditions increased post cannabis legalisation.⁶ Such risks may increase with greater access to cannabis, especially if potency was to increase. Doctors as a group, and psychiatrists in particular, will need to proactively monitor and make submissions on how people at risk of mental illness, or with existing mental illnesses, are affected by the legalisation of cannabis in New Zealand. We may achieve greater clarity in this regard as legalisation and liberalisation of cannabis occurs in many countries, including New Zealand, and as we accumulate empirical data that will help us understand the role of public policy on cannabis legalisation.¹² Until then, we can use the experiences of other countries that have legalised cannabis

to prepare a framework for clinicians and policy-makers to approach these concerns by incorporating the following steps:²⁶

- i. A sound general population education strategy
- ii. Limits on cannabis potency and clearer product labelling
- iii. A minimum age for legal recreational cannabis use
- iv. A national surveillance strategy before and after cannabis legalisation strategy
- v. Developing an enhanced treatment capacity for problematic cannabis use, such as for those with psychiatric disorders

There was provision in the Bill¹ for an education strategy to be implemented. Here we emphasise that legalising drugs like cannabis needs to occur in conjunction with evidenced-based preventive and early intervention efforts to reduce harmful cannabis use, with a strong focus on education.³ Taking a public-education approach was, therefore, a positive aspect of the Bill, along with the provisions to control potency and enforce clear product labelling and a minimum age of 20 for recreational cannabis use—by introducing this age limit, we stood the chance of reducing the harm caused by early adolescent initiation, although young adults may still have been at risk of experiencing adverse mental health conditions, particularly psychosis. The choice of 20 years as the minimum age was criticised as “being mainly founded in opinion or speculation combined with political calculations rather than concrete scientific evidence”.² Furthermore, New Zealand policy-makers need to consider the impact of legalisation on the health and wellbeing of people who are younger than 20 years old.²

In Canada, the proportion of people accessing cannabis from friends and family and thus not paying for cannabis did not change with legalisation.¹³ This suggests at least some young people in New Zealand may continue to access cannabis from friends and family post legalisation. Taking a gradual, educational approach, rather than holding a binary referendum, has been proposed as better alternatives to legalisation.³ Post-legalisation creep in

activism for more potent cannabis and for wider range of cannabis products, such as raw (fresh and dried), resin, vaping concentrate and edibles, to be made available⁶ has occurred in other parts of the world.^{6,11} This could also occur in New Zealand. An effective system of surveillance for limiting potency and enforcing labelling across the full range of products will be essential because, compared to dried cannabis, other products have different properties, such as delayed onset of effect and higher potency.¹¹ Consumers will need to be informed of such differences. If possible, the legislative framework should protect people with mental illnesses from the harms associated with increased access to cannabis.

Conclusions

The data presented above are relevant for regulators, public health officials and policymakers considering the impact of legalisation of cannabis for recreational use as in New Zealand. These findings also have implications for mental health policy in terms of education on risks and harm-minimisation strategies for products containing cannabis, and for research into effects in people who might be vulnerable to mental illness. There are strong reasons to approach cannabis legalisation cautiously. We need to closely monitor the impact of different forms of legalisation of cannabis in other countries as we evaluate the effects of changes in our own.

Competing interests:

Nil.

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REFERENCES

1. Wilkins C, Rychert M. Assessing New Zealand's Cannabis Legalization and Control Bill: prospects and challenges. *Addiction*. 2021 Feb;116:222-230. doi: 10.1111/add.15144. Epub 2020 Jul 4.
2. Fischer B, Bullen C. Emerging prospects for non medical cannabis legalisation in New Zealand: An initial view and contextualization. *International Journal of Drug Policy*. 2020. Feb;76:102632. doi: 10.1016/j.drugpo.2019.102632. Epub 2019 Dec 24.
3. Poulton R, Robertson K, Boden J, Horwood J, Theodore R, Potiki T, Ambler A. Patterns of recreational cannabis use in Aotearoa-New Zealand and their consequences: evidence to inform voters in the 2020 referendum. *Journal of the Royal Society of New Zealand*. 2020. 50:2. 348-65. doi: 10.1080/03036758.2020.1750435
4. Ministry of Health [Internet]. Available from: https://minhealthnz.shinyapps.io/nz-health-survey-2018-19-annual-data-explorer/_w_c21841e3/#/ explore-topics.
5. Lowe D, Sasiadek J, Coles A, George T. Cannabis and mental illness: a review. *European Archives of Psychiatry and Clinical Neuroscience*. 2018 April; 269:1-14.
6. Murray RM, Hall W. Will Legalisation and Commercialization of Cannabis Use Increase the Incidence and Prevalence of Psychosis? *JAMA Psychiatry*. 2020; 77(8):777-8.
7. Delling FN, Vittinghoff E, Dewland TA, Pletcher MJ, Olgin JE, Nah G,

- Aschbacher K, Fang CD, Lee ES, Fan SM, Kazi DS, Marcus GM. Does cannabis legalisation change healthcare utilisation? A population-based study using the healthcare cost and utilisation project in Colorado, USA. *BMJ Open*. 2019 May 15;9(5):e027432. doi: 10.1136/bmjopen-2018-027432. PMID: 31092662; PMCID: PMC6530411.
8. Medsafe [Internet]. Medicinal Cannabis Scheme. Prescriber Update. 2020 [cited 2020 August 10]. Available from: [https://www.medsafe.govt.nz/profs/PUArticles/PDF/Prescriber_Update_Vol_41\(1\)_M_arch_2020.pdf](https://www.medsafe.govt.nz/profs/PUArticles/PDF/Prescriber_Update_Vol_41(1)_M_arch_2020.pdf).
 9. Korff DJ. Dutch coffee shops and trends in cannabis use. *Addict Behav*. 2002 Nov-Dec;27(6):851-66. doi: 10.1016/s0306-4603(02)00291-5. PMID: 12369472.
 10. Leung J, Chiu J, Chan V, Chan G, Stjepanović D, Hall W. What have been the public health impacts of cannabis legalisation in the USA? A review of evidence on adverse and beneficial effects. *Current Addiction Reports*. 2019; 6(4): p. 4) 418-428.
 11. Goodman S, Wadsworth E, Leos-Toro C, Hammond D; International Cannabis Policy Study team. Prevalence and forms of cannabis use in legal vs. illegal recreational cannabis markets. *Int J Drug Policy*. 2020 Feb;76:102658. doi: 10.1016/j.drugpo.2019.102658. Epub 2020 Jan 9. PMID: 31927413.
 12. Bahji A, Stephenson C. International Perspectives on the Implications of Cannabis Legalisation: A Systematic Review & Thematic Analysis. *Int J Environ Res Public Health*. 2019;(16):3095.
 13. Rotermann M. What has changed since cannabis was legalized? *Health Rep*. 2020 Feb 19;31(2):11-20. doi: 10.25318/82-003-x202000200002-eng. PMID: 32073644.
 14. 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(10208):1580-90.
 15. Hasin D. US epidemiology of cannabis use and associated problems. *Neuropsychopharmacology*. 2018; 43(1):195-212.
 16. Di Forti M, et al. The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study. *Lancet Psychiatry*. 2019; 6(427-36).
 17. McGee R, Williams S, Poulton R, Moffitt T. A longitudinal study of cannabis use and mental health from adolescence to early adulthood. *Addiction*. 2000; 95; 95(4):491-503.
 18. Meier M, Hill M, Small P, Luthar S. Associations of adolescent cannabis use with academic performance and mental health: A longitudinal study of upper middle class youth. *Drug Alcohol Dependence*. 2015; 156:207-12.
 19. Hines L, Freeman T, Gage S, Zammit S, Hickman M, Cannon M, et al. Association of High-Potency Cannabis Use With Mental Health and Substance Use in Adolescence. *JAMA psychiatry*. 2020;(e201035).
 20. Degenhardt L, Hall W, Lynskey M. Testing hypotheses about the relationship between cannabis use and psychosis. *Drug Alcohol Depend*. 2003; 71(1):37-48.
 21. Hall W, Degenhardt L. Cannabis use and the risk of developing a psychotic disorder. *World Psychiatry*. 2008; 7(2):68-71.
 22. Myles H, Myles N, Large M. Cannabis use in first episode psychosis: Meta-analysis of prevalence, and the time course of initiation and continued use. *Aust N Z J Psychiatry*. 2016; 50(3):208-19.
 23. Lev-Ran S, Roerecke M, Le Foll B, George T, McKenzie K, Rehm J. The association between cannabis use and depression: a systematic review and meta-analysis of longitudinal studies. *Psychol Med*. 2014; 44(4):797-810.
 24. van Rossum, I, et al Does Cannabis Use Affect Treatment Outcome in Bipolar Disorder? A Longitudinal Analysis *J Nerv Ment Dis* 2009;197:35-40
 25. Copeland J, Rooke S, Swift W. Changes in cannabis use among young people: impact on mental health. *Curr Opin Psychiatry*. 2013; 26(4):325-29.
 26. George T, Hill K, Vaccarino F. Cannabis Legalisation and Psychiatric Disorders: Caveat “Hemp-tor”. *The Canadian Journal of Psychiatry*. 2018; 63(7):447-50.