Considering the health and social welfare impacts of non-medical cannabis legalization

With the implementation of non-medical cannabis legalization in jurisdictions across North and South America over recent years, a major policy experiment in alternative control of this widely used, and previously illicit, substance has been unfolding.

Hall and Lynskey[1] review the state of knowledge to date regarding cannabis legalization's impact on public health outcomes. As they correctly observe, the current (mostly North America-based) evidence base regarding the impacts of legalization is limited, and mixed, including heterogeneous effects on cannabis use and related harms. For example, while cannabis use rates among young people seem to have remained stable in the wake of legal availability, use among others and some severe harm outcomes (e.g., hospitalizations) appear to have increased. Thus, it is yet impossible to conclude if legalization has been an overall success or failure for public health.

This likely relates to several reasons beyond those mentioned by the authors. First, effects observed to date may be driven by "strawfire" (or "novelty") dynamics. Second, the full public health impact of cannabis legalization will likely hinge on a combination of outcomes, including use prevalence and initiation among youth; high-risk use patterns (such as frequent and/or high-tetrahydrocannabinol use); cannabis-impaired driving and consequent motor vehicle crashes and related injuries; use disorders and related treatment needs; hospitalizations for cannabis-related problems; use substitution or interactions with alcohol, tobacco or other psychotropics[2].

The robust assessment of such primary outcomes as related to legalization faces a number of challenges. The first one is integrating individual outcome measurements into a combined (e.g., index-type) measure, such as burden of disease, to enable overall public health impact assessment and monitoring[2]. Of note, such measurements commonly omit, but should ideally include, impacts on marginalized or non-general (e.g., indigenous) populations. A second challenge is that pre-legalization trends must be taken into account, as several of the aforementioned outcomes had featured marked pre-legalization increases. Hence, even just a trend-change could constitute a relevant impact associated with the policy change.

The "big picture" evidence on cannabis legalization public health impacts may, even in the long run, remain mixed, inconclusive or even contradictory. In that scenario, particular importance may need to be assigned to possible developments in social – including social justice – benefits or harms. While currently no empirical "social burden" (akin to "disease burden") outcome measure exists, such assessment would need to capture legalization's impacts on reducing the criminalization and stigmatization of large numbers of – predominantly young and often socio-economically marginalized/racialized – cannabis users, and the severe, long-term consequences of these punitive processes on young lives[3,4]. Such a reduction in social harms, indeed, may need to be considered a (or the) quintessential collective benefit of legalization[5]. In some – such as Latin American – countries, social harms have translated into widespread violence, including numerous deaths, related to illegal cannabis markets, which legalization may at least somewhat temper.

Legalization has not eliminated all pitfalls of punitive control and consequences. For example, in select provinces in Canada, the possession of any amounts of cannabis by under-age persons (mostly <19 years) may result in a civil fine. Repeat occurrences or possession amounts of >5 g will draw a charge under the Youth Criminal Justice Act, with subsequent criminal justice system involvement. Given that adolescents' cannabis use rates (about 25% or more) are among the highest, these punitive provisions, combined with commonly arbitrary enforcement practices, could mean extenuation, rather than removal, of prohibition harms for young and vulnerable members of society under the veil of legalization.

In the long run, further developments of cannabis-associated health outcomes under legalization may hinge on the extent to which public health-oriented regulations (e.g., on legal product properties and quality, availability and access) and education on safer use will effectively outweigh dynamics pushing for riskier use behaviors and patterns among consumers[6].

The pivotal factor here – despite declared intentions for effective control in this realm – may rest in the dynamics of the commercialization of legal cannabis production and distribution. For example, in Canada, despite the prohibition of direct cannabis advertisements and promotion, a vastly expansive cannabis industry – striving for sale and profit maximization in highly competitive settings – is driving a commercialized environment in which the armory of public health may simply be too slow and weak for effective checks and protections[7].

Additional developments include cannabis industry-related corporate mergers and combinations with other psychoactive consumption products, such as alcohol, nicotine products and soft drinks, and the widely normalized discourse of cannabis as a universally "therapeutic" consumption good, tacitly drawing on far-reaching yet often un-evidenced medicinal use claims[8]. Decreasing cannabis prices and trends towards higher-potency product distribution, as mentioned by Hall and Lynskey, may further amplify a momentum pushing towards adverse outcomes.

The experiences with alcohol, tobacco and many prescription pharmaceuticals have shown that commercially-driven approaches to psychoactive product design, marketing and distribution can be difficult to control, as well as catastrophic for public health, even with well-intended regulations[9]. Here, cannabis legalization regimes like that of Canada, comprising strong emphasis on user/demand side regulations, had alternatives to full-scale commercialization of cannabis production and distribution, yet opted against them. It would be

disastrous if, in due time, the cannabis legalization experiment simply repeated the histories of other commodified substances and their collateral public health impacts.

In that same vein, cannabis legalization ought not to support a *de facto* re-colonization of vulnerable (e.g., indigenous) populations or communities by psychoactive commodities, yet rather protect free, culturally appropriate choice-making and governance. In these overall respects, Uruguay's model of legalization[10], with its more restrained parameters of commercial cannabis production and availability (yet arguably minus "user registration" requirements and related "surveillance" concerns), may be a worthy sketch for a public health-oriented model.

The idea of cannabis legalization should continue to be considered a potentially beneficial concept for public health and welfare. A number of "second generation" jurisdictions (e.g., New Zealand, Luxembourg) are contemplating legalization options. But the transfer of experiences and evidence on outcomes between complex policy ecologies is not straightforward. Nevertheless, legalization candidates should heed emerging lessons from ongoing legalization experiments. Concretely, they should consider implementing cautious and restrained approaches to legalized cannabis product supply, distribution and availability.

While easily overlooked in societies with predominant "free market" doctrines, alternatives to fully commercialized models – including full or partial government monopolies, cooperatives (e.g., regulated social clubs), community trusts – exist for consideration[3,10]. These can be adapted towards principally furthering the goal of public health through the policy framework of cannabis legalization.

As currently ongoing cannabis legalization experiments in different countries demonstrate, there is much that can be proactively designed and anticipated in the *a priori* planning of major policy reform. It is equally important to carefully monitor both – and especially unexpected or adverse – policy outcomes and their drivers following implementation, and consequently adjust or correct these with best empirical knowledge and tools available. If that occurs successfully, future commentaries in this space may indeed offer overall positive conclusions on the public health impacts of cannabis legalization.

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To legalize or not to legalize cannabis, that is the question!

The wave of changes in cannabis laws coming from the US and more recently Canada has pushed many countries, including the land of Shakespeare, into the dilemma of legalizing or not legalizing cannabis use.

In the UK, a first step took place in November 2019, when medicinal cannabis became legal. Now British specialist physicians can prescribe cannabis for a handful of medical conditions. However, has the American experiment yet convinced its more cautious British allies to go all the way and legalize cannabis for recreational use?

As a clinician and an academic living in UK and working on the link between cannabis use and psychotic disorder, I have been watching the American experiment very closely.

Hall and Lynskey[1] highlight that two of the key arguments of the legalization lobby are: a) that it will reduce adolescent access, and b) that the available cannabis will be safer and less potent because of state-controlled levels of its active ingredient, tetrahydrocannabinol (THC). These are cleverly chosen predictions to reassure both concerned parents and mental health professionals against the well-established association between cannabis use – especially when started in adolescence[2] and of high potency types[3] – and the risk to develop a psychotic disorder. But, have these two predictions held up against the evidence of time?

Hall and Lynskey give a comprehensive snapshot of the outcomes that have followed the changes in cannabis law since 2012 in the US. So, what about adolescents use?

The authors report that, while rates of cannabis use have increased among adults in states that have legalized cannabis, they have not changed among adolescents. Not surprisingly, as Canada, Uruguay and the US have legalized cannabis for adult use, whereas use remains illegal for adolescents, the latter continue to buy it from criminal gangs and they risk criminal prosecution for using it. Moreover, experience with both tobacco and alcohol has shown that adolescents' choices are not influenced as much as adults' by the legal status of a recreational drug. Furthermore, it is still early days to see whether the increase in rates of cannabis use among adults leaks down to influence younger groups.

Indeed, data from a large and nationally representative US survey[4] quoted by the authors, based on state-level estimates spanning 2008-2016, tentatively suggest trends of increase in cannabis use among young adolescents (12-17 years old) in