Commentary

A critique of cannabis legalization proposals in Canada

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ARTICLE INFO

Article history:
Received 11 November 2015
Received in revised form 27 April 2016
Accepted 9 May 2016

Keywords:
Cannabis policy
Legalization
Decriminalization
Harms caused by prohibition
Harms to adolescent users
Cost-benefit assessment

ABSTRACT

An editorial in this issue describes a cannabis policy framework document issued by a major Canadian research centre, calling for legalization of non-medical use under strict controls to prevent increase in use, especially by adolescents and young adults who are most vulnerable to adverse effects of cannabis. It claims that such a system would eliminate the severe personal, social and monetary costs of prohibition, diminish the illicit market, and provide more humane management of cannabis use disorders. It claims that experience with regulation of alcohol and tobacco will enable a system based on public health principles to control access of youth to cannabis without the harm caused by prohibition.

The present critique argues that the claims made against decriminalization and for legalization are unsupported, or even contradicted, by solid evidence. Early experience in other jurisdictions suggests that legalization increases use by adolescents and its attendant harms. Regulation of alcohol use does not provide a good model for cannabis controls because there is widespread alcohol use and harm among adolescents and young adults. Government monopolies of alcohol sale have been used primarily as sources of revenue rather than for guarding public health, and no reason has been offered to believe they would act differently with respect to cannabis.

Good policy decisions require extensive unbiased information about the individual and social benefits and costs of both drug use and proposed control measures, and value judgments about the benefit/harm balance of each option. Important parts of the necessary knowledge about cannabis are not yet available, so that the value judgments are not yet possible. Therefore, a better case can be made for eliminating some of the harms of prohibition by decriminalization of cannabis possession and deferring decision about legalization until the necessary knowledge has been acquired.

Introduction

The editorial by Cre´pault, Rehm & Fischer (p. 1 of this issue) provides a detailed description of the origins and rationale of a CAMH document entitled Cannabis Policy Framework (Cre´pault, 2014), referred to below as the CPF. As described in the editorial, the CPF concluded with a recommendation for legalization of non-medical use of cannabis, with reliance on strict application of regulations to prevent access to cannabis by underage users who are most vulnerable to its adverse effects on health and social functioning. As the editorial explains, the CPF grew out of an earlier document from the Addiction Research Foundation (ARF) that called for a public health approach to cannabis policy and for decriminalization of possession for personal use (Addiction Research Foundation, 1997). This recommendation was also made in the LeDain Commission Report (Canadian Government, 1972), and was maintained in CAMH statements that preceded the CPF. It is therefore useful to examine the reasons that led to the changed recommendation in the CPF and other recent similar publications (Haden & Emerson, 2014; Spithoff, Emerson, & Spithoff, 2015).

Among the important considerations mentioned in the editorial are the following:

- social harms caused by prohibition, and by its inequitable application,
- the relative modesty of the health harms attributable to cannabis use in the majority of users,
- costliness and ineffectiveness of prohibition, combined with its deterrence of public health measures aimed at prevention and treatment of drug-induced harm,
- superior ability of legalization to prevent harm to vulnerable groups by the use of regulatory controls that cannot be implemented under decriminalization,
- the risk that decriminalization could actually encourage the production and distribution of cannabis.
The validity of the model proposed in the CPF and reproduced verbatim in the editorial can be assessed by examining the available evidence concerning these and some related issues.

Is prohibition ineffective or a failure?

Prohibition has indeed failed to prevent all use of the drug, but this is not a reasonable expectation. No prohibition, whether of something as minor as smoking too close to a hospital entrance, as common as exceeding speed limits, or as grave as murder, is expected to be 100% effective. All one can reasonably expect from prohibition of any undesirable behavior is that it asserts society’s disapproval, and makes the disapproved behavior substantially less frequent than it would otherwise be.

Prohibition of alcohol in North America in the 1920s and early 1930s did markedly reduce consumption and public intoxication (Dills, Jacobson, & Miron, 2005) as well as the death rate from alcoholic cirrhosis (Dills & Miron, 2004). However, it also had various socially harmful consequences such as the growth of bootlegging and organized crime, corruption of police forces, loss of employment in alcohol-related industries and loss of important tax revenues (Blocker, 2006). It deprived millions of moderate drinkers of what was for most of them a harmless pleasure, and possibly of alleged health benefits of moderate consumption (Kalant & Poikolainen, 1999). Therefore, prohibition did work, but at the cost of important social harms. One must make a value judgment as to whether the costs to society outweighed the benefits, but that is not the same as saying that prohibition was ineffective.

Neither can one say that cannabis prohibition is ineffective if use is significantly less than it would be under legalization. The percentage of past-year users of cannabis among the Canadian general population in 2012 was only 10% while that of the legal drug alcohol was 78% (Health Canada, 2014). A recent study found that 10% of US high school students who had not yet used marijuana intended to use it if it became legal, and 18% of those who had already used it declared intention to use more frequently (Palamar, Ompad, & Petkova, 2014). These probably represent minimum increases, because when the more decisive users increase consumption, their attitudes and behaviors affect other members of their peer groups to act similarly (Keyes et al., 2011; Salvy, Pedersen, Miles, Tucker, & D’Amico, 2014).

Greater permissiveness in the United States has been accompanied by a doubling of rates of use and of use disorders from 2002 to 2012 (Hasin et al., 2015). American states that adopted very poorly controlled medical marijuana laws (MML) tantamount to legalization had higher rates of marijuana use, abuse and dependence than states without such laws, even among adolescents who were not eligible for medical permits (Cerdà, Wall, Keyes, Galea, & Hasin, 2012; Wall et al., 2011). “Medical” marijuana was deviated to illicit use in non-MML states (Thurstone, Lieberman, & Schmiege, 2011), a risk that also applies to legalization in Colorado (RMHIDTA, 2015). In contrast, Choo et al. (2014) did not find increased use by adolescents in states adopting MML, and Masten and Guenzburger (2014) found that some MML states experienced a significant increase in cannabis-related traffic fatalities while other MML states did not. Until the difference between the results of these studies can be explained, it is unwarranted to argue that we know how to prevent increased use after legalization.

Preliminary evidence to date indicates that in Colorado cannabis use among 12–17, 18–25, and over-26 age groups increased by between 17% and 63% in the 2 years after legalization compared to the 2 years before, while national averages for the same groups were either unchanged or lower (RMHIDTA, 2016). We will not know for some years yet whether the increases were temporary or permanent, nor the resulting social costs in terms of school and work performance, physical and mental health, automobile accidents and deaths, etc. Without such knowledge, there is no factual basis for saying that legalization is a better policy for society than prohibition or decriminalization. Legalization is in harmony with the democratic ideal of restricting individual liberty of action only when necessary for the common good, but judging what constitutes the common good requires comprehensive knowledge of the consequences of each policy option, which we do not yet have.

Does cannabis prohibition impose serious personal harms on society that would be removed by legalization?

The editorial refers only briefly to the social harms caused by prohibition of cannabis, but the CPF states that “Around 60,000 Canadians are arrested for simple possession of cannabis every year”. The figure is based on data from Statistics Canada (2014). This statement, combined with the CPF reference to only the maximum possible sentences provided for in the law, gives the impression that large numbers of Canadians suffer severe penalties every year for simple possession of cannabis under the present prohibition. However, Statistics Canada records all cannabis incident reports by the police in each province, regardless of whether cannabis possession is the principal object of the incident or only a minor accompaniment to other more serious charges, and the statistics give no indication of the outcomes.

In contrast, Pauls, Plecas, Cohen, & Haarhoff (2012), with the help of the RCMP, had access to the complete files (names removed) of all case reports in British Columbia over a 3-year period and were able to separate them into subgroups according to the nature of the charges and the outcomes. The results present a dramatically different picture from that implied by the CPF. In 2011, of 22,561 files coded for marijuana possession in British Columbia, 4,355 were dropped because of insufficient evidence. Of the 18,206 cases in which possession was demonstrated, the great majority were let off without being charged, e.g. with a warning or simply a decision not to proceed. In 4,257 cases charges were laid, but in most cases the possession charge was a minor addition to charges of more serious crimes such as trafficking, violence, impaired driving or others. Of the 249 charged only with simple possession, one-third had the charges dropped and did not come to trial. Of those that came to trial, only 42 were convicted, the others being acquitted, discharged, or directed to treatment. Finally, only seven of those convicted were sentenced to jail for 1–14 days, and these were all repeat offenders with long criminal histories. Very similar proportions of outcomes were found in each of 2009, 2010 and 2011. It is clear, therefore, that in British Columbia very few people accused only of simple possession of marijuana actually come to trial, and extremely few are convicted and fined or jailed.

Correspondingly detailed figures for Ontario and for all of Canada are not available. However, in Ontario in 2013 there were 17,641 reported incidents of cannabis possession; of these 8,045 were cleared without charges, 8,706 led to charges, and 890 were not yet cleared (CANSIM, 2013). Among detained youth, 1,281 were cleared whereas 3,804 youths were released without charges. Generally, similar figures were found for Canada as a whole (Boyce, 2013). These figures are proportionally very different from those prevalent in the United States, though federal law in both countries prohibits non-medical use of cannabis. The difference demonstrates that the manner of enforcement, rather than prohibition per se, determines the magnitude of the social cost. The foregoing discussion does not in any way deny the seriousness of arrests and criminal records for simple possession of cannabis, but in the weighing of costs and benefits of different policy options, the size of the problem matters. There is a clear...
need for full and accurate nationwide information, which we do not yet have.

Statistics Canada does indicate that over 699,000 Canadians have criminal records as a result of convictions on charges of cannabis possession, many of which occurred decades ago during their adolescence before the Youth Criminal Justice Act came into effect. This is certainly an important harmful effect of prohibition of cannabis possession, and either legalization or decriminalization would prevent it from happening in the future. However, neither would undo the harm to those who already have criminal records. A legislated amnesty would be required, but this could be done in connection with decriminalization or even with continued prohibition, and is not necessarily linked to legalization.

As in the United States, some Canadian provinces show greater severity of application of cannabis prohibition than others. That could just as logically call for federal government action to impose uniform moderate sentencing rules across the country as for legalization of cannabis use.

**Does prohibition of cannabis impede the application of measures to reduce drug-related harm to health?**

The editorial’s statement to this effect is more cautious than the CPF statement that “The law enforcement focus of prohibition drives cannabis users away from prevention, risk reduction and treatment services”, for which it cites no supporting literature. In fact, prohibition of cannabis possession is not necessarily in conflict with treatment of dependent persons. Diversion of cases from the justice to the health care system has been occurring with increasing frequency in Australia (Feeney, Connor, Young, Tucker, & McPherson, 2005), Portugal (Hughes & Stevens, 2010), Canada (Pauls et al., 2012) and the UK and elsewhere in Europe (Hamilton, Lloyd, Monaghan, & Paton, 2014) where possession is still illegal.

**Are adolescents and young adults especially vulnerable to the adverse effects of cannabis on health and wellbeing?**

The editorial asserts that harms caused to most users by cannabis are relatively modest, significantly less than those for tobacco or alcohol. It does say “at the levels and patterns of use by most adult cannabis users”, and this is an important qualification, because the use of cannabis in Canada, as noted earlier, is much less than that of alcohol. It has long been recognized that the extent of harm caused by a drug is proportional to its use (CANYS, 2009; Hughes et al., 2014). If cannabis legalization should prove to be followed by an important increase in its use, as discussed elsewhere in this commentary, the difference between the extent of harms caused by alcohol and by cannabis would almost certainly be considerably reduced.

A more important reservation even now relates to harms caused to young users. Both the editorial and the CPF do discuss the potentially serious effects of cannabis use by adolescents on mental health and maturation of cognitive functions (Hall & Degenhardt, 2007). The importance of this topic for policy considerations warrants a more detailed consideration. The Dunedin study in New Zealand followed a birth cohort of over 1400 newborns through childhood, adolescence, young adulthood and into early middle age. Histories and mental and physical examinations were repeated at intervals throughout the study, measuring among many other things the effects of early acquisition of drug-taking behavior and its maintenance or cessation (Milne et al., 2009). A thorough analysis of the Dunedin results (Meier et al., 2012) demonstrated that children who did not acquire cannabis-taking behavior had a small but significant increase in age-adjusted intelligence score from age 13 to age 38. Those who began cannabis use during adolescence had a decrease in IQ at age 38, which was more marked the earlier they had begun use, and the more intensively and persistently they used. Similar findings were obtained in other cohort studies (Silins, Horwood, Patton, Fergusson, & Olsson, 2014).

All tested domains of cognitive functioning were affected, and the effect was recognizable in everyday living, including poor school performance, higher drop-out rates, and subsequent restriction of career possibilities. It could not be explained by decreased years of schooling, persistent drug presence in the body, socioeconomic status, or other potential confounders. Cessation of use was followed by recovery of cognitive functions in those who began use as young adults, but not in those who began early in adolescence. The findings are consistent with experimental studies showing that cannabinoids prevent mature synapse formation in maturing brain pathways involved in “executive functioning” (Kalant, 2014), and that the same chronic cannabis regimen (with dosage adjusted for body mass) that caused permanent impairment of learning and memory in adolescent rats did not do so in mature adult rats (Stiglick & Kalant, 1985).

A clinical diagnosis of cannabis dependency by DSM-IV criteria was found in about 8–10% of adult users, but in about 16% of adolescent users (Anthony, 2006). A prospective 3-year study of young adult frequent users, aged 18 to 30 years at baseline, found a 37% cumulative incidence of dependence (van der Pol et al., 2012). The risk of future lung cancer in heavy cannabis users of military conscription age represents another type of vulnerability (Callaghan, Allebeck, & Sidoruch, 2013).

These findings are especially significant for cannabis policy decisions as adolescents and young adults are disproportionately represented among cannabis users. By combining the provincial statistics of the population age distribution in 2013 (Ontario Ministry of Finance, 2014) with the percentages of past-year users in different age groups as shown in the CPF, one can estimate that 43% of users are adolescents and young adults (Table 1).

**Table 1**

<table>
<thead>
<tr>
<th>Age group</th>
<th>Adjusted Population Subtotals</th>
<th>% past-year users</th>
<th>Number of users</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>12–14</td>
<td>298,240</td>
<td>23%</td>
<td>65,595</td>
<td>720,721</td>
</tr>
<tr>
<td>15–19</td>
<td>871,460</td>
<td>30%</td>
<td>261,438</td>
<td></td>
</tr>
<tr>
<td>20–25</td>
<td>967,000</td>
<td>40.4%</td>
<td>390,668</td>
<td></td>
</tr>
<tr>
<td>26–29</td>
<td>962,600</td>
<td>40.4%</td>
<td>388,890</td>
<td></td>
</tr>
<tr>
<td>30–39</td>
<td>1,825,900</td>
<td>17.3%</td>
<td>315,881</td>
<td>1,102,294</td>
</tr>
<tr>
<td>40–49</td>
<td>1,988,000</td>
<td>8.4%</td>
<td>166,992</td>
<td></td>
</tr>
<tr>
<td>50–74</td>
<td>3,907,309</td>
<td>5.9%</td>
<td>230,531</td>
<td></td>
</tr>
</tbody>
</table>

*The population totals in the Provincial data are given in 5-year age groups, but the percentages of cannabis users in the CPF document are given by school grades that begin at about age 12 years, and by decade in those above 20 years of age. The adjustments are attempts to reconcile the age groups with the corresponding percentages of users.*
Would legalization plus strict regulation effectively prevent access to cannabis by underage users?

The claim that alcohol and tobacco control measures provide a good model for controlling youth access to cannabis after legalization (Pacula, Kilmer, Wagenaar, Chaloupka, & Caulkins, 2014; Room, 2014) is also contrary to experience. Alcohol continues to be widely used by Ontario students at all age levels examined (Boak, Hamilton, Adlaf, & Mann, 2013), despite regulations against its sale or distribution to minors. Past-year use was reported by almost 10% of Grade 7 students (12–13 years old), increasing to 74% of Grade 12 students. About 6–7% reported drinking at least once a week, 20% reported binge-drinking within the past month and 18% reported getting intoxicated in the same period.

Among fatally injured drivers in Canada in the period 2000 to 2007, 17.4% of those aged 19 years or less tested positive for alcohol, 18.6% for drugs (predominantly cannabis) and about 14% for both alcohol and drugs (Beasley, Beirness, & Porath-Waller, 2011). Similarly high and growing percentages report driving under the influence of alcohol or cannabis, and even more report being passengers in vehicles operated by alcohol- or cannabis-impaired drivers (Adlaf, Mann, & Paglia, 2003). These figures become more disturbing when viewed against the increase in cannabis-related driver fatalities seen in Colorado after broad commercialization of “medical marijuana” (Salomonsen-Sautel, Min, Sakai, Thurstone, & Hopfer, 2014). Such statistics of alcohol use, binge drinking and driving while intoxicated among underage users in Ontario can hardly be considered evidence for the efficacy of current alcohol regulations in preventing access to alcohol by those considered to be at too great a risk to be allowed to use it. It is therefore puzzling that the CPF, as cited in the editorial, without presenting any supporting evidence assumes that regulation would be successful in preventing access of underage users to cannabis after legalization.

Would legalization of cannabis, combined with regulation, significantly reduce the illicit market and its associated dangers?

As the CPF states, experience with alcohol and tobacco has shown that price is an important determinant of per capita consumption and of the numbers of those who suffer serious harm from excessive consumption (Guindon, 2014; Her, Giesbrecht, Room, & Rehm, 1999; Wakefield & Chaloupka, 2000). Most adult users would probably prefer to buy legal cannabis even if the price is somewhat higher than the street price, but if the regulations prevent sales to underage users, they would have no incentive to stop purchasing from their accustomed illicit sources. Moreover, if the price for legal cannabis is made significantly lower to undercut the black market, the levels of use, especially by young people with more limited financial resources, are likely to increase even further rather than decrease (Anderson, 2007; Caulkins, Kilmer, MacCoun, Pacula, & Reuter, 2012; Osterberg, 2011). Tobacco presents a better model than alcohol for comparison with legalized cannabis, because the reduction of use by the population at large has been achieved without use of criminal sanctions, by a sustained campaign of public education on health consequences of smoking (Wakefield & Chaloupka, 2000), comparable to that which led to a marked decrease of alcohol use in France. But we do not yet appear to have developed an effective approach with respect to cannabis comparable to that with tobacco, especially for adolescents. A study of high school students in the United States ongoing since 1976 has shown that likelihood of marijuana use was inversely related to the percentages of students in specific birth cohorts who disapproved of use and who believed the information about its perceived dangers. Use among the student population as a whole has gone through two cycles of rising and falling, but the determinants of attitude in different birth cohorts are not yet understood (Keyes et al., 2011). Use among Canadian youth is currently decreasing, but until we know how their attitudes are determined, and how to direct these so as to build a health-conscious approach to cannabis use among them, we cannot count on continued decrease of use.

The editorial and the CPF set out some very good recommendations for controlling the level of use of legal cannabis: prohibit marketing and advertising, limit density of sales outlets and hours of sale, set maximum permissible concentration of THC, and some would add setting maximum amount per sale. But other recommendations lack substance, such as the proposal that pricing policy should limit demand while minimizing the opportunity for continuation of lucrative black markets. Limiting demand calls for higher prices, yet higher prices encourage competition from lower-priced black markets. The authors offer no way of dealing with this incompatibility, or of selecting an optimal target price.

Does the possibility of deriving additional government resources through taxation of legalized cannabis represent a significant gain for society?

A major reason advanced by politicians who favor legalization of cannabis is the possibility of gaining a major new source of revenue, comparable to that from the sale of alcohol, to support increasingly expensive public health, education and social programs. However, alcohol consumption generates very high social and economic costs, possibly greater than the revenue derived from the production and sale of alcohol (Rehm et al., 2007). The CPF advances no reason why this would not also be true of legal cannabis sale by a government monopoly. A very limited analysis of some of the costs attributable to cannabis under the present legal prohibition (Fischer, Imtiaz, Rudzinski, & Rehm, 2016) shows the need for much more extensive investigation of this question. The CPF speaks of a need to avoid a financial incentive for a government monopoly to increase cannabis sales. This is idealistic but surely rather naive. Experience with the Canadian provincial government monopolies of sales of spirits and imported wines, with their sophisticated marketing activities and maximized opportunities for access, does not offer any reason for believing that sales practices with cannabis would be different.

Would legalization of cannabis reduce greatly the costs of poison and court work caused by the current policy of prohibition?

The CPF states (p. 11) that legalization “would eliminate the more than $1 billion Canada spends annually to enforce cannabis possession laws”. However, other estimates are substantially lower. One article quotes a Department of Justice budget for the drug control strategy for all of Canada as $528 million for the period 2012–2017, or about $106 million a year, and a Simon Fraser University estimate of $10.5 to $18.5 million as the annual cost for British Columbia (MacQueen, 2013).

More importantly, if the British Columbia findings on the disposition of cannabis possession incidents are representative of Canada as a whole (which remains to be determined), there would appear to be very little police or court time devoted to enforcing the law against possession alone. The great majority of possession charges were add-ons in cases in which the accused were detained for other offences. If cannabis had been legal, the police would still have had to expend the same effort in detaining and charging them for the principal offences, and the courts would still have had to deal with those principal charges. Under legalization, illicit
production and trafficking would still be criminal offences, and would still consume police and court time. It is therefore unclear that very large economies to the justice system would be produced by legalization of cannabis.

Is decriminalization a half measure, subject to manipulation by police bias?

The editorial, like the CPF, refers to decriminalization as a half measure because of three alleged flaws. The first is that “it may encourage the production and distribution of cannabis”, but no evidence is offered to support this conjecture. Indeed the decriminalization systems adopted in Portugal, Australia and some American states did not increase use and may even have reduced use and drug-related harms (Hughes & Stevens, 2010; Hughes & Stevens, 2012; Single, Christie, & Ali, 2000). The second “flaw” is that decriminalization “does not address the health harms of cannabis use”. The authors themselves have correctly stated that legalization also does not address these harms, and that specific regulatory mechanisms must be adopted for that purpose. The Portuguese decriminalization system has adopted other mechanisms to address these harms, including education, admonition, and referral to treatment.

The third “flaw” is police bias in enforcement of the law under decriminalization and inequality of imposition of penalties against different subgroups of the population. This concern may well be legitimate. However, the document does not discuss the possibility that police bias could also persist after legalization, in relation to prosecution for illicit production and trafficking. It also does not examine alternative methods of dealing with this problem, such as educational and administrative approaches to altering the police culture, nor does it compare alternatives with respect to their costs and benefits.

Discussion

Legalization of nonmedical use of cannabis and strict regulation of its potency, price and accessibility represents an ideal that a democratic society might well aim at, because it proposes the least restriction of personal freedom compatible with the protection of those most vulnerable to the adverse effects of cannabis use. Over a 15 year period Canadian public support of legalization gradually rose to 37% in 2014 (Ipsos Reid, 2014). In 2015, it rose more rapidly, in tandem with the popularity of Liberal Party leader Justin Trudeau, as stated in the editorial. After his endorsement of legalization a 2015 Ipsos-Reid poll found 65% in favour of decriminalization, but the wording of the question was compatible with legalization rather than decriminalization. It is difficult to judge whether this shift of public opinion represents a “celebrity effect”, uncertainty of the meanings of the terms, a progressive movement away from laws considered oppressive, or “normalization” of cannabis use (Parker, Williams, & Aldridge, 2002), as a large majority in that poll did not consider marijuana laws to be a high priority matter.

Sound policy decisions require at least two essential elements: (1) complete, objective, unbiased presentation of the facts concerning the policy matter under review, including both what we know and what we do not yet know, and scientifically based predictions about the most probable consequences of the various policy options; (2) value judgments that classify the various facts and projections as good or bad, beneficial or harmful, useful or useless, for society as a whole. It is also necessary to assign quantitative weights – how good or bad, how beneficial or harmful – so that the various policy options can be compared with respect to their overall contribution to harm reduction and society’s wellbeing (Kalant & Kalant, 1971; Shanahan, Gerard, & Ritter, 2014).

As set out in the preceding sections, we lack major portions of the necessary evidence for making such a rational choice. Therefore, any decision to legalize cannabis in Canada now cannot really be “evidence-based” and must rest primarily on broader social values, ideals and hopes rather than on a thorough cost-benefit accounting. A strong argument can be made for decriminalizing possession of cannabis for personal use, while monitoring closely the effects of legalization, both beneficial and harmful, in other states or countries that have already adopted it. A system of legalization and strict controls could possibly work to the benefit of society, but only if we find effective solutions to the problems set out above before making changes that may cost society more than it gains.

References
