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Commentary

Limitations to the Dutch cannabis toleration policy Assumptions underlying the reclassification of cannabis above 15% THC

Margriet Van Laar [a,*], Peggy Van Der Pol [a], Raymond Niesink [a,b]

[a] Trimbos Institute, Da Costakade 45, 3521 VS Utrecht, The Netherlands
[b] Open University of The Nederlands, PO-Box 2960, 6401 DL Heerlen, The Netherlands

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ABSTRACT

The Netherlands has seen an increase in Δ9-tetrahydrocannabinol (THC) concentrations from approximately 8% in the 1990s up to 20% in 2004. Increased cannabis potency may lead to higher THC-exposure and cannabis related harm. The Dutch government officially condones the sale of cannabis from so called 'coffee shops', and the Opium Act distinguishes cannabis as a Schedule II drug with 'acceptable risk' from other drugs with 'unacceptable risk' (Schedule I). Even in 1976, however, cannabis potency was taken into account by distinguishing hemp oil as a Schedule I drug. In 2011, an advisory committee recommended tightening up legislation, leading to a 2013 bill proposing the reclassification of high potency cannabis products with a THC content of 15% or more as a Schedule I drug.

The purpose of this measure was twofold: to reduce public health risks and to reduce illegal cultivation and export of cannabis by increasing punishment. This paper focuses on the public health aspects and describes the (explicit and implicit) assumptions underlying this '15% THC measure', as well as to what extent these are supported by scientific research.

Based on scientific literature and other sources of information, we conclude that the 15% measure can provide in theory a slight health benefit for specific groups of cannabis users (i.e., frequent users preferring strong cannabis, purchasing from coffee shops, using 'steady quantities' and not changing their smoking behaviour), but certainly not for all cannabis users. These gains should be weighed against the investment in enforcement and the risk of unintended (adverse) effects. Given the many assumptions and uncertainty about the nature and extent of the expected buying and smoking behaviour changes, the measure is a political choice and based on thin evidence.

Tijdschrift Verslaving 11:44-56 Van Laar, M., Van der Pol, P., Niesink, R. Grenzen aan gedogen. Uitgangspunten 15% THC-maatregel nader beschouwd. Copyright (2015), with permission from Springer.

Introduction

Cannabis potency, usually defined by the concentration of the primary active ingredient, Δ9-tetrahydrocannabinol (THC), has been much debated in recent years (e.g., Downey & Verster, 2014; Freeman & Winstock, 2015; Kilmer, 2014). After an increase in cannabis potency in the Netherlands from approximately 5–7% in the 1970s and an average 8% in the 1990s up to 20% in 2004 (King, Carpentier, & Griffiths, 2005; Pijlman, Rigter, Hoek, Goldschmidt, & Niesink, 2005), increased potency has become a worldwide phenomenon (Cascini, Aiello, & Di Tanna, 2012; Niesink, Rigter, Koeter, & Brunt, 2015).

The Dutch cannabis policy is quite different from other countries (Van Ooyen-Houben & Kleemans, 2015). In 1976, a formal written policy of non-enforcement for violations involving possession or sale of up to 30 g of cannabis was adopted (Schedule II of the Opium Act; a drug with 'acceptable risk'). While cultivation of cannabis plants is a criminal offence, the government officially condones the sale of cannabis from so called 'coffee shops' under strict conditions, including: no advertising, no public nuisance, no access to underage (<18 years) people, limited quantities per transaction and no sale of Schedule I drugs (i.e., drugs 'with unacceptable risk', such as heroin and cocaine) (MacCoun, 2011; Monshouwer, van Laar, & Vollebergh, 2011). Based on the potency, the Dutch policy initially made a distinction for hemp oil, which was considered to be a Schedule I drug due to its high THC content. In 2011, an advisory committee suggested to also reclassify other forms of potent cannabis to Schedule I (Expertcommissie Lijstensystematiek Opiumwet, 2011). This advice was motivated

* Corresponding author at: Trimbos Institute, Drug Monitoring, Da Costakade 45, 3521 VS Utrecht, The Netherlands. Tel.: +31 30 29 71 165.
E-mail address: mlaar@trimbos.nl (M. Van Laar).

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by both the increased THC content and increased knowledge of the health risks of cannabis use, especially for young people.

Reclassifying potent cannabis to Schedule I would increase punishments for trafficking and cultivating high potency cannabis and coffee shops would only be tolerated to sell less potent varieties. As the scientific underpinning of a specific THC-limit would take years of research, the committee pragmatically (some would argue arbitrarily) proposed an upper limit of 15% THC. This was expected to reduce the average THC-content to approximately 12%, which is comparable to the levels at the start of this century before the considerable increase in cannabis potency. They posed that in the early 2000s, the effects of cannabis use on public health were 'relatively limited'. Additionally, it was expected that it would result in a significant reduction in THC exposure for a substantial proportion of users. The government deemed reclassification necessary to prevent damage to the health of users, but increasing penalties was also expected to reduce the large-scale cultivation of cannabis, which is partly controlled by organised criminal groups (Belackova, Maalsté, Zabranskya, & Grunda, 2015).

The procedure to classify cannabis with a THC-concentration of 15% or more as a Schedule I drug, which was initiated on March 26th, 2013 (Staten-Generaal-33593 A-Nr.1), is still pending. Meanwhile, the standing committee of Health of the House of Representatives had two rounds of written consultations with the Secretary of State of Health, Welfare and Sports and organised a roundtable conversation in October 2014 with experts from the public health domain, as well as coffee shop retailers, forensic sciences and law enforcement (T.K. 33593-2, 3, 4). Virtually all experts objected to this measure. With the resignation of the former Minister of Security and Justice who proposed this measure (March 2015), its implementation may be re-evaluated.

This paper illustrates the proposed reclassification and its evidence base. We focus on the public health aspects rather than legal aspects, identifying the (explicit and implicit) assumptions underlying the measure and assessing their validity (or at least plausibility) in light of scientific evidence, practical obstacles and (undesirable) side effects that can be anticipated.

The assumptions

The effectiveness of the 15% THC-measure in terms of expected public health gain depends on the validity of four assumptions, for which the scientific evidence and gaps in this knowledge are described successively: (i) 15% potent cannabis is more harmful than its less potent forms and (ii) the reclassification will lead to a decrease in the average THC content of cannabis. If 'i' and 'ii' apply, then the proposed policy will reduce harm from cannabis use, unless (iii) users will adjust their purchasing or smoking behaviour in response to lower THC content, mitigating the effect of the policy.

i) 15% potent cannabis is more harmful than its less potent forms

Three questions are important to investigate this first assumption: what is known about the health risks of cannabis use? Is there a correlation between the amount of THC in cannabis and damage to the health of users? And how many people use 'strong' cannabis and could theoretically be reached by this measure?

What is known about the health risks of cannabis use?

The effects and risks of cannabis use are relatively well known after decades of research, although there is still some debate regarding the causality for some outcomes. There is strong evidence that cannabis use can cause several acute health effects, including anxiety and panic reactions, acute psychosis, reduced cognitive functioning, poorer driving performance and traffic accidents (Hall, 2014; Hall & Degenhardt, 2014). Chronic and frequent users are at increased risk of chronic bronchitis and other respiratory diseases, psychotic symptoms and -disorders (especially predisposed people), poorer school performance and absenteeism, cognitive decline (at least one month after cessation, possibly longer) and acute myocardial infarction (in middle aged users; Di Forti et al., 2015; Hall, 2014; Hall & Degenhardt, 2014; Radhakrishnan, Wilkinson, & D'Souza, 2014; Silins et al., 2014; Van Gastel et al., 2014). These relationships are likely (partially) causal.

Other possible effects, for which a causal relationship is unclear, include cancers of the respiratory tract, anxiety and mood disorders and other drug use (Hall & Degenhardt, 2014). Additionally, it is estimated that one in ten lifetime users of cannabis becomes dependent (Lopez-Quintero et al., 2011). In American general population studies, 20–30% of daily cannabis users meet criteria for a cannabis dependence diagnosis (EMCDDA, 2009). In the Dutch 'CanDep' study, 37% of frequent cannabis users who used cannabis on at least three days per week became dependent during the three-year follow up (Van der Pol et al., 2013b). While THC is the primary cause of mental health risks related to cannabis use, respiratory diseases (such as bronchitis) are mainly caused by the harmful substances released during the combustion of cannabis (independent of the THC content), such as combined with the harmful effects of tobacco with which cannabis is usually mixed in the Netherlands (Lee & Hancox, 2011; Tashkin, 2014).

Some evidence suggests that certain effects of THC (such as anxiety and psychosis) may be partly prevented by cannabidiol (CBD) (Englund et al., 2012; Hindocha et al., 2015; Morgan & Curran, 2008; Morgan, Freeman, Schafer, & Curran, 2010; Morgan, Schafer, Freeman, & Curran, 2010; Morgan et al., 2012; Niesink & Van Laar, 2012). While resin imported to the Netherlands does contain CBD, the amounts in domestically grown cannabis are negligible (Niesink et al., 2015). Evidence supporting a less harmful public health profile for imported resin compared with domestic cannabis is limited (Hall & Degenhardt, 2015; Hindocha et al., 2015; Schubart et al., 2011). Small consistent but non-statistically significant associations between the preference for herbal cannabis over resin and cannabis dependence were found in the before mentioned 'CanDep' study among Dutch young adult frequent cannabis users (Van der Pol et al., 2013b, 2014, 2015). Thus, overall, it seems plausible that high CBD cannabis is less risky than cannabis with little or no CBD with similar THC levels. This remains, however, an understudied area of research.

Young people (and early onset cannabis users) seem particularly vulnerable to the negative effects of cannabis use (Danielsson, Falkstedt, Hemmingsson, Allebeck, & Agardh, 2015; Di Forti et al., 2014; Fergusson, Boden, & Horwood, 2015). The underlying mechanisms are not yet clarified: predisposition, social factors and interference of THC on the normal development of the brain may all play a part (Bossong & Niesink, 2010; Hurd, Michaelides, Miller, & Jutras-Aswad, 2014).

The practical consequences of reclassification on public health should be seen in the context of the prevalence of both cannabis use as well as the prevalence and incidence of the outcomes. For example, a British study showed that cannabis use by 4700 young men aged 20–24 must be prevented to avoid a single case of schizophrenia (Hickman, Vickerman, Macleod, Kirkbride, & Jones, 2007). Hence, such a 'universal intervention' is not very efficient way to prevent schizophrenia, whereas prevention targeted at vulnerable young people at increased risk for schizophrenia might be.

Is there a correlation between the amount of THC in cannabis and damage to health of users?

The relationship between the concentration of THC in cannabis and damage to the health of users is complex. Risks of most chronic effects are roughly doubled in regular (daily or almost daily) users