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**Article:**

Dirisu, O, Shickle, D and Elsey, H (2016) Influence of legal status on the uptake of cannabis in young people. *Current Opinion in Psychiatry*, 29 (4). pp. 231-235. ISSN 0951-7367

<https://doi.org/10.1097/YCO.0000000000000253>

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# **Influence of legal status on the uptake of cannabis in young people**

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### **Purpose of review:**

Policies that limit young people's access to cannabis may reduce early onset of use and minimise health related harm. This review article provides an update of recent research examining the influence of the cannabis policy frameworks on the use of cannabis by young people.

### **Recent findings:**

There are significant concerns that ongoing policy changes in favour of legalisation will increase the uptake of cannabis by young people. Evidence to support a causal effect of cannabis policy changes on increased uptake by young people is lacking; more time may be needed to assess the impact because the policies are still evolving. Policy changes in favour of legalisation were associated with reduced risk perception although this may be a cause or consequence. The need to situate the impact of these policies in the context of specific policy features, social norms and perceptions about cannabis has been highlighted.

### **Summary:**

A more nuanced understanding of the impact of the legal status of cannabis on young people is needed to build evidence for future policy options. The impact of these policies may not be immediately apparent but limiting young people's access to cannabis must be prioritised during policy deliberations.

**Key words:** cannabis, adolescent, policy, legalisation, medical marijuana

## **Introduction**

Cannabis is the most widely used illicit substance globally with an estimate of about 181.8 million users or 3.9% aged between 15-64 years worldwide (1). For the purpose of this review, young people are defined according to the World Health Organisation (WHO) as those aged between 10- 24 years. A recent estimate of lifetime cannabis use for young people of varying ages between 12- 19 years was 21.5% in Australia, 22.5% in the UK, 17.4% in Netherlands, 1.9% in Indonesia, 16.4% in Uruguay, 12.8% in South Africa and 35.8% in the USA (1). The proportion of users needing treatment for the first time is increasing and they are predominantly in their twenties except in Asia where they are in their thirties (1). There are indications that cannabis use in adolescence is associated with an increased risk of mental health problems, cognitive impairment and dependence (2-4). Active brain development occurs until 21 years and the negative effects of cannabis are more severe when uptake and use occurs during the developmental phase (3). Debates about policy change relating to recreational and medicinal use of cannabis have recently occupied a central position in scientific and socio-political domains (5-7).

## **Changes in the legal status of cannabis use**

International Drug Control Treaties to which many countries are signatories prohibited the supply and use of cannabis for recreational purpose within the provisions of the Single Convention on Narcotic Drugs in 1961 (8). Since the 1970s, many countries have moved away from prohibition and implemented changes ranging from depenalisation to legalisation of cannabis use (9). Depenalisation refers to the lessening of penalties (criminal or civil) attached to cannabis possession while decriminalisation is form of depenalisation concerned with removing the criminal status (10). Policy changes in European countries

such as Netherlands which accommodate the sale and use of small amounts of cannabis align with International Treaties by retaining cannabis as an illegal substance (5, 11, 12). Recent changes in Uruguay, Colorado and Washington states in the USA have resulted in the legalisation of cannabis for recreational use (5, 12).

Cannabis for medicinal use has been legalised in 23 states in the USA, Canada, Netherlands and Israel amidst widening debates in other countries (13). The majority of cannabis users worldwide, however, live within areas where cannabis use is still considered illegal (14). The inclination towards legalisation is hinged on the concerns that prohibition has failed to deter young people from using cannabis use although there is limited evidence to show that legalisation frameworks will solve this problem (15). The fact that cannabis use is normalised even in jurisdictions where its use is prohibited cast doubts on the effectiveness of prohibition in deterring use (8). The basis, however, for concluding that prohibition has failed in its capacity to deter use may be flawed because there is limited comparable evidence on the level of cannabis use without prohibition (15).

Rehm and Fischer considered penalties for cannabis use to be out of proportion to its health related consequences as it is associated with less morbidity or mortality than legal substances such as alcohol and illegal substances such as heroin (8). While there is no conclusive evidence of the impact of prohibition in deterring cannabis use, it is clear that enforcing prohibition requires resources. The cost of cannabis prohibition includes law enforcement costs as well as missed opportunities for future employment due to criminal records and the tendency to target vulnerable people (8).

## **Protection of young people**

Within most jurisdictions, policy changes are accompanied by guidelines instituted to protect minors from accessing cannabis (9, 14). For example, while the minimum age for use in Colorado and Washington is 21 years, it is set at 18 years in Uruguay (5). Despite these guidelines, there are significant concerns that legalising a substance that was criminalised on the basis of its harmfulness may reduce young peoples' perception of its harm, reduce its cost and hence increase access or use (4, 13, 16-18). Preventing the uptake of cannabis is critical because it is much easier to prevent initiation than to encourage users to quit during a period of their lives when they are more vulnerable to health related harm (19). Liberalised cannabis laws are presumed to be significant drivers of increased use (20, 21). This may be because first time users are more likely to use cannabis after it is legalised if their uptake was being hindered by the criminal label associated with use (19).

The danger of 'sending the wrong message' to young people underpins concerns about policies that legalise cannabis for medical use (22-24). As the perceived therapeutic utility of cannabis increases among young people (25), health promotion messages about its harmful effects may contradict their positive notions about its utility (4, 16, 26). These positive notions may be reinforced by the fact that compared to cannabis; there are no ongoing debates about the therapeutic benefits of tobacco and alcohol which are legal. In the USA, citizen-led campaigns played a role in facilitating legalisation of medical marijuana (9). The process of generating debates about cannabis policies may shape social norms about cannabis use. Young people have access to public debates but may not have the discretion to decipher conflicting information about harm. An association between exposure to medical marijuana adverts and future intentions to use was reported in a study among

adolescents in the USA (27). Legal frameworks may be insufficient in deterring use and measures to reduce young people's access to cannabis should be considered irrespective of the legal status (28).

### **Impact of cannabis policy change on use and acceptance by young people**

A study of cannabis use before and after decriminalisation in California in 2010 using the Monitoring the Future (MTF) data from 2007–2013 showed increased levels of use and acceptance after decriminalisation (20). The increase in levels of use commenced before the policy was implemented suggesting that prior media deliberations about legalising cannabis influenced young people's inclinations to use (20). This finding may not be surprising because tweets about legalising cannabis because of its therapeutic benefits were prominent in a study that evaluated cannabis related tweets from influential young twitter users (29). Another USA study utilising MTF data from 2007-2011 showed that 10% of non-users indicated intention to use cannabis if it became legal (12). The data did not, however, differentiate between variations in cannabis policies for each state which may explain the findings (12).

A Colorado study using National Survey on Drug Use and Health data from 2003- 2011 reported reduced risk perception, increased access and use among young people in states where medical marijuana laws had been passed (6). A significant reduction in the perception of risk associated with cannabis use was reported in a study that used similar data across the USA from 2002- 2012 (30). Reduced risk perception may, however, be a cause or a consequence of policy change. Another study using similar data in 50 U.S states showed that medical marijuana laws increased recreational use among young people (21). The finding was not supported by a study that replicated the analysis using the same data and

found no evidence that the laws increased use after accounting for prior state level rates of use (31). Although cannabis use has been found to be higher in states in the USA where medicinal use is legal, it is possibly because these states had greater rates of use and lower risk perception before the laws were passed (18, 24).

Using data from the MTF for young people aged 13-18 years between 1991-2014, a USA study controlled for individual, school and state level factors in states where medical marijuana laws had been passed (32). Cannabis use was more prevalent in these states but there was no difference in the risk of use before and after the laws had been passed (32). A study that accounted for policy variations in access and levels of use found that medical marijuana laws were associated with no change or reduced use (26). State level norms in favour of cannabis may be higher in medical marijuana states because citizens play an active role in the referenda process.

An evaluation of the Youth Risky Behaviour Survey (YRBS) data in the USA from 1993-2011 for 16 states which legalised medicinal cannabis within the period showed no association between the policies and cannabis use after controlling for confounding factors (22). Using the YRBS data from 1991-2011, another study compared five states where medical marijuana was legal with neighbouring states where it was not and concluded that there was no evidence to suggest that the laws increased the likelihood of use among adolescents (33). Choo et al's study controlled for state level factors and so provides more reliable evidence than similar studies that do not control for these differences (33).

A UK study evaluating the effect of cannabis depenalisation in 2004 using data from 2003-2006 reported no significant effect except a slight increase in occasional use among 15-17 year olds (34). This finding was supported by an Australian study that utilised national

household survey data between 1998-2010 and showed that there were no long term effects of decriminalisation although a marginal increase in uptake was observed within the first five years and this was occurring at a younger age (19). A study that utilised the Health Behaviour in School Aged Children (HBSC) data for 38 European and North American countries reported that liberal policies at country level were associated with a higher likelihood of cannabis use among adolescents (35). In contrast to the Australian study, the association was observed after the liberal policies had been in place for over five years (35). This study did not account for country level norms or rates of use prior to policy change but it underscored the fact that the impact of cannabis policies may not be apparent in the short term.

An association between the physical availability of medicinal marijuana outlets and current use was reported in a telephone survey in California with a higher proportion of the users in the 18- 29 years age group than other age groups (18). Some researchers suggest that increased uptake of cannabis among young people may occur as a result of diversion from authorised adult users but there is limited supportive evidence (13, 17). Medical indications of cannabis use peculiar to young people such as anxiety may actually be consequences of long term cannabis use from adolescence (9). Cannabis use is increasingly being reported among young people as a coping strategy for psychological stressors (25). Issues have been raised regarding smoking as a route of administration of 'therapeutic cannabis'(24).

### **Methodological issues**

Evidence from a systematic review on the link between medical marijuana laws and adolescent cannabis use was mixed (13). Methodological and contextual factors may explain the mixed findings on the impact of cannabis policies. The variation in cannabis laws,

baseline rates of cannabis use and social norms that existed prior to policy change were not accounted for in some studies (26, 36). Many studies evaluating the link between medicinal marijuana laws and cannabis use do not utilise methods that prove causality; findings may also reflect population differences (6, 37). The control measures limiting or facilitating access to medical marijuana differ between states and such contextual factors can impact on research findings (26). Evaluating the link between policy change and heavier use among existing cannabis users may be a better indicator than first time use and this may explain why studies investigating uptake of cannabis as an outcome measure are finding no effect (36, 37).

### **Emerging trends and future directions.**

The rising potency of cannabis over the past decade due to higher THC concentration facilitated by sophisticated cultivation techniques and practices such as dabbing has been implicated in the greater incidence of cannabis dependence (25). Dabbing which entails the inhalation of  $\Delta 9$ -tetrahydrocannabinol (THC) concentrates of up to 80% extracted using solvents like butane is increasingly being reported in the USA (38, 39). There are concerns that these emerging trends may escalate with legalisation of cannabis (16, 39). A UK study reported increased treatment for dependence among young people who used higher potency cannabis despite the declining rates of cannabis use in England and Wales (40).

Cannabis policies are still evolving and more time may be required to evaluate the long term impact on use (36, 37). Future research should explore the nuances in cannabis policies and contextual factors (36). Current evidence is concentrated in the USA where policies are rapidly evolving; a sound evidence base will, however, inform policy debates in other parts of the world. There may also be differences between medical and recreational cannabis

laws in terms of availability, norms relating to use, demographic profile of users and impact on young people that can be explored in future research (33, 41). Longitudinal studies are needed and more evidence is required with respect to THC concentration, cannabis potency and dependence.

## **Conclusion**

There is an urgent need for a clear direction regarding cannabis policies and young people that is underpinned by scientific evidence rather than public opinion and politically-motivated debates. Irrespective of the legal status of cannabis, there is a consensus on the negative health effects of early onset of use. Health promotion messages for young people need to be adapted to pragmatically address issues relating to cannabis policy as well as health related consequences. The wait for evidence to inform future policy directions may be a long one; it may be better to utilise what is currently known as a trade-off to delay onset of cannabis use and reduce harm among young people.

## **Key points:**

- Cannabis use among young people is associated with an increased risk of mental health problems and dependence.
- Cannabis policies are rapidly evolving in favour of depenalisation and legalisation.
- There is no conclusive evidence to show that policies in favour of medical and recreational cannabis use increase uptake by young people.
- Limiting young people's access should be a key priority in order to minimise health related harm.
- A nuanced understanding of the impact of cannabis policies requires research that situates the policy details and sociocultural factors in context.

## **Acknowledgements**

None

## **Financial support and sponsorship**

None

## **Conflicts of Interest**

None

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- of special interest
- of outstanding interest

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