

Cannabis: Use, Harms, Disorder, and Interventions

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Abstract: *Cannabis is the most common illicit drug of dependence in the Western world. Frequent cannabis use, especially when first used before the age of 16 years, is associated with addiction, poor mental health, impaired memory and learning, reduced educational attainment, in addition to social and legal difficulties. Despite the harms associated with cannabis use, dependent cannabis users are less likely to present for treatment than other illicit drug users and problematic cannabis use is rarely detected by health professionals. It is important that clinicians regularly include screening and assessment of cannabis use and account for cannabis use in case formulations. This paper will outline the prevalence of cannabis use, its associated harms, diagnostic considerations, and a brief review of best-practice treatment.*

Keywords: *cannabis, marijuana, treatment, addiction, assessment, brief interventions*

Prevalence

The 2013 National Drug Strategy Household Survey revealed that around 1 in 10 Australians (10.2%; or 2,000,000) aged 14 years and over, reported using cannabis in the previous 12 months and more than a third (35%; 6,600,000) had used over their lifetime (AIHW, 2014). Among recent cannabis users, 12.8% of those aged 14 years and over are daily users with an additional 19.5% using weekly or more often. The age group with the highest prevalence of recent cannabis use are 20-29 year olds with 24.7% of males in that age group reporting use (AIHW, 2014). As with tobacco, Indigenous Australians are twice as likely to smoke cannabis as non-Indigenous Australians. Cannabis use among young people is particularly concerning, with those aged 14-19 years more likely to have used cannabis than tobacco (AIHW, 2014). In the US, past year cannabis use significantly increased from 2001-2002 compared with 2012-2013 from 4.1% to 9.5% of participants in a nationally representative survey reporting use (Hasin et al., 2016). The proportion of participants reporting cannabis use disorders in the same study also doubled in that time period. Cannabis is most commonly known as marijuana in the US due to their

legislation but is widely referred to as 'weed'. For an overview of common queries of issues such as increasing cannabis potency and a wide range of information and clinical resources see <https://ncpic.org.au/>.

Harms

Cannabis use is considered to place a large burden on the health care system and is associated with significant harms to the individual (Degenhardt et al., 2009; Degenhardt et al., 2013). In Australia, the majority of people smoke cannabis mixed with tobacco, either in water pipes or hand rolled cigarettes. This form of administration inherently results in respiratory damage including chronic wheezing, bronchitis, sputum production, and chronic cough. There is evidence that these symptoms are attributed to smoking cannabis even after controlling for tobacco use (Gates, Jaffe & Copeland, 2014), and the damaging respiratory effects of cannabis and tobacco seem to be additive (Taylor & Hall, 2003). Moreover, cannabis use may predispose individuals to cardiovascular complications, such as stroke and heart attack, including among young people (Jouanous, Lapeyre-Mestre & Micallef, 2014).

In addition to the effects of cannabis on physical health, cannabis use is associated with higher rates of injury or death through motor vehicle accidents (Hartman & Huestis, 2013) or operating equipment at work (Wadsworth, Moss, Simpson & Smith, 2006). Cannabis use is also associated with poorer educational and vocational outcomes, and increased interpersonal difficulties (Henquet et al., 2005). There is emerging evidence indicating that cannabis use is associated with impairments in cognition, such as poorer attention, memory, the organisation and integration of complex information and loss of overall intelligence. Alarming, these impairments are found following cannabis cessation, indicating potential long-term impairments (Meier et al., 2012).

Particular populations appear to be more vulnerable to experiencing the short and long term harms associated with cannabis use, such as young people, pregnant women, individuals with cardiovascular or respiratory disease or susceptibility and those with comorbid mental health conditions (Copeland & Clement, 2014). In particular, heavy and frequent cannabis use at a young age appears to be associated with significantly increased risk for experiencing chronic physical, social and psychological consequences. There is some evidence to suggest that cannabis use increases the risk of suicide attempts, particularly amongst young people (Silins et al., 2014). One of the strongest effects of adolescent cannabis use is failure to complete high school and attain further educational qualifications (Silins et al., 2015).

The prevalence of comorbid mental health disorders, such as depression and anxiety are higher among cannabis users compared to non-users. Cannabis use is associated with higher rates of

experiencing a major depressive episode (Chen, Wagner & Anthony, 2002) and those who meet DSM-IV criteria for cannabis dependence or abuse are over six times more likely to meet criteria for major depression than individuals who do not meet cannabis dependence or abuse criteria (Grant et al., 2004). There appears to be a dose-response relationship between cannabis and depressive symptoms, whereby increased use is associated with greater risk for depressive symptoms (Moore et al., 2007). The evidence is mixed, however, and a direct causal link between the two has not been clearly established as it may be common social, family and contextual factors that result in the increased risk of both heavy cannabis use and depression.

The relationship between cannabis use and anxiety is less clear. There is good evidence that anxiety, such as panic attacks, are acute symptoms of cannabis use, particularly at high doses and among drug-naïve individuals (Crippa et al., 2009). Paradoxically, many individuals report using cannabis to alleviate symptoms of anxiety. While long-term cannabis use is associated with higher rates of anxiety disorders and vice versa, the causal mechanisms or direction of the relationship between chronic use and anxiety disorders is unknown.

Although there is no evidence that cannabis directly causes schizophrenia, there is evidence that cannabis use is associated with an increased risk of experiencing a psychotic episode or developing a psychotic disorder. Among those with psychotic disorders, cannabis use precipitates the onset of the disorder by an average of three years and is associated with poorer outcomes, such as poor adherence to antipsychotic medication and increased rates of hospitalisation (Large, Sharma, Compton, Slade & Nielsen, 2011). A meta-analysis conducted by Moore et al. (2007) concluded that individuals who used cannabis were 40% more likely to experience a psychotic episode than non-users.

Cannabis Use Disorder (CUD)

Prevalence studies indicate that approximately 6% of the total Australian population will meet criteria for cannabis dependence in their lifetime and 1% for the past 12-months (Teesson, Slade, Swift et al., 2012). The rates amongst those who used at least five times in the previous year were 14.3% (Teesson, Slade, Swift et al., 2012). Current cannabis use disorders are more common amongst males and young users. Approximately one in ten people who use cannabis will become dependent and dependence rates dramatically increase with frequency of use, with 50% of daily users likely to experience dependence (van der Pol et al., 2013).

Withdrawal

Cannabis withdrawal is now recognised in DSM-5 (American Psychiatric Association, 2013) as a discrete syndrome and not only as a symptom of CUD. The 2002 National Epidemiological Survey on Alcohol and Related Conditions conducted in the United States revealed that among those that had used cannabis at least three times per week in the past year, almost half (44%) had experienced at least two symptoms of withdrawal, while over a third (34%) had experienced three or more symptoms of withdrawal over that period (Hasin, Keyes, Alderson et al., 2008). In clinical populations, 50-95% of treatment seekers report experiencing withdrawal symptoms (Budney & Hughes, 2006).

The most troubling withdrawal symptoms reported by clinical samples include irritability and restlessness, low mood, sleep disturbance and gastrointestinal discomfort (Allsop et al., 2012). Cannabis withdrawal symptoms significantly affect quit attempts and are associated with functional impairment to daily activities, substance use to alleviate cannabis withdrawal symptoms and increased frequency of cannabis use (Hasin et al., 2008). Cannabis withdrawal symptoms among those who are dependent on cannabis are also strongly associated with relapse (Allsop et al., 2012), highlighting the importance of ongoing assessment and monitoring of withdrawal symptoms as part of treatment.

Treatment

Treatment seeking individuals commonly report multiple problems related to their cannabis use, some of which are directly related to cannabis dependence, such as difficulty cutting down their use and acute withdrawal symptoms. Other common reasons for presenting to treatment include financial, relationship and family stress, deterioration in health and reductions in life satisfaction (Copeland, Swift & Rees, 2001). Treatment may take place in a variety of settings including inpatient residential and community-based outpatient services. Outpatient counselling is the most common service type among Australians seeking treatment for their cannabis related problems in specialist alcohol and other drug services (AIHW, 2015). There is good evidence for a range of psychosocial interventions in the treatment of cannabis use and some evidence for supportive psychotherapy, family therapy and support groups (such as SMART Recovery) (Copeland, Clement & Swift, 2014). Those presenting with cannabis use disorders have high rates of psychiatric comorbidity, particularly other substance use disorders, affective disorders, anxiety and personality disorders (Hasin, Kerridge, Saha et al., 2016). These should be considered in all assessment and intervention approaches. There is no evidence-based treatment for such comorbidities with an urgent need for such development and integrated treatment. While there is no current sufficient evidence-base for the use of

pharmacological interventions, there are promising trials with cannabinoid receptor agonists such as nabiximols (Sativex) (Allsop et al., 2014).

Screening and Assessment

Although cannabis users are more likely to experience psychological difficulties than non-users, they rarely present to non-drug treatment with cannabis use as a presenting problem (Copeland & Swift, 2009). Despite this, those with primary cannabis use related problems account for 20-25% of those seeking specialist drug treatment in Australia (Australian Institute of Health and Welfare, 2015). The barriers to treatment seeking for cannabis users, including stigma and not being convinced of the need for treatment, however, mean that many problematic cannabis users do not receive adequate treatment, highlighting the need for clinicians to implement routine screening and assessment of cannabis use. Identification of cannabis use and its associated problems, the individual's level of dependence and the severity of withdrawal symptoms are crucial for clinicians to account for in their case formulation and treatment plans.

There are a number of valid and reliable screening tools that can be used to detect recent cannabis use and its associated problems for a range of populations. As previously noted, screening for recent daily or near daily cannabis use will identify half of those with cannabis use disorder (van der Po, Liebrechts, de Graaf et al., 2013). The direct measure of this construct can be quickly assessed using the *Severity of Dependence Scale*. This is a validated, brief five-item measure of the degree of dependence on cannabis. This measure also provides cut-off scores for dependent adult and adolescent users (Martin, Copeland, Gates & Gilmour, 2006; Swift, Copeland & Hall, 1998). The *Cannabis Problems Questionnaire* is designed to assess the relationship between cannabis use and associated functional impairments across a range of biopsychosocial domains (Copeland, Gilmour, Gates & Swift, 2005). This measure has also been adapted for use with young people (Martin et al., 2006). Clinicians can also utilise the *Cannabis Withdrawal Scale*, which was designed to assess the symptomatology and severity of cannabis withdrawal. These measures can be downloaded at www.ncpic.org.au.

Psychosocial Interventions

Motivational enhancement therapy (MET), cognitive behaviour therapy (CBT) and contingency management (CM) are considered the most efficacious psychosocial interventions for cannabis use. Best practice treatment, however, will incorporate a stage matched approach to psychosocial treatment that is contingent on the individual's willingness to change their cannabis use patterns.

There is also some evidence for supportive psychotherapy, family therapy and support groups, which may be encouraged as an adjunct to individual treatment.

Motivational enhancement therapy (MET).

There is good evidence that one to four sessions of MET among treatment and non-treatment seekers results in reductions in cannabis use and increased motivation to change up to 15 months follow-up (Marijuana Research Program, 2004; Martin and Copeland, 2008; Stein, Lebeau, Colby et al., 2011; Walker, Roffman, Stephens et al., 2006). MET is generally considered the first line treatment for problematic cannabis use among individuals who are ambivalent about changing their current patterns of use (largely non-treatment seekers). MET is a non-judgemental client-centred therapy that aims to resolve ambivalence surrounding cannabis use by increasing cognitive discrepancy between actual behaviour and chosen goals. MET is based on motivational interviewing principles with the addition of at least one feedback session in which normative feedback is presented to the client using a motivational interviewing style (Miller & Rollnick, 2012).

Cognitive behaviour therapy (CBT).

Cognitive behaviour therapy is considered an efficacious treatment for individuals who are motivated to change their cannabis use or for individuals who have increased their readiness to change their use following MET. Cognitive behaviour therapy typically aims to provide individuals with cognitive and behavioural skills that are applied to modify learned behaviour that contribute to cannabis use. For example, CBT focuses on identifying and minimising cues and high risk situations that often lead to cannabis use and cognitive and behavioural strategies to manage acute withdrawal. Cognitive behaviour therapy has been shown to be effective in treating cannabis use in as little as one session and as many as 12 sessions, and is effective in combination with MET (Babor, 2004; Copeland, Swift, Roffman & Stephens, 2001; Stephens, Roffman & Simpson, 1993).

Contingency management (CM).

Contingency management has been shown to be an effective intervention for problematic cannabis use, particularly among adults who are motivated to change (Litt, Kadeden & Petry, 2013), young people in juvenile justice settings (Sinha, Easton, Renee-Aubin & Carroll, 2003), and individuals with chronic mental illness (Sigmon, Steingard, Badger, Anthony & Higgins, 2000). Contingency management aims to reinforce positive behaviours that promote abstinence by providing frequent and immediate tangible rewards for such behaviours. While evidence for CM is strong, it is not applicable to many clinical settings due to the financial cost of providing such rewards and lack of specific funding.

Mediators and Moderators of Quitting Attempts

Although the majority of individuals with cannabis use disorder are able to quit without professional support, recent research has identified some key variables that affect treatment outcomes (Flórez-Salamanca, Secades-Villa, Budney et al., 2013). The use of active coping skills, distress tolerance skills and an ability to distract oneself during acute cravings have been identified as key processes that are associated with more successful quit attempts. On the other hand, prior quit attempts, no prior engagement with professional support, higher levels of cannabis dependency, lower educational attainment, poorer wellbeing (e.g. stress and depression), and greater exposure to peers who smoke cannabis are associated with less successful quit attempts (Rooke, Norberg & Copeland, 2011).

Supportive Resources

There are a range of referral options and adjuncts to face to face treatment, including for those on waiting lists to see specialist clinicians. These include the free national *Cannabis Information and Helpline* (1800304050) which provides information and support for family members and evidence-based telephone interventions (Gates, Copeland, Norberg et al., 2012). There are also evidence-based interventions available via a website (<https://ncpic.org.au/cannabis-you/tools-to-quit/reduce-your-use/>) (Rooke, Copeland, Norberg, Hine, & McCambridge, 2013) along with a smartphone application (<https://ncpic.org.au/quit/sign-up/>). A range of information sources for adolescent mental health and drug such as <http://au.reachout.com/> are also available.

Conclusion

Clinicians should incorporate screening and assessment of cannabis use in their routine assessment process as cannabis is the most widely used illicit substance, and individuals presenting for treatment often do not see their cannabis use as problematic. Best practice treatment for problematic cannabis use should focus on the individual's stage of change and incorporate MET, CBT or a combination of these psychosocial therapies. Treatment should also incorporate the monitoring and management of cannabis withdrawal syndrome to minimise functional impairments and likelihood of relapse.

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Declaration

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