College of Psychiatrists of Ireland

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The Effects of Cannabis on Mental Health

Information Sheet for Health Professionals

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Introduction

This information sheet is aimed at health professionals and aims to answer 20 Frequently Asked Questions about cannabis. Cannabis and cannabis-based products are becoming more widespread within Ireland. People who use the mental health services, both children and adults are at higher vulnerability to the harms of cannabis use. Health professionals should be familiar with these risks as the media as well as patients are likely to underestimate the harms of cannabis use.

- Cannabis is the mostly commonly used illegal drug in Ireland
- Cannabis is easily available in Ireland including high potency versions
- Cannabis adversely affects mental health
- Young people who use high potency cannabis regularly are at highest risk of harms
- Cannabis can be additive
- Cannabis and cannabis products are not evidence-based treatments for mental illness
- Cannabis use is associated with many social and educational problems

Frequently Asked Questions

1. What is Cannabis?

Cannabis is a psychoactive drug derived from a genus of plants of the same name. Cannabis is most commonly available in Ireland in the form of herbal cannabis ("weed", "grass") or cannabis resin ("hashish" or "hash"). There are also high potency cannabis extracts, such as oil, shatter or wax. The majority of cannabis use in Ireland is via smoking[1]. Cannabis products can also be inhaled via vaping or "dabbing" or ingested orally ("edibles").

2. Is Cannabis use common in Ireland?

Cannabis is the most widely used illegal drug in Ireland. The National Advisory Committee on Drugs and Alcohol (NACDA)[1] conducted a general population study in 2014/2015 and found 1 in 4 of respondents had used cannabis at least once in their lifetime with 6.5% of respondents reporting cannabis use within the last month. Cannabis use is highest in young adults, and regular use is more common among males than females. Results from the European School Survey Project on Alcohol and Other Drugs (ESPAD)[2] study in 2019 showed that 9% of Irish Transition Year Students (aged 15-16) in Ireland had used cannabis in the past month.

3. What are Cannabinoids?

Cannabis contains over one hundred cannabinoids, the two most researched are the phytocannabinoids delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD). Cannabinoids exert their effects primarily by interacting with the endocannabinoid system, which comprises endogenous ligands such as N-arachidonoylethanolamide and 2-arachidonoylglycerol. There are two specific receptors - cannabinoid receptor type-1 (CB1) and cannabinoid receptor type-2 (CB2). A large number of synthetic cannabinoids also exist designed to imitate the actions of THC with a higher risk of adverse effects[3].

4. What are the effects of THC and CBD?

The two cannabinoids act quite differently with different affinity for the different cannabinoid receptors. THC is the psychoactive substance responsible for the "high" and can lead to dependence. THC can cause hallucinations, paranoid thoughts and agitation. THC is also associated with impairment of cognition and thinking both in the short term and the long term. THC is a partial agonist at the CB1 receptor[4]. CB1 receptors are found across the brain with high concentrations in the neocortex, basal ganglia and hippocampus[5]. CBD is not thought to be associated with dependence or psychosis and has a mildly sedating effect. CBD lacks significant affinity for the CB1 receptor but it is able to displace THC at low concentrations[6].

5. How much THC is available in the Cannabis in Ireland?

Cannabis with THC content greater than 9% is generally considered "high-potency" cannabis. The international and European trend shows that THC content in both herbal cannabis and resin is increasing[7,8]. The THC level of cannabis seized in Ireland is not routinely measured but is expected to be in line with European trends. In 2010 samples of cannabis in Ireland were tested and the THC content ranged from 1 – 16%[9]. Evidence from the US indicates that potency of cannabis products has increased following legalisation[10,11].

6. Why does the THC level matter?

The adverse psychoactive effects of cannabis are attributed to the THC component. Studies show that the higher the THC content the greater the risk of psychosis, agitation and anxiety developing[3].

7. What are the acute effects of cannabis?

For the majority of users, the effects of cannabis intoxication are acute and transient. Many users report pleasurable effects including mild euphoria and a feeling of relaxation. Undesirable experiences (particularly with high potency cannabis) include panic attacks, dysphoria, suspiciousness and paranoia, perceptual distortions, hallucinations, cognitive impairment and psychomotor impairment[3,12].

8. What are effects of cannabis on driving?

The cognitive and psychomotor effects of cannabis account for impairment of driving and operating machinery[13]. The combination of alcohol and cannabis intoxication has a synergistic effect on driving impairment which exceeds the risk of using either exclusively[14]. The Gardaí began roadside testing for cannabis and other substances in 2016. In 2018 cannabis was implicated in 1,205 cases of road traffic offences according to the Medical Bureau of Road Safety. A recent study suggests that chronic cannabis use can impair users' driving even after a 12-hour abstinence period[15].

9. Is Cannabis addictive?

Yes, cannabis is addictive and can lead to Cannabis Use Disorder. Stopping cannabis consumption after a period of use can result in significant withdrawal effects (irritability, anxiety, decreased appetite, restlessness, and sleep disturbance)[16].

The 2014/15 Drug Prevalence Survey conducted by the National Advisory Committee on Drugs and Alcohol[1] found that 1 in 5 people who use cannabis report symptoms consistent with cannabis dependence. This rate of cannabis use disorder is consistent with international findings and can increase to 1 in 3 in the case of adolescent users who use large amounts of cannabis[17].A cannabis use disorder is now the most common presenting problem for people seeking addiction treatment under the age of 25 years, even more common than alcohol use disorder[18]. From 2006-2016 there was a two-fold increase in adolescents entering the addiction service for treatment of a cannabis use disorder[18]. The risk of dependence increases with increased frequency of use and higher potency cannabis. A review based on US data showed early use is a predictor of dependence, people who begin using cannabis before age 18 are four to seven times more likely to develop a cannabis use disorder[19].

10. Is Cannabis a gateway drug?

The gateway hypothesis proposes that cannabis use leads to use of other drugs such as cocaine, amphetamine and heroin. Although scientific evidence is mixed on this question, a recent large study of predictors of later opioid use disorder in the US has shown that early cannabis use (before age 18) was the dominant predictor[20]. An Australian twin study showed that twins who started using cannabis by age 17 were 2-5 times more likely than their non-cannabis using co-twin to go on to use other substances and to become dependent on drugs or alcohol[21].

11. Is Cannabis associated with mental illness?

Yes. Cannabis use can precipitate new mental illness and exacerbate pre-existing mental illness. A study[18] using the National Psychiatric In-Patient Reporting System (NPIRS) data found that cannabis-related admissions had increased by 140% between 2011 and 2017 for people aged 15-34.

Psychosis

Cannabis users are at a 3-4 fold increased risk of development of acute psychosis[22] with evidence that this association is increased to 5-6 fold with early use of high potency cannabis[23]. People with cannabis-induced psychosis are at high risk of progression to a chronic psychotic disorder such as schizophrenia. It has been shown that 1 in 5 people who suffer cannabis-induced psychosis will progress to a schizophrenia diagnosis within 3-4 years[24].

Mood Disorders

Early-onset use of cannabis is also associated with an increased risk of development of major depressive disorder[25,26]. Cannabis use disorder has been associated with a greater risk of Bipolar affective disorder onset[27] and reduced length of time between relapses.

Anxiety Disorders

Young cannabis users are at higher risk of anxiety disorders particularly those who use high potency cannabis[28].

Suicidal behaviours

Chronic cannabis users are more likely to report thoughts of suicide than non-users. The National Self-Harm Registry Ireland Annual Report 2018 states that cannabis was the most common illicit drug used among men aged 15-24 with self-harm presentations – present in 8% of overdose acts[29]. A recent systematic review found that the risk for suicide attempts in young cannabis users was more than 3 times higher than in young people who did not use cannabis[26].

12. What are the risk factors for developing chronic psychosis for cannabis users?

The use of high potency (high THC) cannabis regularly and starting to use cannabis at an early age are the strongest risk factors for developing a psychotic disorder among cannabis users[30]. Other important risk factors are a family history of psychosis and individual genetic vulnerabilities.
THC has been shown to induce psychosis in healthy people with no history of mental illness[12]. The Report from the National Academies of Science, Engineering and Medicine (2017) has stated that cannabis use is associated with psychosis: higher the dose, the higher the risk[27].

13. Do the risks of cannabis apply only to people who use excessively?

The highest risk is for users of high potency cannabis on a regular basis. However, studies have shown that even a small amount of cannabis exposure in early adolescence may be related to structural brain changes and mental illness[31].

14. How does cannabis influence the developing brain?

Cannabis use has effects on brain structure and development[32,33]. The adolescent brain seems to be most at risk from neurodevelopment and structural changes[30]. Cannabis has an effect on synaptic pruning and white matter brain development and users with a "still developing brain" are at most risk[30,34]. While chronic and high frequency use of cannabis is associated with structural brain differences a recent review has shown that even low exposure to cannabis during adolescence may result in changes in grey matter volume in the brain[31]. Larger studies and further replication are required to investigate this relationship.

15. Is cannabis use in pregnancy harmful?

Cannabis use during pregnancy is associated with low birth weight and disruption of the endocannabinoid system which may lead to neurodevelopmental problems[35] including autism spectrum disorder[36]. For these reasons, cannabis should be avoided in pregnancy.

16. What about cognition, motivation and academic attainment?

Cannabis use can adversely influence academic and work performance and is linked to decreases in IQ in those who use cannabis heavily at a young age[37ab]. A recent systematic review of the evidence reports average decline of approximately 2 IQ points following exposure to cannabis in youth[38].
Cannabis use decreases memory performance tasks in students[39]. Multiple studies across different sites have shown early life cannabis use, is strongly associated with poorer educational outcomes, lower income, greater welfare dependence and unemployment and lower relationship and life satisfaction[40,41].

17. Can cannabis use result in harm to others?

Yes, cannabis use is associated with harms for the user, their family and the society they live in. All parental addictions, including cannabis use disorder, are now recognised as constituting an adverse childhood experience (ACE) and children growing up with increased ACEs have poorer health and socioeconomic outcomes[42,43]. A severe cannabis use disorder can lead to parenting problems, and neglect of children. The HSE and TUSLA have issued a joint advisory document on addressing these hidden harms of substance use disorders which has practical advice on problem drug use within households[44].

Cannabis use has also been implicated in many road traffic accidents. In the US, the states that legalised recreational cannabis sales had higher traffic fatalities in the year following legislation change[45]. Cannabis use increases the risk of violent behaviour[46], especially in individuals with psychotic disorders[47]. Cannabis use is also implicated in domestic violence and in cases where children are exposed to violence[48,49]. Teenagers and young adults with cannabis use disorders can cause substantial distress to their parents and siblings[50], and clinical services in Ireland and elsewhere note that child-to-parent violence occurs frequently in these situations[51].

18. Can cannabis be used to treat mental illness?

A comprehensive recent review found that cannabis-based products are not effective in the treatment of mental illnesses (e.g. psychosis, depressive disorders, anxiety disorders, post-traumatic stress disorder and Tourette's syndrome), and were associated with adverse side effects[52]. There is concern that people with mental illnesses may self-medicate with cannabis, or have it unwisely recommended to them, and this may delay both appropriate help-seeking and provision of evidence-based treatments. At time of publication cannabis and cannabis products are not evidence-based treatments for mental illness. Studies are ongoing to investigate whether cannabidiol (CBD) may be used in the treatment of schizophrenia and substance dependence. There are no definitive results as yet.

19. What are the physical harms associated with cannabis use?

Cannabis smoke contains similar toxins to those found in tobacco smoke (e.g. carbon monoxide, aldehydes, acrolein, phenols and carcinogenic polycyclic aromatic hydrocarbons)[53]. In Irish general hospitals, it has been noted that there was a three-fold increase in the number of admissions of young adults with a cannabis related diagnosis between 2005 and 2017[18]. Cannabis use is associated with physical harms including: cannabis hyperemesis syndrome[54], exacerbation of respiratory illnesses including bronchitis[55,56], cardiovascular illness including stroke and cardiac arrhythmias and certain types of cancer[57,58].

A scoping review of 72 systematic reviews concerning the benefits and harms of medical cannabis found mild harms were frequently reported. The authors state the harms of cannabis-based medicines may outweigh the benefits[60].

20. Many cannabis users express the view that cannabis consumption is beneficial to their mental health. How do you explain this?

In common with other substances, including alcohol, many people experience the short-term effects as pleasurable. Survey data both nationally and internationally would suggest the perception of the harms of cannabis have diminished over recent years especially among adolescents[18]. Current research is on-going to assess and understand this trend. Possible factors include favourable media coverage of cannabis use, misunderstanding and misrepresentation of the early evidence on cannabis-based products as therapeutic agents, social media misinformation and effects of commercial cannabis marketing[59].

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