volteface

STREET LOTTERY

CANNABIS POTENCY AND MENTAL HEALTH

Paul North

Contents

Foreword

Executive Summary

Introduction

Chapter 1
Reframing Mental Health

Chapter 2
Risk Factors

Chapter 3
The Current Picture

Chapter 4
Taking Control

Foreword

For over half a century, various activist groups in the UK have launched campaigns to legalise cannabis, but with little success. One of the most effective arguments used by those opposed to reform is the absence of any existing regulated legal markets for selling cannabis. This is no longer the case. Over the past five years, eight US states (including California) have voted to legalise cannabis. Next July, Canada will become the first country to legislate with a general election mandate to do so.

So this issue will inevitably become more salient in the years to come. What is already clear is that reform takes place within particular social and cultural contexts. Local conditions dictate its priorities.

Here in the UK, the debate around cannabis cannot ignore the issue of mental health. For years, there has been conjecture in this area as the potency of cannabis, its addictiveness, the impact it has on young people, its links with psychosis, and the best way in which to address its illicit market have all been debated at length.

This report provides a concise and compelling new account of the deleterious consequences of leaving cannabis in the hands of the black market. Drawing on insights from world class academics and original research, it was commissioned to stimulate a better informed and more nuanced public debate.

With inadequate treatment provision, a lack of understanding around the key points, and no effective policy in place, there is an urgency to this issue which can longer be sidestepped. We must be brave in discussing and properly examining the implications of, not only the existing illicit market for cannabis, but the real challenges that exist in implementing a safe and responsible system of regulation in which mental health is a key priority.

Steve Moore,
Volteface Director

Executive Summary

There is a huge amount of conjecture around the issue of cannabis use and mental health in the UK. The relationship between the drug and how it can impact both positively and negatively on someone's mental health is a complex one. Debate on this issue is often polarised, with one camp proclaiming cannabis is so safe that it should be legalised and made available to all, and another stating that cannabis is more dangerous than some might think and that we should have harsher sentences for those both growing and consuming it. This report addresses the issue head-on and explores in depth the difficult question of how cannabis impacts a consumer's mental health. Its findings paint a problematic picture, which can only be addressed through considered reform.

Our study, carried out in partnership with Dr Oliver Sutcliffe, Senior Lecturer in Psychopharmaceutical Chemistry at Manchester Metropolitan University, shows how street cannabis is now exceptionally potent in comparison to previous years. Buying it is a 'lottery' in which the consumer has next to no control over the product they are procuring. As this report examines, cannabis of this nature appears to be deeply problematic for many people because it greatly increases the risk of a deterioration in mental health and the chance of forming dependency. Academic research in this area is supported by data and expert testimony from frontline services which suggest that street cannabis is having a direct impact on the number of people accessing mental health services and presenting at drug treatment centres.

There are three risk indicators to consider when examining how problematic street cannabis is, the academic research suggests. The first is the level of THC. Higher amounts have stronger correlations with dependency and problematic side effects from paranoia to psychotic episodes. The second factor is how much CBD is present. This appears to be a protective chemical, which mitigates against the negative effects of THC. Finally, the age of the consumer is important when considering longer-term effects on cognition and brain development. Research indicates that, during the period when someone's brain is developing and growing, cannabis can have a detrimental effect on this process.

In the UK's illicit cannabis market, all three risk indicators are present. The young people we spoke to and surveyed told us that they can obtain cannabis more easily than alcohol. Frontline services indicated that young people are experiencing a wide range of mental health problems linked to their consumption of street cannabis. These groups of young people, who are often disengaged from frontline services, are rarely explored by academia and more needs to be done to examine the impact street cannabis is having on their mental health. Reports from the frontline and disclosures from young people themselves suggest that the relationship is problematic.

The relationship consumers can form with cannabis can be exceptionally complicated. While the research outlined in this report suggests that cannabis can lead to a deterioration in mental health, many people state that it helps them to cope with their mental health. Cannabis is used by large cohorts of people to deal with anxiety and problematic thoughts, and to these consumers it is medicinal in its nature. While this relationship is complex, and in many respects highly personal, what we have found is that street cannabis is rarely cited as being beneficial for mental health.

It appears that two distinct groups exist: those who are informed about the cannabis they are buying, and those who have no idea and are essentially in the dark. The latter present far more of a concern as they are using forms of cannabis that seem to carry with them higher rates of addiction and dependency, and in the absence of resources, knowledge and understanding, problematic patterns of use remain, and the consumer's mental health can suffer.

This report acknowledges that a variety of factors impact on the mental health of consumers, and that the relationship someone forms with cannabis cannot only be explained by reference to THC and CBD levels. The reality, however, is that we can regulate and control THC and CBD to reduce the risks, inform consumers and offer choice. Markets are emerging around the world in which this is taking place.

The UK's illicit cannabis market is out of control and dominated by more problematic forms of cannabis. Systems that bring the market into check, take it out of the hands of criminals and could generate vast tax revenues for government exist. Enforcement of this market has not worked and police forces, failing to see either the benefit or purpose of attempting to enforce it, are surrendering. The tip of the iceberg is becoming clear to see as mental health presentations for cannabis-induced psychosis increase, but the majority of problematic use remains hidden in people's homes and away from treatment services. We need reform and new drug policies before the crisis deepens.

Key Terminology and Definitions

Skunk

Due to a lack of education and awareness, the term Skunk is causing confusion and misinformation. New terminology is needed, along with a recognition that cannabis is a highly complex product that people can form a wide range of relationships with - from beneficial ones to those which are problematic. The use of the word Skunk hinders this understanding.

When it comes to cannabis, the term Skunk causes a great deal of debate and disagreement. This is not only a distraction from the real issues at hand, but is creating further misinformation around a subject requiring clarity. Use of the term is damaging the debate and creating confusion with young people in drug education and on their perception and understanding of cannabis.

What is problematic about the term Skunk is that it can mean very different things. Academics and journalists have used the word Skunk to describe a new type of cannabis that is high in THC and low in CBD. To many connoisseurs of cannabis, Skunk is just one strain with similar THC and CBD content to many other available strains. To many young people smoking cannabis, Skunk is just a word used to describe 'good weed'.

Using the term Skunk to describe high THC, low CBD cannabis also creates a problem in the way wider society understands other forms of cannabis, such as Hash. By using the term Skunk to describe a 'problem' strain of cannabis, an impression is created that other forms are safer, when - in reality - they may contain far higher levels of THC and have no CBD. The use of the word is damaging societal health and wellbeing by spreading misinformation. Consumers who encounter Hash may not realise that it can contain extremely high levels of THC, far beyond that of Skunk, whatever their understanding of the term is.

Street Cannabis

This report will use the term 'street cannabis' to describe the strains of cannabis that are bought through the illegal market. We acknowledge that cannabis bought on the street varies in nature with regards to the specific strain, but there is no doubt that, in the UK, street cannabis tends to be high in THC and low in CBD. The impact of this is that, in most cases, people are not given a choice or the opportunity to avoid more potent strains, which present an increased risk to their psychological wellbeing. [1]

Potency

The term potency will be used in this report in reference to the concentration of THC and the ratio of THC to CBD in cannabis. When using the term 'high potency', we are referring to strains of cannabis which have a high level of THC and little CBD.

Defining Mental Health

The focus of this report is to examine the way in which cannabis impacts on the mental health of consumers, both positively and negatively. The report will consider addiction as a mental health condition in line with its acknowledgement and definition in the Diagnostic and Statistical Manual for Mental Disorders fifth edition (DSM-5). The report will also look at how cannabis can impact on cognition and the brain development of consumers and classify impairment in this area as an issue of mental health, in line with the DSM-IV-TR.

Defining Psychosis

This report will go on to explore the link between cannabis consumption and psychosis. Before doing so, we need to provide a definition and highlight the broad spectrum of experiences that can occur. The term psychosis covers a variety of symptoms from a relatively minor aberrant experience to a more serious episode of schizophrenia. The definition provided by Gelder et al. is that, when medically diagnosed, psychosis is a descriptive term for hallucinations, delusions and impaired insights that someone

may experience for an undefined period.[2] A psychotic episode may be drug-induced and last for a short period or several weeks. People's experience of a psychotic episode can therefore vary greatly and our understanding of it needs to reflect this. Drug-induced psychosis is a term used to describe psychotic symptoms occurring after intoxication of a substance, which can last for any length of time.

The discussion around psychosis must recognise that experiencing it as a condition does not always result in a hospital admission or medical diagnosis. We should view psychosis as a broad set of symptoms which could last for a short period of time, sometimes just due to the intoxication of the substance, and that many consumers of cannabis who experience disorganised thinking, hallucinations or delusions have in effect experienced psychosis.

If we are to effectively discuss and evaluate the role that cannabis has on someone's mental health, we need to recognise that the debate must take place on a broader level. Even if there is a causal link between cannabis and psychosis, most consumers will not experience a psychotic episode. Far more, however, may be experiencing other issues such as addiction and dependency, which could gradually decline if not addressed, and affect their health and wellbeing on a significant scale.

Chapter 1
Reframing Mental Health

A combination of confusion

Cannabis is a complex substance capable of inducing a vast spectrum of experiences, from enjoyable euphoria to distressing anxiety. This complexity is exacerbated when the impact it can have on someone's mental health is considered. 'Mental health' might be a term we think we all understand, but, just like cannabis, it is far more complicated than many would imagine. Unfortunately, many people, consumers of cannabis included, see mental health as something that is 'black and white' - you either have a mental health problem or you are okay. The debate around cannabis can, at times, fall into the same trap - cannabis is seen as either safe or causing psychosis. The reality is that, mental health, just like physical health, is a spectrum. To progress the debate around cannabis and mental health, we need to reframe our understanding and recognise the complexity of the issue, rather than accepting simple labels and diagnoses.

Gaps in Policy and Perception

Despite the growing number of cannabis presentations in drug treatment services and increased hospital admissions for drug-related psychosis, the 2017 Government Drug Strategy, published in July, makes no attempt to address the issue. Vast reductions and cuts to drug treatment services instead reveal an ignorance of the problem. While the Prime Minister Theresa May recognised that cannabis could impact negatively on someone's mental health [3] in the 2017 general election campaign, no clear plan has been outlined on how to tackle the issue.

The latest Government Drug Strategy placed more emphasis on enforcement, which has thus far not proved to be effective, and provided no solution for those who with ongoing dependency. The strategy also brought harm reduction back onto the agenda and recognised the importance of gendered experience, which was mentioned little in the previous strategy. The issue, however, is finding the funding for any new ideas or ways of working.

The Government's official mental health strategy is now six years out of date and therefore unable to respond to the emerging picture around problematic cannabis use. While the Government has said that mental health is a priority, no new strategy has been forthcoming.

As this report will discuss, mental health is too often seen as a 'black or white' issue, which severely limits our understanding and response to it. We will now explore a more productive way of thinking about it before returning to the role cannabis plays on a consumer's mental health, both positively and negatively.

A spectrum rather than a label

"Our current system [of mental health service provision] was designed from the wrong end of the telescope, focusing on provision, funding, demarcations and organisation of a particular set of professional services for one in twenty people, regardless of how they became ill. The design ignored the fact that one hundred per cent of people have mental health and that, as with physical health, they are on a spectrum from the super-fit, through to the healthy, the unhealthy and the moderately ill to the severely ill."

—Paul Kirby [4]

As Paul Kirby notes, everyone has a level of mental health that can fluctuate from moment to moment, day to day, and year to year. Just like physical health, our mental health can improve or deteriorate based upon our experiences and biology. Although this concept seems easy to relate to, the fact that mental health cannot be seen in the same way as physical health, or understood as simply, makes the matter more complex. The problem with mental ill health is that its treatment relies upon the diagnosis or labelling of a specific condition, such as anxiety, depression, or schizophrenia. While this may assist in the administration of medicines, insurance and disability benefits, it can create the impression in society that you either have one of these conditions or are completely well.

Issue 1
People do not always notice a deterioration in mental health

If we view anxiety or depression as a purely singular condition, without progressive deterioration, then we miss out on the chance to get help early on or change patterns of behaviour. The gradual decline of someone's psychological wellbeing presents opportunities for intervention throughout, but if the individual does not see it as such they may wait for far too long before seeking help. This keeps people away from services and treatment, leaving them out in the community, unaccounted for and without support.

This becomes a key issue when the impact of cannabis on someone's mental health is considered. As the debate has focused so heavily on episodes of psychosis, many consumers of the drug do not consider that they could be experiencing mental health problems that fall lower down on that same spectrum. Should someone's mental health be gradually deteriorating (or even remain stable at a problematic level), the regular consumption of cannabis will make this harder to recognise. The relationship between such a problem and the consumption of a drug can also become entwined as the experience of consuming cannabis can mask, create, amplify or suppress the problem itself.

"I didn't realise something was wrong until I couldn't leave the house. I ended up just being a complete recluse who couldn't even walk to the shop without someone going with me. The mad thing is I was a confident guy and used to play in front of people at gigs all the time. But slowly this fear just started to set in… when I look back I can see I was slowly getting worse and worse, but I was just smoking all day and escaping from stuff so it was pretty hard to notice at the time."

— Michael, cannabis consumer for 15 years

"I have no doubt that people presenting for cannabis-induced psychosis are the 'tip of the iceberg' of people adversely affected by heavy cannabis use. In our study in Dunedin (Arseneault et al 2002), cannabis use increased not only psychotic disorder but also minor subclinical psychotic symptoms such as paranoia among people in the community."

— Professor Robin Murray, Institute of Psychiatry, King's College London

We need to educate consumers of cannabis that mental health, just like physical health, can fluctuate. While conditions such as psychosis or schizophrenia are higher up on this spectrum in terms of severity, they are not the only type of problematic experience.

Issue 2
Academic debate heavily focused on psychosis

The subject of cannabis and mental health is hotly debated both in and outside of academia. Its focus, however, seems to be on the most severe psychological conditions and their labelling, rather than on exploring issues that are more common in the cannabis consuming population as a whole. By looking only at the more serious conditions — the tip of the iceberg — the debate is misleading and serves to reinforce a simplistic way of discussing mental health. If the debate instead discussed a wider range of conditions and viewed such problems as on a spectrum, there could be several benefits. As outlined earlier, it could help to educate those consuming cannabis to be aware of changes in their mental health and would also push academia to look beyond the easily accessible group of hospital admissions and groups seeking treatment.

"Researchers try their best to access cannabis users but it is too convenient to recruit from treatment centres. The majority of people don't make it into a treatment centre, they sort things out on their own and find their own way. We are almost blind to the largest number of people who don't get into treatment. Research has shown again and again the vast majority, almost 90%, who do develop a problem don't make it into treatment for a whole variety of reasons."

— Ian Hamilton,
Lecturer in Mental Health,
University of York

Issue 3
The media are missing the bigger story

Media reports focus heavily on the relationship between street cannabis and psychosis, with readers being provided with accounts of the most alarming stories. Regardless of the relationship between cannabis and schizophrenia, by reporting solely on this upper tier of mental health conditions, the general population is left with a message that cannabis is either safe or sends you into a psychotic episode.

We need to create a dialogue and raise awareness with the media that it should be discussing far more than simply schizophrenia or psychosis when it comes to cannabis and mental health as the scale of the problem might be going under the radar. The issue should also be handled with more subtlety and nuance by the press to reflect its complexities.

Issue 4
Physical health and mental health are linked

The World Health Organisation states that 'there is no health without mental health' [5]. Poor physical health can cause pain, discomfort and create limitations on someone's ability to function. This lack of functioning and discomfort can then impact on how a person feels about themselves and, in some cases, leads to a deterioration in mental health. This becomes especially relevant when discussing cannabis and mental health. Even if cannabis has no impact whatsoever on a consumer's mental health from a biological perspective, if it was to contribute to physical limitations, or to a change in their social integration, mental health may well be affected.

One important factor to highlight when discussing cannabis use in the UK is the prevalence of tobacco in joints. The Global Drug Survey 2017 showed that in the UK 77% of cannabis smokers who responded to the survey used tobacco with their cannabis. This is far higher than Canada (17%) and the US (8%), and relatively close to many other European countries (range 58-94%). The introduction of tobacco alongside cannabis adds many additional risk factors to consumption, from an increased risk of dependency to the impact on the consumer's physical health. The harms of tobacco are exceptionally well researched and the impact it has on a consumer's physical health is well known. [6]

Two-way street

We must also recognise the positive role cannabis can play in managing someone's mental health and the complexities that exist when evaluating the intoxication of a substance. Many consumers of cannabis state that it is highly beneficial for their mental health. Cannabis is medically prescribed in more than ten countries and 29 US states. It is used for a range of ailments, both physical and psychological, and there is a comprehensive research base to support its prescribed use. A research review carried out by Mike Barnes found that there was an evidence base for CBD as a treatment for anxiety, but the same could not be said of THC which appears to exacerbate the condition. [7]

It is important to recognise that the majority of cannabis users consume the drug for pleasure and enjoy using street cannabis. Intoxication from THC can be a euphoric and relaxing experience, enjoyed by millions of people around the world. People who consume high THC, low CBD strains are likely to state that it does improve their mental health as it makes them feel good during consumption and that they experience few problematic effects.

"The reason I like weed is because it feels great. I love the feeling of being stoned and the stronger the better to be honest. It's not like I do it all the time but when I do, I want to get pretty high rather than it just be relaxing."

— Anonymous male,
18, North Yorkshire

What complicates this relationship further is the fact that any drug-induced experience is reliant upon, not only the drug itself, but the environment in which it is used in and on the individual. Norman Zinberg's 'drug, set and setting' model highlights how both the environment and individual play a major role in defining a drug-induced experience. [8] For this reason, high levels of THC and low CBD are just one factor in assessing the experience someone might have consuming cannabis. Having a predisposition to a mental health condition, living in deprivation, going through a particularly difficult time in life, or smoking the drug to excess all impact on the likelihood of a problematic relationship. Addiction itself is not 'black or white', it is a complex relationship and, just like mental health, exists as a spectrum.

Anecdotal evidence suggests that medical users of cannabis seek strains of cannabis with high levels of THC to help with the management of pain, whereas the recreational consumers seek strains which contain higher levels of CBD to reduce anxiety. The relationship, however, is complex and ultimately down to personal experience and desired effect.

According to the United Patients Alliance (UPA), which represents many medical cannabis consumers in the UK, CBD oil is often used to supplement street cannabis in order to reduce the problematic effects of the latter. Jonathan Liebling, the UPA's Political Director, told us that many cannabis consumers use CBD oil before taking street cannabis to help mitigate against negative effects from the high levels of THC it contains.

A survey carried out by the UPA found that 36% of medical cannabis consumers in the UK used the drug to help manage a 'mental or behavioural disorder', which was the largest stated reason of all available categories. The same survey also indicated that the main method of procurement was to buy from street dealers (52.6%), which suggests many medical users of cannabis may not be obtaining a strain of cannabis that is ideal for their condition. In an unregulated market, the consumer is given no choice of strain and procurement is a lottery in which the acquired drug could do more harm than good.

Beyond Psychosis

There are other factors besides cannabis use that could impact on a consumer's mental health and wellbeing. The social implications that can come with taking any illegal drug, especially for many young people in the UK, can have a negative and life-changing impact. Research by the charity Release shows that, despite lower rates of drug use, black males are five times more likely to be charged with possession of cannabis than white males.[9] The result of this is that many young black males are particularly susceptible to being arrested for possession of cannabis and must deal with the consequences of this both psychologically and socially.[10] Many people on the frontline of deprived communities in the UK, who were interviewed for this report, spoke of the many young people lost in a world of procuring cannabis, consuming it daily and committing crime. This lifestyle is distressing, dangerous and can quickly result in life-changing consequences.

The lifestyle that comes with dependant cannabis use consistently puts the consumer at risk of arrest and the stigma attached to offending can have a detrimental effect on a consumer's mental health. Those using the drug medically must still procure it through the illicit market and regularly offend. Should someone already be struggling with anxiety and using cannabis to manage this, the added stress of committing a criminal act is likely to make them more anxious.

"One of the things from our patient survey was that when we were asking patients about the side effects of cannabis, about 50% of those who said they used cannabis to help with anxiety, also said the main side effect of using the drug was the anxiety and paranoia caused by using the illicit market. As far as we can see, almost all of our patients are experiencing severe and chronic illness, and the fact they have to procure a drug that helps them so much illicitly puts them at greater risk."

— Jonathan Liebling,
Political Director, UPA

In an appropriately regulated, legal market, young people would not face the same level of criminalisation for possession and those who use the drug medicinally would not have to risk prosecution and the stress of procurement. By eradicating the illicit market, young people would also not be as easily drawn into patterns of offending and criminality. To obtain cannabis, a young person must currently interact with the illicit market, which brings with it the chance of exploitation and abuse. We need policies that reduce the risk of young people getting lost in lives of crime, not those that present the risk of doing so as a necessary gateway to procurement

Summary

This chapter has highlighted how mental health, just like physical health, is a spectrum. The discussion around cannabis should reflect this and refrain from focusing purely on the diagnosis of one condition to quantify harm. We should recognise that mental health is fluid and cannabis can play a key role both positively and negatively.

The work of Zinberg shows that the experience of using cannabis is also dependant on factors outside of its chemical components - crucially the environment and the individual. This means that any problematic relationship between a consumer and a drug should look beyond the drug itself. Regardless of this, the chemical components of cannabis could be controlled and consumers could be educated about them. The wide-ranging environments in which people use, and the vast demographic of consumers, are far harder to control.

Chapter 2
Risk Factors

Cannabis and Mental Health

Now that we have established a broader understanding of mental health, we can examine the key risk factors that are present in the consumption of street cannabis. As highlighted earlier, the drug itself is not the only factor to consider when assessing the impact of cannabis on someone's mental health. There are a host of variables that can make someone more or less susceptible to poor mental health. From underlying poor mental health or predispositions, to polydrug use, cannabis is never impacting on someone's mental health in isolation.

The focus of this report, however, is on cannabis itself, its major psychoactive and neuroprotective constituents - chiefly the levels of THC and CBD - and the age at which someone starts to consume it. The reason for this is that these are the factors that can be controlled and regulated by the state to lessen the negative impact of cannabis use. They are also areas in which we can give clear and informed educational messages on consumption, allowing consumers to make more informed choices.

Three Key Risk Factors

- High levels of THC (increased rates of addiction and problematic use)
- Low levels of CBD (decreased protective mechanisms against addiction and mental health problems including psychosis)
- Early onset of consumption while the brain is developing; consuming before the age of 20

Cannabis with a high level of THC and very little CBD, that is used by young people, would therefore present the highest risk.

1. The Protective nature of CBD

A study conducted by Professor of Psychiatric Research, Sir Robin Murray, of King's College London suggests that individuals smoking street cannabis every day are five times more likely to develop psychosis. The study looked at the association between the consumption of high THC cannabis and psychosis by interviewing 410 south London hospital patients diagnosed with first time psychosis. The research found that those who had used mostly 'Skunk'-like (high potency THC) cannabis were twice as likely to be diagnosed with a psychotic disorder if they had used it less than once per week, nearly three times more likely if they used it at weekends, and five times more likely if they used it every day.[11] The same was not true for Hash, which did not appear to increase the risk regardless of the amount smoked.

This research presents an interesting comparison between high potency THC cannabis and Hash. While both are forms of cannabis, one typically contains far more THC and less CBD - the result of which looks to significantly increase the risk of psychosis.

"..use of high-potency cannabis (Skunk) confers an increased risk of psychosis compared with traditional low-potency cannabis (Hash)"

— Murray et al.

The reasons for this differential risk level could be that cannabis with high levels of THC has a more harmful effect on a consumer's mental health. Research has been conducted into the effects of THC which, when administered intravenously, can create psychotic symptoms increasing in severity with the dose.[12] This would suggest that cannabis with high levels of THC is the most problematic in terms of increasing the risk of psychosis and such a risk increases with the amount someone is consuming.

The other key factor at play could be the interaction of CBD, as the study stated it

was ‘Skunk’ (high THC / low CBD) which carried the most risk. The study suggests that ‘Skunk’ has a high level of THC and next to no CBD. Strains can vary widely in terms of their THC content, which is why we recommend the term ‘street cannabis’. Regardless, the report draws the conclusion that ‘Skunk’ or street cannabis has little to no CBD and high levels of THC.

“cannabidiol (CBD) ameliorates the psychotogenic effect of THC and might even have antipsychotic properties. The presence of cannabidiol might explain our results, which showed that hash users do not have any increase in risk of psychotic disorders compared with non-users, irrespective of their frequency of use.”

— Murray et al

The study acknowledged some limitations in the data, as the readily available high-strength THC cannabis in south London might have resulted in an over-representation of the general population. The study also notes that it did not explore how much cannabis was being used by participants, which means that we cannot be sure how much THC was being consumed.

Research exploring the effect of CBD in cannabis has shown that, when it is administered alongside THC, it can significantly reduce problematic effects both cognitively and psychologically.[13] When administered in isolation, THC can induce cognitive impairment and psychotic-like symptoms, but when given alongside CBD, research has shown that these effects significantly diminish.[14] In a study carried out by Karniol et al, volunteers were given either a high dose of THC or both THC and CBD together. Those who received both THC and CBD together found the psychological reaction of THC to be significantly reduced.[15] A hair sample study by Morgan et al also showed a similar link between THC and CBD, finding that those who tested positive for both THC and CBD in their hair had far fewer psychotic-like effects, than those who tested positive just for THC.[16]

While research suggests that increasing the level of CBD in cannabis reduces the problematic effects of THC, it does not seem to impact on the feeling of being ‘stoned’ or high from cannabis. Multiple studies have shown that high doses of CBD do not change the experience or pleasurable effects of THC.[17] This suggests that CBD is simply protective in nature and does not detract from the pleasurable experience of smoking cannabis.

In an unregulated market, the level of CBD in cannabis cannot be controlled. Furthermore, the harm reduction message that CBD appears to be protective and mitigates against a problematic experience is absent from the procurement of cannabis.

Anecdotal evidence from consumers of cannabis also suggests that CBD plays a key role in moderating the harmful effects of THC and reducing problematic experiences.

“In my experience I have found that when taking CBD alongside cannabis with high levels of THC it has not only reduced my overall level of consumption, but the problematic side effects such as anxiety or paranoia.”

— Jonathan Liebling,
Political Director UPA

There is, however, further research to be carried out on CBD to establish, in more detail, at what ratio the protective element comes into play. Although academic studies suggest CBD is protective, we do not know at what point this takes place and how research carried out in this area can be practically applied to consumers of cannabis.[18]

2. THC and Addiction

While most academic research has focused on cannabis and psychosis, addiction is a far more prevalent issue among those who consume it.[19] Curran et al estimated that cannabis consumers are nine times more likely to become addicted to cannabis than experience psychosis.[20] Although addiction remains a debated term, Curran et al recognised it to be the "ongoing and compulsive consumption of a substance, despite clear negative consequences to doing so".[21] To better understand the implications of cannabis addiction, the Diagnostic and Statistical Manual for Mental Disorders fifth edition (DSM-5) is a good point of reference. The DSM-5 amalgamated the terms cannabis abuse and cannabis dependence into cannabis use disorder and provided the below symptoms.

DSM-5 definition of cannabis use disorder

- Cannabis is often taken in larger amounts or over a longer period than was intended
- There is a persistent desire or unsuccessful efforts to cut down or control cannabis use
- A great deal of time is spent in activities necessary to obtain cannabis, consume cannabis, or recover from its effects
- Important social, occupational, or recreational activities are given up or reduced because of cannabis consumption
- Cannabis consumption is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by cannabis
- Tolerance, as defined by either a need for markedly increased cannabis to achieve intoxication or a desired effect or a markedly diminished effect with continued consumption of the same amount of the substance
- Withdrawal, as manifested by either the characteristic withdrawal syndrome for cannabis or cannabis is taken to relieve or avoid withdrawal symptoms[22]

These conditions are commonplace with those who consume cannabis problematically. A key contributing factor in their development could be the consumer's exposure to THC. Freeman and Winstock carried out research examining the relationship between cannabis with high levels of THC and dependency. They found that cannabis with high levels of THC is associated with 'an increased severity of dependence, especially in young people'.[23] They also noted that cannabis with high levels of THC was the preferred choice of young people, with participants reporting that it produced the best high. However, it was also associated with stronger memory impairment and paranoia.[24]

As THC produces the desirable effects of cannabis, a higher dose can create a strong compulsion to consume again, which is likely to be the reason why a correlation between dosage and dependency is observed.[25] If someone is consuming cannabis problematically for the pleasurable experience of THC, then it is understandable that cannabis which provides this to a greater extent becomes more appealing to use.

Research by Freeman et al suggests that those who smoke cannabis with low levels of CBD are more prone to consuming it problematically, and that CBD could act as a protective agent against dependency.[26] It could also, according to work carried out by Crippa et al, reduce symptoms of cannabis withdrawal.[27]

CBD appears, both from academic research and consumer anecdotes, to reduce the problematic side effects of THC and create a more balanced experience. The drug itself is used in isolation to reduce anxiety and improve people's psychological wellbeing around the world. We need to understand cannabis as a drug that can take many forms, some more harmful than others. The evidence suggests that CBD could be key in reducing this harm. The illicit cannabis market has no obligation to care for the health or wellbeing of its consumers and provides them with no choice.

3. Cannabis and Young People

Due to the way in which brains develop and grow, young people could be at an increased risk of the harmful side effects of cannabis. Research on young people's consumption of cannabis suggests that, the earlier the onset of cannabis consumption, the more likely they are to experience problematic effects.

Dragt et al in their study, 'Cannabis use and age at onset of symptoms in subjects at clinical high risk for psychosis', concluded that "younger age of onset of cannabis consumption is associated with earlier symptoms of anxiety, social withdrawal, derealization, memory impairment, and difficulties in concentration, with effects being more pronounced in patients with heavier cannabis use". [28]

As the brain is growing, regular cannabis consumption impairs its development and maturation. [29] The result of this could be that the young person is more susceptible to a mental health problem and issues with cognition. Research carried out by the Centre for Brain Health at Texas University found that earlier consumption of cannabis results in slower brain development in the prefrontal cortex, which is responsible for judgment, reasoning and complex thinking. [30] Interestingly, those who began consuming cannabis after the age of 16 experienced the opposite effect, in that their brains showed signs of accelerated ageing.

Research carried out by the University of Montreal supports this by showing that young people consuming cannabis before the age of 17 experience brain impairment in the areas of verbal IQ and specific cognitive related activities, all of which occur in the frontal cortex. [31] In the study, participants who smoked cannabis before turning 14 performed worse by 20 points on cognitive tests and were more likely to drop out of school earlier. [32] The research noted that underperformance in verbal abilities might actually be due to the social implications rather than neurological effects.

It is important to understand this 'window of vulnerability' both socially and biologically. The research outlined above highlights how cannabis can impair brain development in young people, but the social factors and lifestyle choices it results in can also play a key role. Young people who are consuming cannabis are less likely to engage in systems of education and, as Castellanos Ryan states, this results in reduced opportunities to develop. The lifestyle that comes with consuming substances from an early age limits educational growth via reduced engagement in school, with young people then becoming isolated from opportunities for development.

Those who work on the frontline of drug treatment also find this same link.

Young people are at an increased risk from smoking cannabis, both biologically and socially. There appears to be an evidence base to suggest early consumption of cannabis is detrimental to the brain, and that the lifestyle choice that comes with cannabis results in decreased opportunities to develop. While this relationship is complex and young people who are socially disengaged may be more likely to consume illicit drugs [34], cannabis is clearly not increasing their chances or potential for growth. The research highlighted in this report suggests that the most vulnerable age group of cannabis smokers are those under the age of 20 who should still be engaged in systems of education. [35] Young people in the UK currently have easy access to a strain of cannabis which appears to carry the highest risk.

"In the early onset group, we found that how many times an individual uses and the amount of marijuana used strongly relates to the degree to which brain development does not follow the normal pruning pattern. The effects observed were above and beyond effects related to alcohol use and age. These findings are in line with the current literature that suggest that cannabis use during adolescence can have long-term consequences."

— Francesca Filey,
lead researcher

"The results of this study suggest that the effects of cannabis use on verbal intelligence are explained not by neurotoxic effects on the brain, but rather by a possible social mechanism. Adolescents who use cannabis are less likely to attend school and graduate, which may then have an impact on the opportunities to further develop verbal intelligence."

— Castellanos Ryan,
lead researcher [33]

"The kids I have worked with in school who smoke loads of cannabis nearly always struggle to engage in education. They become less interested, can't really be bothered with the lessons and say that the work is becoming too hard. Eventually it becomes a vicious cycle in which they just can't keep up with the work and don't believe i n themselves anymore."

— Becky,
young people's substance misuse worker,
North Yorkshire.

Summary

In this chapter, we have shown how three key risk factors are present in the use of street cannabis in the UK. The evidence indicates that cannabis containing little to no CBD presents the highest risk, and is more likely to induce the problematic side effects of THC. CBD seems to provide an element of protection, without compromising the pleasurable effects of THC. While further research does need to be done on CBD, the evidence and experience cited from consumers indicates its protective nature should be taken very seriously. The illicit market is not focused on the health and wellbeing of the consumer and the consequences of this are deeply problematic.

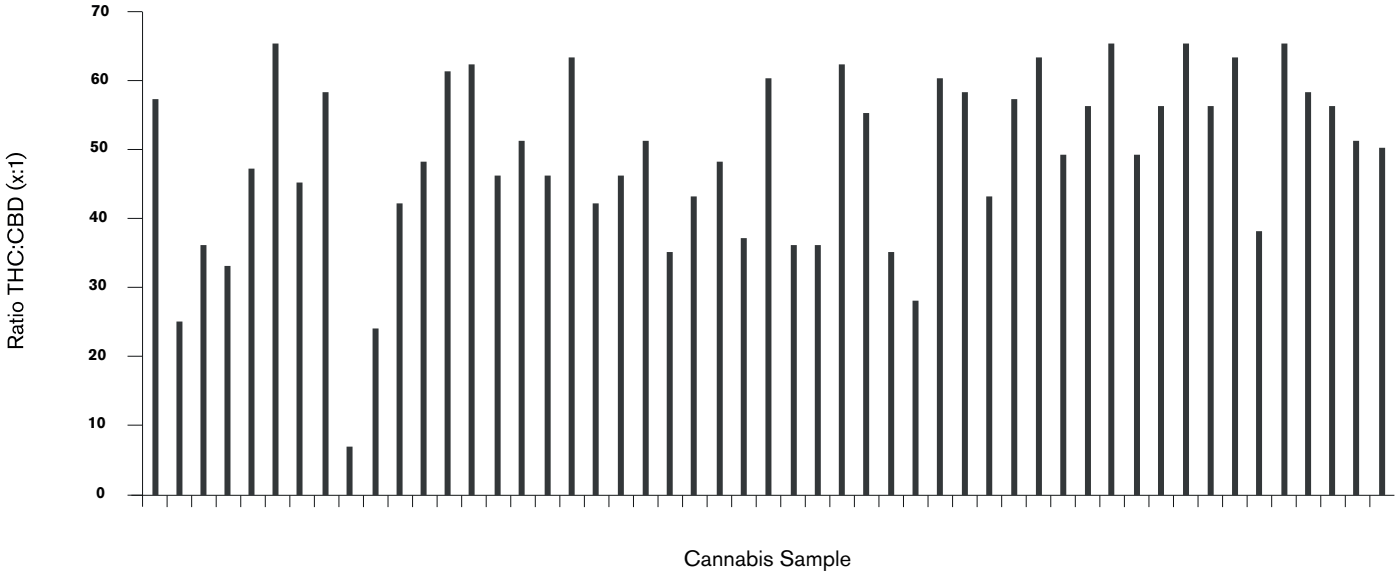
Chapter 3
The Current Picture

A multitude of factors paint a complex and problematic picture with regards to cannabis and mental health in the UK. Not only are treatment and mental health services experiencing an increased demand from cannabis consumers, but funding has been significantly reduced. There is also a severe lack of awareness and policy solutions on this issue in either the latest drug strategy or mental health policy. No clear plan exists to eliminate the illicit cannabis market and police forces are de-prioritising this issue across the country; enforcement continues to fail.

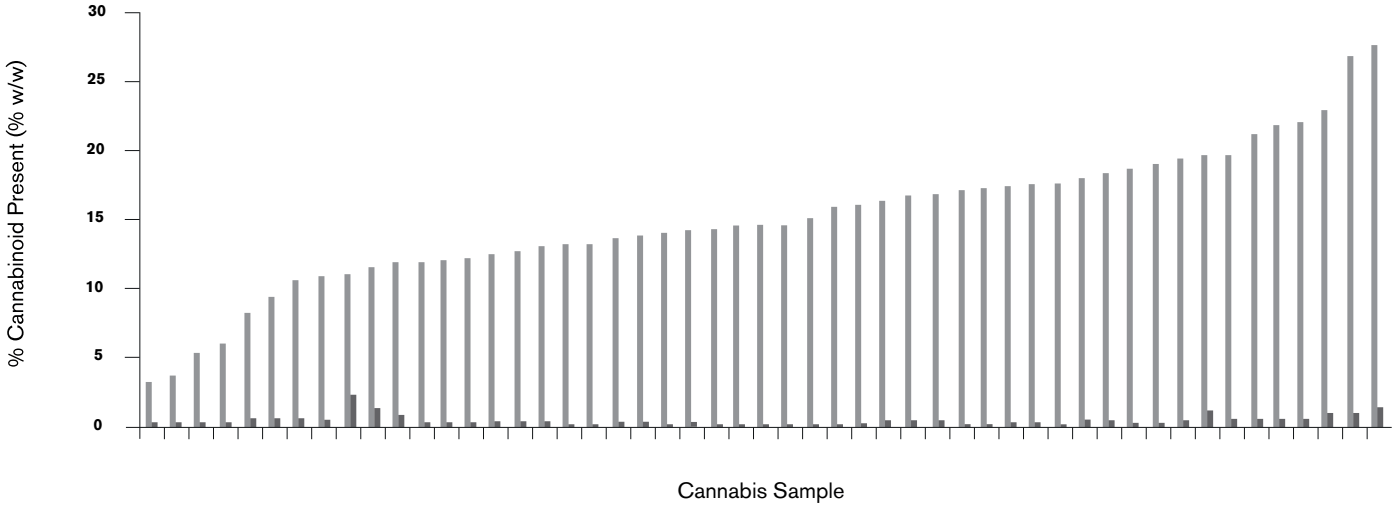
This failure of policy and ongoing erosion of services is taking place at a time when street cannabis is more potent, dominates the UK market more than ever before, and is exceptionally easy for many young people to access.

The Weed on our Streets
Volteface, in partnership with Dr Oliver Sutcliffe of Manchester Metropolitan University, tested the THC and CBD levels of fifty samples of cannabis flower seized by Greater Manchester Police. This data provides an up-to-date snapshot of the content and variation of street cannabis in the UK today.

Content (%w/w) of THC and CBD in Cannabis Samples



Ratio of THC:CBD in Cannabis Samples



Key results

- The mean THC content was 14.7% w/w and ranged from 3.37 - 27.6% w/w.
- 90% samples contained THC contents greater than 10% w/w; 14% samples contained THC contents greater than 20% w/w.
- The mean CBD content was 0.38% w/w and ranged from 0.06 - 1.50% w/w.
- Only one sample contained a THC content greater than 1% w/w CBD.
- The THC:CBD ratio in 49 of the 50 samples tested ranged from 24:1 - 65:1.
- The mean THC:CBD ratio was 48:1, the median was 49:1.
- Only one sample displayed a THC:CBD ratio of less than 24:1. This sample was an outlier, with a THC:CBD ratio of 7:1.

The samples tested in our study are in agreement with the existing literature on the subject, and reinforce our knowledge that the THC content of street cannabis is high in the vast majority of cases, while the CBD content in almost all cases is negligible.[36,37,38,39] While greater variation in THC and CBD contents and ratios may be more common among cannabis that is home-grown or ordered online by enthusiasts, it is evident that street cannabis shows very little variation, being almost exclusively high in THC and markedly low in CBD.

Caveats exist around the data. Only cannabis flower was analysed, with resin and cannabis extracts excluded. Samples were taken from the Greater Manchester area only so are not a perfect representation of the content of the street cannabis market nationally. Samples were the result of police seizures, which is not a perfectly representative sampling method.

However, as an indication of the cannabis that is being consumed by the majority of people, the results are highly revealing.

High THC, low CBD cannabis dominates the UK's illicit market as it has a rapid growth period up to maturity and can be grown indoors. This enables those selling cannabis to make the greatest profit and presents the lowest risk. While popularity of this product is undoubtedly high, this may well be due to the fact that no other product is easily available and consumers have neither the access to nor the experience of any alternative.

The result of the increasing potency and market dominance of street cannabis may be having a direct impact on the number of drug treatment presentations in the UK.

Increased Treatment Presentations

In the past ten years, there has been a 64% increase in the number of individuals who have accessed drug treatment services for their cannabis consumption in the UK - with 31,129 adults seeking support in 2016.[40,41] This increase in presentations is taking place at the same time as a steadily declining population of cannabis consumers in the UK.[42] Despite the reducing number of consumers, cannabis now accounts for 26% of all drug treatment [43] presentations, and is the fastest growing drug-consuming cohort in treatment. In young people's drug treatment services, 87% of service users reported consuming cannabis.[44]

Frontline treatment workers are noticing this increase in cannabis referrals and finding that those heavily dependent on the drug also experience mental health issues:

"A lot more cannabis users coming into treatment, mainly social services referrals e.g. parents. Lots of young people coming in for cannabis problems including addiction, saying it's taking over their life, can't do anything, smoke non-stop, agoraphobic, psychotic effects."[45]

"Big rise in cannabis users accessing services that are more usually accessed by opiate users. All for Skunk. Almost all presentations have mental health issues. They see our cannabis group, consultant psychiatrist, one-to-one key work for issues around dependence, exacerbating mental health problem, onset of anxiety."[47]

"Young people are now committing more serious crimes and more crime to buy cannabis. Before they would be stealing money off parents or doing a bit of social dealing on the side, now they are shoplifting and doing home burglaries. Why? Because there are a lot younger dependent cannabis users."[48]

"80% of our clients are here for Skunk problems. People sorting out their own grows in spare rooms, buying seeds and hydroponics over the web from Barney's Farm online. Their favourite blend is Amnesia 'Ammy'. Impact on their mental health, hearing voices and hallucinations. Cannabis sometimes used as way of getting kids involved in crime. One boy was given £3,000 worth of driving lessons he thought through kindness from a friend and the elder who then told him he owed money and threw him a bag of weed and said start selling that."[49]

As our own study indicates, the vast majority of street cannabis now contains high THC levels and very little CBD to mitigate its problematic effects. This trend appears to be having a direct impact on the number of people who present for help in drug treatment, a subject examined in depth by McCulloch in 'Why did cannabis presentations rise in England between 2004/5 and 2013/14?'

Despite this growing number of consumers accessing treatment, as our previous report 'Black Sheep' outlined, this is just the tip of the iceberg and accounts for 14.6% of those who show signs of cannabis dependence and problematic use.[50]

Funding cuts with no clear plan

In the past few years, drug treatment services have experienced severe cuts to their budgets, with some areas set to lose up to 50% of their funding.[51] The Government's latest drug strategy does not provide any clear guidance or solutions to this issue. There is an increased demand on services to meet the growing number of cannabis users accessing them, alongside other pressures - but no clear action plan or incentives are in place for such a need to be addressed. With budgets being stretched even further and targets still focused heavily on opiate users, vast numbers of problematic cannabis users are being missed.

Treatment services not only need more funding, but they require the Government to recognise that street cannabis is an escalating problem in the UK. Regulation of cannabis would not only help provide this funding, but it would create opportunities where treatment services could work innovatively with licensed premises selling cannabis.

"The main thing we are measured on in treatment are the number of opiate users who we successfully discharge. While users of other drugs are important the reality is that sometimes resources are tight as the opiate cohort are quite hard to deal with in terms of time, and they are the ones we need to get out to meet the targets"

— Anonymous drug treatment lead worker

Increased hospital admissions for drug-related psychosis

Hospital psychiatric units have also experienced an increasing number of cannabis presentations over the past ten years. In 2015/16, there were 1606 admissions to hospital psychiatric units for cannabis-related mental health or behavioural problems - a 22% increase compared to 2014/15 and more than double the level since 2006/07.[52] Just like the increasing number of presentations at drug services, this is taking place at a time when there is:

- An overall decrease in the number of drug consumers in the UK, including cannabis consumers
- An increase in the level of THC found in street cannabis
- A reduction in the level of CBD found in street cannabis

The reduction in overall consumption should, in theory, result in a decrease in admissions. However, this is clearly not taking place and street cannabis could be playing a significant role. Research carried out by Patel et al found that, in the UK, 46.3% of first episode psychosis admissions had documented consumption of cannabis and, in terms of their demographic, were mainly male, single and between the ages of 16-25[53]. Far more men were also admitted to hospital psychiatric units for drug-related mental health problems - 70% male compared to 30% female.[54] This data also matches the far higher percentage of male cannabis consumers, who are twice as likely to smoke cannabis than females.[55] This disparity could, however, be due to women avoiding treatment contact and having different needs. The report 'Mapping the Maze' highlights how many women avoid treatment services completely and that they are not suited to deal with their needs.[56]

The study also found that patients who had documented consumption of cannabis had far higher rates of readmission, spent more time in hospital when admitted, and had increased likelihood of compulsory admission.[57] The research also concluded that there were poorer clinical outcomes within the cannabis-consuming cohort, which could indicate cannabis preventing the effectiveness of prescribed anti-psychotic medication.[58] As with drug treatment, when speaking to frontline staff, this same increase is observed.

"The majority of people being admitted for drug-related mental health problems in my experience have cannabis-induced psychosis… We see people who have been smoking cannabis on a regular basis for years, but who've been destabilised after going onto smoking Skunk. It's like someone drinking four pints of lager a day and then suddenly switching to triple strength lager. It's going to trip you up."

— Dr Derek Tracy,
consultant psychiatrist[59]

Our research, along with other studies, shows a dramatic reduction in the CBD content of street cannabis, which could be contributing to the increase in hospital admission for psychosis.[60]

Admissions for psychosis are the tip of the iceberg when it comes to problems related to cannabis. If we are seeing an increasing number at this tip, it is likely that increasing numbers of cannabis consumers are experiencing problems further down the spectrum. The increase of cannabis presentations in drug treatment suggests that this is the case, as do the statements from those who work in such services who see consumers presenting with mental health problems.

As drug treatment services see only 14.6% of those who show signs of dependency on cannabis, most consumers who are experiencing a problematic relationship are not getting professional support and are relatively unknown when it comes to research or data[61]. With 31,819 cannabis consumers in treatment, this accounts for around 190,000 individuals who are consuming cannabis problematically but not accessing treatment.[62] With so many dependent consumers not seeking support, we can only speculate as to the number who experience problematic mental health conditions, but do not access services. With the majority of problematic consumers not getting support, the true scale of this problem is unknown.

Young people access cannabis more easily than alcohol

We carried out a survey and a focus group with teenagers from London to find out how easy it is for young people to buy cannabis in the UK. Our findings suggest that young people felt it is far easier for them to access cannabis than alcohol. From our national survey of those aged 13-18, 44% of respondents said it was 'extremely easy' for them to get cannabis for free or to find a dealer or a friend who would sell it, while just 23% said the same was true for alcohol. This supports anecdotal comments from the frontline, although further research is required to substantiate.

The focus group also provided similar feedback and even laughed when asked how easy it was for them to buy cannabis:

"When I asked how easy it was for them to get cannabis, they literally laughed in my face."
— workshop facilitator

"When we're walking to school, people come up and ask if we want to buy weed."
— Tereke, 16

"If you've got the money, you can get cannabis, no problem."
— Harry, 17

"Knock on a door."
— Tereke, 16

The young people also showed an awareness around the quality and type of weed they were buying. When asked in the focus group, respondents said that they smoked 'Skunk' not 'weed', and knew that it contained a lot of THC. The focus group felt that it was the only type of cannabis that they could buy and knew it was not the safest, but had little other choice:

"We don't smoke weed, we smoke skunk."
— Nubiyah, 16

"But skunk is more available."
— Billy, 16

"I don't even think it's that great, but it's all you can get, there's just bare THC in it."
— Harry, 17

Our results suggest that cannabis is easier for young people to procure than alcohol and that, despite knowing street cannabis is typically high in THC and not a preferable experience, they would still rather buy it as nothing else is available. Although some studies have suggested that high potency cannabis is the preferred option [63], this may be due to a lack of consumer choice and branding of products.

With regards to the prevalence of use, data from the NHS shows that young people are more likely to take cannabis than any other drug, and that 26% of 15-year-olds have been offered it, with 10% going on to try it. [64] Out of those who had tried cannabis, 43% had done so in the last month and 20% of 15-year-olds thought it was okay for them to do so. [65] In total, 6.7% of pupils from the ages of 11-15 stated that they had taken cannabis in the last year, making it three times more popular than the entire category of stimulant drugs. [66] This data, alongside statistics from drug treatment and our own research, suggests that cannabis is the drug of choice among young people.

Young people should not be able to access a Class B drug more easily than they do alcohol. However, despite the illegality of the market, it is impossible to effectively police and the availability of cannabis is exceptionally high. Street cannabis is typically grown indoors in a comparatively short space of time, which means that the market in the UK is saturated with high THC, low CBD cannabis, sold directly to young people up and down the UK. With the market in the hands of criminals, the priority is on making a profit, with no recourse to effective regulation. The strains that are grown are chosen to maximise profit, which due to the market's illegality, means higher strength strains, as any other tools for creating market advantages are unavailable. This does not take into consideration any of the product's harmful effects. While an illegal market continues to exist, young people will remain exposed to street cannabis from an early age, which the existing research on brain development and growth suggests is highly problematic. A regulated market could effectively prevent this problem by reducing the ability of young people to procure cannabis. Even if young people managed to obtain cannabis in a regulated market, effective regulation could ensure high THC, low CBD strains were not commonplace or as readily available.

The issues of access are also compounded by the way in which the police are inconsistently dealing with cannabis in the UK. This is creating a confusing message for young people, the implications of which we will now highlight.

Inconsistencies breed confusion

Since 2010, cannabis arrests in the UK have fallen by almost 50%, cautions for possession by 48% and the total number of people charged by 33%.[67] These reductions have taken place alongside a vast increase in the number of presentations at psychiatric units for drug-induced mental health problems and a rise in the number of people accessing drug treatment for cannabis. Our research showed that 76% of young people were worried about getting into trouble with the police when procuring cannabis. However, with police forces struggling to manage the issue, and many areas of the country relaxing their approach, young people should be less concerned about the criminal implications of procurement and consumption.

The police are even less able to effectively tackle the illicit cannabis market in the face of severe budget cuts, with police spending having been reduced by 25% by the Government in the past decade.[68]

Across the UK, police forces have taken contrasting approaches to managing cannabis. Between 2010-2015, Hampshire police charged or gave a court summons to 65% of those caught in possession of cannabis. During the same period, just 14% were charged in Cambridge, while Staffordshire, Hertfordshire, Cornwall and Devon all reported 16%.[69] The inconsistency continues in Durham, where its elected Police and Crime Commissioner Ron Hogg has announced that those growing cannabis for personal consumption are not a priority and that, in low-level cases, it is better to help the individual to recover than punish.[70] While the approach taken in Durham could be seen as both progressive and logical, it highlights the vast inconsistencies that exist across the UK. The result of this is that young people are not given a consistent message about cannabis and the chance of prosecution for possession is a postcode lottery.

Police enforcement of cannabis is not working. Many young people are not deterred and the street cannabis market is making vast sums of money, most of which funds criminal gangs. As enforcement is no longer prioritised, police forces are creating their own models of decriminalisation. The Government needs to address this and create a system that provides regulation and control, so money can be diverted out of the hands of criminals and the police can focus on a much smaller illicit market.

Summary

This chapter has highlighted the current state of street cannabis in the UK, both in terms of its content and the experiences of treatment services, which are experiencing an apparent increase in its problematic use. There are an estimated 190,000 problematic cannabis users who are not in treatment and there is growing evidence from hospital admissions that street cannabis is having a negative impact on the mental health of some consumers. While it is still a minority of consumers who experience a mental health issue that might warrant hospital admission, these people represent the tip of an iceberg of cannabis consumers who are experiencing low level problems further down the spectrum of these mental health conditions.

Part of the problem when exploring cannabis and mental health is that the debate has become so focused on psychosis that we are losing sight of the bigger picture. This is something worth exploring in more detail and will help to further inform the debate.

Chapter 4
Taking Control

The illicit cannabis trade has created a market which is focused primarily on profit, not on the health and wellbeing of its consumers, with no regulation to keep this in check. Not just in the UK, but around the globe, governments have attempted to address this problem through police enforcement and punitive measures. While the focus of this report is not to assess or review these approaches, it must be recognised that change is taking place when it comes to drug policy. Alternative systems are being implemented which provide solutions to the problems highlighted in this report.

The difference between a criminal, unregulated market and a legal, regulated one is not in the incentive to create profit, but the way in which government can implement effective controls over the sale of its products. The illicit market is unmanageable and, regardless of the attempts to clamp down on it, it continues to flourish. A regulated market can be changed and controlled by government - and, in the UK, we have a track record of doing so with alcohol and tobacco.

The cannabis market does not have to be in the grip of criminal gangs. It can be regulated, controlled and managed appropriately. The UK can provide a model where those who wish to use cannabis are given the information and support to do so safely. Money can be diverted away from crime and into the economy, where it can be used to support those who develop problematic use.

Finding a Balance

As we have explored, young people are at an increased risk of harm from consuming cannabis. Any proposals therefore need to have the interests of young people at their heart and work to best restrict access. At the same time, it is vital to move the market out of the hands of organised crime.

Finding a solution with these two goals in mind creates some tension. A system seeking to prevent access to young people requires many safeguards and controls, such as age limits, pricing strategies to discourage consumption, limits on promotion and advertisement. On the other hand, a model focused on displacing the illicit cannabis market requires the creation of a legal market that can effectively eradicate it. Excessive restrictions could therefore easily lead to the formulation of another illicit market.

The key is finding a balance where young people are adequately safeguarded with sensible restrictions on access and promotion, within a regulated market that can compete with the illicit trade.

There should also be a balance when it comes to the choice of cannabis given to consumers. This report has raised concerns regarding strains high in THC and low in CBD, but many consumers may still wish to consume strains of such a nature, regardless of any risk. In a regulated market, health advice and information could be provided at the point of sale, allowing consumers to make informed choices. Should there be a demand for high THC cannabis, it may be that within a regulated model such strains are sold alongside adequate health warnings. This would ensure that the illicit market does not re-establish itself and that consumers act within a safer, monitored market that does not fund criminal enterprise.

Harm-Based Taxation

There are many options available to tax cannabis and the most suitable method of doing so is likely to depend on the circumstances of the country in which regulation is being considered. One option would be that of a Pigouvian tax system, designed to cover the harms caused by the selling of cannabis through tax. To implement a Pigouvian tax system, the overall social cost of consuming cannabis would be calculated and then the product taxed to ensure that enough money is provided to mitigate against its harms. This method of taxation could be used to ensure

cannabis with high levels of THC and low levels of CBD are taxed higher than more balanced strains. This would work in the same way as alcohol taxation does in the UK, where drinks containing a higher ethanol content are more heavily taxed.

This kind of system would not only provide a means to fund treatment services, but also encourage manufacturers of cannabis to produce balanced strains. This in turn would encourage consumers to also try more balanced strains rather than sticking solely to high potency cannabis. It would also allow cannabis with higher levels of THC to continue to be produced, although it is likely that such a product would not exist in vast quantities due to the increased cost to the consumer through taxation.

A Minimum Age of Purchase

The evidence presented in this report shows how young people should be safeguarded against easy access to cannabis (particularly street cannabis) due to the associated health risks and current ease of access that exists. Protecting young people from the adverse effects of street cannabis is a priority and setting a minimum age for purchase is therefore a crucial issue.

It is important to acknowledge that age restrictions alone are unlikely to prevent young people from using cannabis and would need to be complemented with preventative measures such as improved access to drug education and restrictions on advertising in order to be effective.

Making a decision about age restrictions would require a careful balance of considerations. Setting the minimum age too high might result in the criminal market for cannabis continuing to thrive, but setting it too low could mean that young people are permitted to consume cannabis before their neurological development has stabilised. However, marking out cannabis consumption as an activity that is only for adults, able to make informed, responsible decisions, would be a very positive step to reduce harm.

In Canada, where a regulated cannabis market is being established, the minimum age of purchase has been set at 18, although the task force advising the Government on regulation has recognised the importance of robust measures regarding both advertisement and education.

"To mitigate harms between the ages of 18 and 25, a period of continued brain development, governments should do all that they can to discourage and delay cannabis use. Robust preventive measures, including advertising restrictions and public education... are seen as key to discouraging use by this age group"

— A Framework for the legalisation and regulation of cannabis in Canada [71]

The UK could follow the same guidance and ensure that preventative measures are in place to mitigate the harm to this group. The minimum age requirement could also be flexible, based upon the emergence of new evidence and understanding in the area of cannabis and its impact on young people's brains.

Prevention and Education

It is essential that preventative work is undertaken alongside a regulated market to educate and inform young people of the detrimental effects of cannabis use, particularly on brain development, mental health, social integration and educational achievement. The Government's latest drug strategy recognises the importance of effective preventative work and calls for more evidence-based work to be undertaken in education. The key issue in meeting this call for action is one of funding and resource. However, with a regulated cannabis market in place, tax collected by the Government could easily support evidence-based education [72] programmes, to build resilience among young people and help to prevent problematic use.

Regulation also increases the opportunity for treatment services to engage with consumers of cannabis. Our 'Black Sheep' report highlighted

how most problematic cannabis users are not engaged with treatment services and that the challenges of doing so in an illicit market are complex[73]. If cannabis were to be sold in a regulated market, treatment services could develop relationships with shops selling the drug to establish referral pathways and promote non-problematic patterns of use in the community. Treatment services could facilitate drop-ins, provide promotional material and engage with the community far more easily than they do at present.

Having additional funding through a Pigouvian tax system could also allow specific services to be established, aimed at engaging problematic cannabis users. At the moment, the majority of cannabis users are not accessing treatment, which suggests that more innovation is required from treatment services to effectively support this cohort.

Strict Control on Promotion and Packaging

It is important to recognise that promotional work and advertising could have a detrimental effect on the efforts of youth drug education and prevention. Irresponsible advertising and promotion could present a mixed message to young people and lead to an increased desire to use, as well as more problematic use in both young people and adults.

To guard against this, advertisement restrictions similar to those outlined in the Tobacco Advertising and Promotion Act 2002 would ensure that promotion is only available at the point of sale, in places where under-18s are not permitted entry.

There is a debate amongst regulators and the public health community around the extent to which branding should be permitted. A branded product certainly create healthy competition and a high quality of product, but could become irresponsible in its attraction of young people if not sufficiently restricted. The answer appears to lie in responsible and regulated branding, allowing the formulation of brands, but not to the point where branding is irresponsible.

Reduced Demand

While the demand to smoke cannabis by young people in the UK will no doubt still exist, regulation opens up the opportunity for more effective policy to reduce the number of young people consuming cannabis. With an effective, regulated market in place there will be little need for an illicit cannabis market, and the availability and ease of access for young people could therefore significantly diminish. With such a reduced illicit market in place, enforcement agencies would find the task of policing it far easier, saving time, resources and money. This in turn would reduce the ease by which young people could access street cannabis.

As the illicit market reduces in favour of a regulated one, the type of cannabis that young people might be able to procure would change in nature. Street cannabis is grown to meet the needs of the illicit market and therefore contains exceptionally high THC and little CBD. As a regulated market with a variety of strains becomes available, those who do procure the drug illegally via the regulated market are far more likely to access less harmful strains of cannabis. Many of the young people we spoke to for this report said that they only consume strains with high levels of THC and low CBD because it is all that they can get.

By removing the illicit market, even those who do manage to illegally access cannabis not only have a choice on the strain (as many young people do procuring alcohol illegally), but they would be in most cases consuming cannabis that has far fewer risks associated with it.

Reform provides solutions

Policy reform can address the issues highlighted in this report. We do not have to continue to allow the illicit market to make billions of pounds in profit for criminal gangs and fill the market with harmful strains of cannabis that are impacting

negatively on the mental health of consumers. We can take control by eliminating the illicit market, prioritising public health and by giving consumers greater choice in the procurement of cannabis. By providing choice, regulation would cut down on the use of more problematic strains which evidence shows are more likely to lead to addiction.

As the procurement of cannabis is currently a lottery and no evidence exists that enforcement can work, the only sensible solution is to follow other countries around the world and create a safer, regulated legal market.

The Cost of doing nothing

There is a need for a new debate and dialogue around cannabis in this country. While the evidence on the impact of THC on consumers' mental health continues to emerge and be discussed, those who appear to be most at risk have ubiquitous access to highly potent cannabis. Rather than waiting for the debate to continue indefinitely and years of further academic research to come to light, we should take steps now to protect consumers' mental health and address the issues raised in this report as a priority.

References

1. Hardwick, S. King, LA. "Home Office cannabis potency study 2008" St. Albans: Home Office Scientific Development Branch, 2008.

2. Gelder, J. Price, J. "Psychiatry, Fourth Edition" New York: Oxford University Press 2012.

3. http://www.mirror.co.uk/news/politics/theresa-refuses-consider-legalising-cannabis-10428612

4. https://paulkirby.net/author/paul1kirby/

5. https://ontario.cmha.ca/documents/connection-between-mental-and-physical-health/

6. Saha, P. Bhalla, K. Whayne, T. Gairola, CG. "Cigarette smoke and adverse health effects: An overview of research trends and future needs" Pubmed. 2007.

7. Barnes, M. "Cannabis: The evidence for medicinal use" 2016

8. Zinberg, N. "Drug, Set, and Setting: The Basis for Controlled Intoxicant Use" Yale University Press.1986

9. Eastwood, N. Shiner, M. Bear, D. "The Numbers in Black And White: Ethnic Disparities In The Policing And Prosecution Of Drug Offences In England And Wales" Release. 2007

10. Krohn, M. Lane, J. "The Handbook of Juvenile Delinquency and Juvenile Justice" Wiley. 2015

11. Di Forti, M. Marconi, A. Carra, E. Fraietta, S. Trotta, A. Bonomo, M. Bianconi, F. Gardner-Sood, P. O'Connor, J. Russo, M. Stilo, S. Marques, T. Mondelli, V. Dazzan, P. Pariante, C. David, A. Gaughran, F. Atakan, Z. Iyegbe, C. Powell, J. Morgan, C. Lynskey, M. Murray, R. "Proportion of patients in south London with first-episode psychosis attributable to use of high potency cannabis: a case control study" Lancet Psychiatry. 2015.

12. D'Souza, DC. Perry, E. MacDougall, L. The psychotomimetic effects of intravenous delta-9-tetrahydrocannabinol in healthy individuals: implications for psychosis. Neuropsychopharmacology. 2004; 29: 1558–72.

13. Englund, A. Freeman, T. Murray, R. McGuire, P. "Can we make Cannabis safer?" Lancet Psychiatry. 2017.

14. Ibid

15. Karniol, IG. Shirakawa, I. Kasinsk, N. Pfeferman, A. Carlini, E. "Cannabidiol interferes with the effects of delta 9 - tetrahydrocannabinol in man" Pharmacol. 1974; 28: 172–77.

16. Morgan, CJ. Curran,HV. "Effects of cannabidiol on schizophrenia-like symptoms in people who use cannabis" Br J Psychiatry. 2008; 192: 306–07.

17. Englund, A. Freeman, T. Murray, R. McGuire, P. "Can we make Cannabis safer?" Lancet Psychiatry. 2017.

18. Niesink, RJ. Van Laar, MW. "Does cannabidiol protect against adverse psychological effects of THC?" Front Psychiatry. 2013.

19. Curran, HV. Freeman, TP. Mokrysz, C. Lewis, DA. Morgan, CJ. Parsons, LH. "Keep off the grass? Cannabis, cognition and addiction" Nature reviews Neuroscience. 2016.

20. Ibid

21. Ibid

22. American Psychiatric Association. "Diagnostic and Statistical Manual of Mental Disorders 5th edition" American Psychiatric Publishing. 2013

23. Freeman, TP. Winstock, AR. "Examining the profile of high-potency cannabis and its association with severity of cannabis dependence" Psychological Medicine. 2015.

24. Ibid

25. Curran, HV. Freeman, TP. Mokrysz, C. Lewis, DA. Morgan, CJ. Parsons, LH. "Keep off the grass? Cannabis, cognition and addiction" Nature reviews Neuroscience. 2016.

26. Morgan, CJ. Freeman, TP. Schafer, G. Curran, HV. "Cannabidiol attenuates the appetitive effects of Δ9-tetrahydrocannabinol in humans smoking their chosen cannabis" Neuropsychopharmacology 35, 1879–1885. 2010.

27. Crippa J, Hallak J, Machado-de-Sousa J, Queiroz R, Bergamaschi M, Chagas M, Zuardi A. "Cannabidiol for the treatment of cannabis withdrawal syndrome: a case report" Journal of Clinical Pharmacy and Therapeutics. 2012

28. Radhakrishnan, R. Wilkinson, S. D'Souza, D. "Gone to pot – a review of the association between cannabis use and psychosis" Frontier in psychiatry. 2014.

29. Ibid

30. Fibley, FM. McQueeny, T. DeWitt, SJ. Virendra, M. "Preliminary findings demonstrating latent effects of early adolescent marijuana use onset on cortical architecture" Developmental Cognitive Neuroscience. Volume 16. 2015. Pages 16-22.

31. Castellanos-Ryan, N. Pingault, JP. Parent, S. Vitaro, F. Tremblay, RE. Séguin, JR. "Adolescent cannabis use, change in neurocognitive function, and high-school graduation: A longitudinal study from early adolescence to young adulthood" Development and Psychopathology, 201. 2016.

32. Ibid

33. https://www.sciencedaily.com/releases/2017/01/170125214606.htm

34. Tarter, RE. Vanyukov, M. Kirisci, L. Reynolds, M. Clark, D. "Predictors of Marijuana Use in Adolescents Before and After Licit Drug Use: Examination of the Gateway Hypothesis" American Journal of Psychiatry, Vol. 63, No. 12. 2006.

35. Fibley, FM. McQueeny, T. DeWitt, SJ. Virendra, M. "Preliminary findings demonstrating latent effects of early adolescent marijuana use onset on cortical architecture" Developmental Cognitive Neuroscience. Volume 16. 2015. Pages 16-22.

36. Hardwick, S. King, SA. "Home Office Cannabis potency study 2008" St Albans: Home Office Scientific Development Branch. 2008

37. "United Nations Office on Drugs and Crime. World Drug Report 2015" New York: United Nations. 2015.

38. Pijlman, FT. Rigter, SM. Hoek, Jl. "Strong increase in total delta-THC in cannabis preparations sold in Dutch coffee shops" Addiction Biology. 2005.10:171-80.

39. Potter, DJ. "A review of the cultivation and processing of cannabis (Cannabis sativa L.) for production of prescription medicines in the UK" Drug Test Analysis. 2014; 6: 31-8.

40. "European Drug Monitoring Centre for Drugs and Addiction, United Kingdom drug report 2017"

41. Monaghan, M. Hamilton, I. Lloyd, C. Paton,K. "Cannabis matters? Treatment responses to increasing cannabis presentations in addiction services in England" Drugs: Education, Prevention and Policy; 23,1,54-61. 2016

42. "British Crime Survey" 2016

43. "United Kingdom Drug Report" European Drug Monitoring Centre for Drugs and Addiction. United Kingdom drug report 2017.

44. "Statistics on drug misuse" NHS England. 2017.

45. Sharpio, H. Daly, M. "Highways and Buyways: A snapshot of UK drug scenes" Drugwise. 2016

46. Ibid

47. Ibid

48. Ibid

49. McCulloch, E. "Why did cannabis treatment presentations rise in England from 2004/05 to 2013/14?" Drug and Alcohol Today. 17(4). 2017

50. McCulloch, E. "Black Sheep" Volteface. 2017

51. http://blogs.bmj.com/bmj/2017/05/25/colin-drummond-cuts-to-addiction-services-in-england-are-a-false-economy/

52. "Statistics on drug misuse, England" NHS. 2017.

53. Patel, R. Wilson, R. Jackson, R. Ball, M. Shetty, H. Broadbent, M. Stewart, R. McGuire, P. Bhattacharyya, S. "Association of cannabis use with hospital admission and antipsychotic treatment failure in first episode psychosis: an observational study" British Medical Journal. 2016

54. Ibid

55. Ibid

56. Holly, J. "Mapping the Maze: Services for women experiencing multiple disadvantage in England and Wales" London: Agenda & AVA. 2017

57. Ibid

58. Ibid

59. https://www.vice.com/en_uk/article/ez8v4e/why-the-government-is-directly-responsible-for-the-rise-of-drug-related-mental-health-issues

60. Zuardi, A. Crippa, J. Hallak, J. Bhattacharyya, S. Atakan, Z. Martin-Santos, R. McGuire, P. Guimaraes, F. “A Critical Review of the Antipsychotic Effects of Cannabidiol: 30 Years of a Translational Investigation” Current Pharmaceutical Design. 2012.

61. McCulloch, E. “Black Sheep” Volteface. 2017

62. “Statistic on drug misuse” UK Government. England. 2016.

63. https://www.ncbi.nlm.nih.gov/pubmed/26213314

64. Statistics on drug misuse” UK Government. England. 2016.

65. Ibid

66. Ibid

67. “Drug Misuse: Findings from the 2014/15 Crime Survey for England and Wales” 2015

68. https://fullfact.org/crime/police-funding-england-and-wales/

69. http://www.independent.co.uk/news/uk/crime/cannabis-arrests-charges-fall-police-giving-up-drug-policy-uk-a7206036.html

70. Ibid

71. “A Framework for the legalization and regulation of Cannabis in Canada”. Canadian Task Force. 2016.

72. “Drug Strategy 2017” Home Office. 2017

73. McCulloch, E. “Black Sheep” Volteface. 2017

Acknowledgements

Ian Hamilton
Lecturer in Mental Health,
York University

Dr Marc Bush
Chief Policy Advisor at YoungMinds
and MD at The Experimentalists

Chris Snowdon
Head of Lifestyle Economics at the IEA,
author and journalist

Prun Bijral
Medical Director for CGL

Kadra Abdinasir
Policy Officer,
The Children's Society

Annette Dale-Perera
Consultant for United Nations
and ACMD

Chandni Hindocha
PHD Student,
UCL

Jonathan Liebling
Political Director,
United Patients Alliance

Ed Morrow
External Affairs Manager and Drugs Lead,
Royal Society for Public Health

Dr Robin Murray
Professor of Psychiatric Research,
Kings College London

Oliver Standing
Director of Policy and Communications

Max Daly
Author and Journalist

Volteface, 2017