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Cocaine and cannabis abuse in the UK: psychological effects, social prevalence and treatment

Abstract

Cocaine is amongst the most highly addictive drugs used worldwide and its expanding demand in the UK is causing it to become an increasingly, problematic drug.[1] Cannabis abuse is a large scale phenomenon and its growth and cultivation within the UK has developed greatly throughout the years.[2] Both cocaine and cannabis since their first use and identification, have both been found to have many different effects and long term risks to health, which is the reason for their illegality. This paper views aspects of their history and origin and their psychological effects on a user, both short-term and long-term. Using relevant statistics, this paper also considers how age, sex, environments and social situations can cause different levels of abuse of these drugs. A thorough understanding of the effects and prevalence of these two major illicit drugs, can allow treatment and prevention programmes to be constructed with a clearer understanding of their target groups.[3] This review pursues a conclusion on whether these programmes can be sufficient in not only reducing the abuse of these illicit drugs, but to also bring about social change and to prevent subsequent divesting effects including homelessness and suicide from occurring as frequently as they do today.

Keywords: cocaine and cannabis, psychological effects, prevalence, treatment and prevention, illicit drugs

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Introduction

The evolution of technology can be an analogy to the ever-expanding world of drugs and drug abuse. Technology used today is replaced by newer, more improved forms a few months later and the newest forms were never even heard of a hundred years ago.[3] Drugs pursue a similar path, as thousands of new drugs are readily becoming available to the public, legally and illegally. People take drugs for different reasons including medical purposes, recreational uses, as a coping mechanism for daily life pressures, anxiety or stress and others use them to imitate human desires and pleasures.[3]

The extensive information accessible to the public on the harmful effects of drug abuse, the laws prohibiting illegal taking of certain drugs and the future mental health issues that can a by-product of their misuse, doesn't seem to stop the many people today that continue to exploit these licit and illicit drugs.[3] A country's legal position in relation to a drug can influence a person's actions, as restrictions do not always take their desired effect, the excitement and risk of taking an illicit drug can be an influence, especially amongst the younger, inexperienced users.[4]

Substances that affect both the mind and the body are commonly known as drugs. Cocaine and cannabis are two very common forms and are precisely entitled 'psychoactive drugs' by professionals in that field. This term relates to how the substance affects the body, particularly on the CNS and how they can alter a person's mood, consciousness, perception and their behaviour.[3] Recognising addiction and abuse of drugs as a chronic, reoccurring brain disorder by repeatedly pursing a drug, can help the understanding of their impact on society's overall health.[3]

Stricter social policy strategies, addressing the current cocaine and cannabis abuse in the UK, can help diminish the health and social costs associated with it.[5] It is difficult to determine the exact use and prevalence of an illicit drug in comparison to a legal drug, due to the absence of regulation and the vast differences in purity and potency, depending on the level of dealing it is discovered.[6] Epidemiology surveys including MTF and NHSDA, proceed to ask members of the public about their illicit drug usage and for obvious reasons many people are usually unwilling to give this information up, thus not allowing for adequate detail or information when creating a representative sample for a population.[6] Treatment and prevention of drug abuse in the UK spans between school, family and youth programmes, to treatment services involving agents to help reduce the addictive effect of a drug and to help with cravings during abstinence syndrome during treatment.[7]

This paper explores the topics mentioned, and discusses the overall history, effects and prevalence surrounding the abuse of cocaine and cannabis in the UK. In addition to also considering current prevention and treatment programmes and evaluating their effectiveness using relevant literature.

Discussion

Psychological effects of drug abuse

Body systems are constantly changing to establish balance and equilibrium, for optimal functioning of all vital organs and systems throughout the body. Drugs can interfere with this balance and cause drug-induced disruption. For example, stimulants can dangerously increase the heart rate and blood pressure and cause a heart attack.

Cocaine is a psychoactive stimulant that can cause this affect.[8] CNS depressants however, can cause opposing affects, they can diminish brain activity resulting in unconsciousness and loss of breathing reflexes. Several drugs of abuse have the ability to exert actions that mimic the same neuronal circuits as natural reward pathways do throughout the body.[9] This is compatible with positive reinforcement and both drugs of abuse, as well as natural rewards like food and sex, that activate the mesolimbic dopaminergic pathway, causing reward positive conditioning in the body.[9,10] A systematic diagram of the reward mechanism is shown below.[9]

Tolerance and dependence are adaptive processes to aid the body in protecting against potential harm and disruption, caused by drug abuse. Tolerance occurs when a response to the same dose of drug decreases, with repeatedly, higher dosage. There are two main types of tolerance including drug disposition tolerance, which is increased metabolism of the drug and therefore increased drug elimination.[9] Pharmacodynamic tolerance is the other form, where the drug and receptor affinity is altered or receptor numbers are lowered, resulting in decreased binding of the drug and its effects. Figures 1&2.[9]

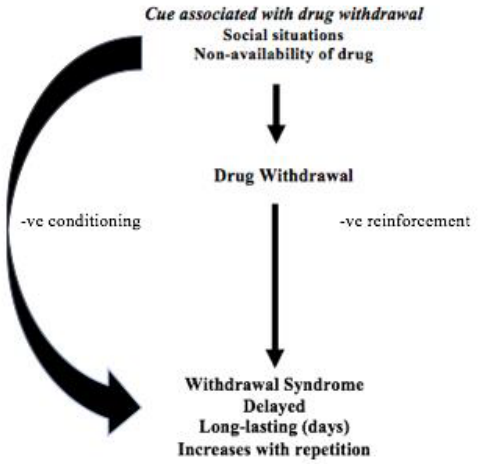

Figure 1 A reproduced flow diagram illustrating the withdrawal mechanism of a drug.[9]

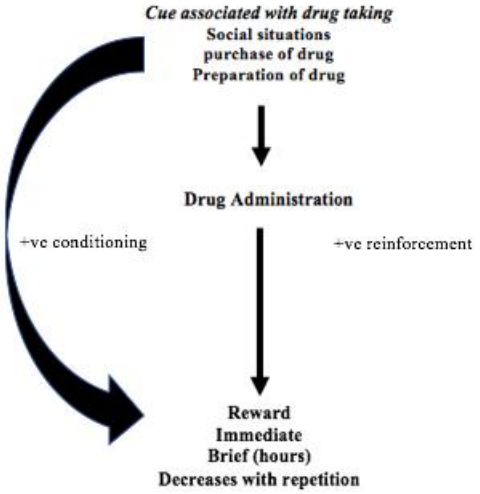

Figure 2 A reproduced flow diagram illustrating the reward mechanism of a drug[9]

The user can develop dependence if they stop administering the drug and the systems in the body become unbalanced, causing withdrawal. A systematic diagram of the withdrawal mechanism is shown in Figure 3.[9] Withdrawal symptoms of a drug tend to oppose their reward symptoms.[3]

Figure 3 1885 Advertisement for cocaine containing drops.[21]

Reward and withdrawal effects caused by a drug also depend on the route of administration. This differs with the type of drug and can also effect the speed at which a drug enters the bloodstream and brain, determining the potency of its effects.[6] Table 1 below displays types of drug administration.

Table 1 The mechanism a drug undertakes when administered using different sites and routes[3,6]

Route of administration	Mechanism
Intravenous (IV)	Example: Heroin - Rapid effects of the drug, bolus injections produce high concentration of the drug, first in the right side of the heart and pulmonary vessels and then to the systematic circulation.[3]
Nasal	Example: Cocaine – Avoids first pass metabolism in the gut, goes rapidly into nasal veins and capillaries, absorption takes place through the mucosa overlying the nasal-associated lymphoid tissue.
Inhalation	Example: Opiates – Similar mechanism to nasal administration, but does eventually undergo first pass metabolism.[3]
Oral	Example: LSD – Easiest route of administration, but the slowest to cause an effect. Little absorption until it enters the small intestine, however, some drugs applied to the buccal mucosa or under the tongue are absorbed directly from the mouth.[3]
Peripheral IV (subcutaneous)	Main action is paralysis of the periphery, not being able to move is masked by the reward/ pleasure pathway. Faster effect than oral administration and rate of absorption depends on the site and local blood flow.[3]

Cocaine and its history

In the past, cocaine use was promoted by medical journals and followers of Freud, the founder of psychoanalysis and was seen as useful in medicines and tonics for its anaesthetic properties.[11]

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However, It soon became a concern when its adverse effects were identified and drug became part of the Dangerous Drugs Act of 1920.[11] It later became a Class A controlled drug in the 20th Century, under the Misuse of Drugs Act (MDA) 1971.[8,12]

Cocaine originates from Colombia, Peru and Bolivia and is from the coca leaves of the Erythroxylum coca plant.[8] Its first discovery was in the 1850's as the 'miracle drug', before its adverse effects were fully understood.[8] It was incorporated into every-day products including tooth paste drops, which is the advertisement featured in Figure 3 and Coca-Cola, which originally contained approximately 9mg of cocaine. In later years, more people and manufacturers became increasingly aware of cocaine's toxicity and its mechanism of action and it was removed from these types of products.[13]

The mechanism and effects of cocaine

Cocaine has the ability to establish a strong, physical addiction and is known as one of the most dangerous illicit drugs ever discovered.[14] It primarily works on the nucleus accumbens section of the limbic system, in the brain.[15] It causes a build-up of dopamine due to the inhibition of transporters, which blocks the reuptake of dopamine, noradrenaline and serotonin.[8] The build-up of noradrenaline activity increases the effects of the user's sympathetic nervous system and alters their cardiovascular activity.[3]

Administering cocaine by either snorting, smoking or injecting causes build-up of dopamine, increasing the stimulation of cells in the nucleus accumbens and resulting in a feeling of intense pleasure and satisfaction. This mechanism gives users an intolerable desire to use again, to re-experience this sensation.[16] Its effects however depend on the type of cocaine and its purity and potency. The purity can differ throughout the dealer chain, as majority of 'street' cocaine is cut by cheaper fillers like talcum powder and amphetamines, making it only 50% pure in order to for an increased personal gain for the dealer.[17] The alkaloid form can be made into a paste by heating it with hydrochloric acid, to produce cocaine hydrochloride and this causes more potent effects on the user.[8] Crack cocaine developed in the mid 1980's, is made by boiling cocaine with a hydrochloride and baking soda solution, to form a rock composition, free of its water-soluble base. This form also produces stronger, more harmful effects to the user when administered.[8]

Scientific studies of cause, distribution and control, have demonstrated that polysubstance abuse often occurs in association with cocaine abusers, which can subsequently lead to the abuser being exposed to further adverse effects and risks.[19] Cocaine causes short but instantaneous bursts of energy, strength and pleasure and are greater than that achieved during normal activities.[19,20]

A high produced by cocaine can cause psychotomimetic effects including euphoria, hyperactivity, restlessness, enhanced confidence, reduced appetite and is occasionally followed by feelings of discomfort and depression.[8,22]

With considerable exposure to cocaine, desensitisation begins to occur of the dopamine D_1-like receptors in the reward pathway, reducing the usual reinforcements made by the drug.[8] This dopamine depletion theory may explain why cocaine is increasingly administered by a user, who eventually builds up a tolerance, resulting in higher doses being administered in order to experience the same effects.[8,14,15] Physical withdrawal effects during abstinence of cocaine are more minor than that of long-term use of CNS depressants and are not considered life-threatening. However, chronic cocaine users are 60% more likely to commit suicide than a non-user. Withdrawal symptoms include, sleep abnormalities, cravings, agitation and anhedonia, which is decreased ability to feel pleasure.[3]

In 1860, Albert Niemann who was a PhD student at the time, explored the extraction of cocaine from the coca leaves and identified its capability to impose anaesthetic effects, after applying it to his tongue and feeling it grow progressively numb.[23] Clinical advances have allowed cocaine to be used in some local anaesthetics, as it has the ability to reduce bleeding during vasoconstriction and can numb an area topically.[3,8] Confined applications are relatively safe, however cocaine can still enter the bloodstream and in people with vulnerable body systems, can cause CNS stimulation, toxic psychosis and sometimes death.[3] Tetracaine, epinephrine and lidocaine are examples of anaesthetics containing cocaine derivatives, concentrations of these can also be combined to apply to skin and reduce the pain of facial and scalp lacerations.[3,8] In other scientific reviews, the dangers of cocaine have been further illustrated, with there being cases of acute myocardial infarction and cerebrovascular accident in relation to cocaine use. Additionally, it has been recognised that excessive cocaine use can also be related to ruptured aorta, cardia arrhythmia and sudden death.[14]

Cannabis and its history

Cannabis is the world's most widely used illicit drug, with evidence of its use dating back to the Neolithic period, around 4000BC.[24] It is also the third highest drug to take concern of addiction treatment services.[25] Although cannabis is currently a Class B drug, under the Misuse of Drugs Act 1971, it still has a maximum sentence of up to 14 years of imprisonment for supplying the drug, yet large numbers of people still knowingly risk the consequences.[12,24] At the time of its classification of being a Class C drug, it was argued that cannabis has a strong relationship with mental illness, in particular with schizophrenia. Further legal control would be needed in order to help reduce its prevalence and its associated harmful effects, thus it was reclassified in 2009 as Class B.[26] Cannabis originates from China, in 2800 B.C. and was primarily used for medical and recreational purposes. Surprisingly, it wasn't until the 19th century that it made its way to Europe.[27] It is produced from the dried flowers and hemp from the plant *Cannabis sativa* and can come in several forms including marijuana, cannabinoid oils and solid resin hashish.[28]

Mechanism and effects of cannabis

There are 421 different chemicals in cannabis, Δ-9-Tetrahydrocannabinol (THC) being the primary psychoactive agent.[3] THC makes up 1-10% of the weight of marijuana and causes the characteristic 'high' many users desire.[2] Cannabidiol is a non-psychoactive component of cannabis, it has the ability to influence THC and can induce therapeutic effects like anti-inflammation.[29] Both THC and cannabidiol are secreted from the same glands called trachoma's, contained within the plant.[30] Its toxicity and effects are induced predominantly in the areas of the brain that are abundant in cannabinoid CB1 receptors, including in the hippocampus, cerebellum, amygdala, the prefrontal cortex and striatum in the brain.[31]

This drug can be administered using various inhalation and oral methods and it causes a depressant action, rather than a stimulatory one. It depresses the central nervous system, causing psychotomimetic effects like hallucinations, altered perception and behaviours, increased

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relaxation and sharpened sensory awareness, which intensifies colours and sounds. Altering a person's perception and causing hallucinations can cause a lot of cannabis users to also experience a sense of paranoia and this can subsequently lead to increased risk of injury. Over-time the use of cannabis can cause effects centrally to the body, including impairment of short-term memory, simple learning, motor coordination and peripheral effects, including analgesia, tachycardia, vasodilation and bronchoconstriction.

Adverse effects

After excessive use of cannabis, unfortunate adverse effects may occur including reduced testosterone and sperm count, apathy, underachievement and mental illnesses, including schizophrenia can develop after long term psychological effects.[9] The prevalence of people with mental health problems increase by 30-40% when they're dependant on drugs or alcohol.[32] Long-term and chronic use of cannabis can cause brain morphology alterations and volume decrease in the hippocampal region of the brain, which correlates with the psychotic symptoms associated with schizophrenia.[33]

A considerable portion of people that have the disorder schizophrenia, also smoke cannabis at high doses, however there are very few studies relating to this relationship, so research is still needed to make this a solid connection.[34] One explanation is that the human endocannabinoid (ECB) system can be disrupted in vulnerable individuals, increasing their risk of developing schizophrenia when exposed to cannabis.[35]

Epidemiological research has suggested that regular use of cannabis, particularly during adolescence into adulthood, can increase the likelihood of these adverse effects on the user.[36] Tolerance and dependence rarely occur when it comes to use of cannabis, however there is evidence that increased sensitisation can occur and withdrawal symptoms mimic that of alcohol abstinence, including irritability and nausea.[9] Cannabis can also be used therapeutically, due to its non-psychoactive component cannabidiol, which in today's society is readily incorporated in vape oils for peoples personal use. It can also be an anti-emetic drug during cancer treatments, including Nabilone which contains cannabis derivatives. Additionally, it can be used to increase a patient's appetite, causing anti-wasting effects during an illness. Sativex is a nose and mouth spray that contains THC, that helps reduce pain and sleep disturbance, for patients with Multiple Sclerosis.[9] Figure 4 shows a what a cannabis plant looks like and this was one seized by Derbyshire Constabulary.[2]

Figure 4 Cannabis plant seized by Derbyshire Constabulary.[24]

Prevalence of drug abuse

In the UK, estimating the number of individuals that use illicit drugs, where they acquire the drugs and how much they consume, is an ongoing challenge.[37] The Home Office, the British Crime Survey (BCS), the Scottish Executive and the Northern Ireland Office conduct regular household surveys regarding peoples crime experiences and questions surrounding drug use. These help provide a measure of prevalence of drug misuse, in a generalised population of the UK. National and household surveys can also help society formulate drug use policies and to identify specific groups within the population that are at greatest risk.[38]

Consequentially, this data can then be used to produce targeted and effective prevention and treatment programs.[39] In order to gather this information accurately in relation to the population, there must be a level of compliance from the respondents, as nearly half of the reports of drug use are illegal and thus they would be admitting to violating the law.[37] Accuracy of these surveys are also limited in estimating the heavier users of illicit drugs that maybe homeless, not in permanent residency and users in prisons.[40] Table 2

Drug use in the UK has declined comprehensively when looking at the level it once was 10 years ago. However, cannabis still remains the most commonly used illicit drug, with powder cocaine being the second most prevalent and most used stimulant in the UK.[41] In 2016, it was stated by Dr Gillian Taylor, who is a member of Teesside University, that domestic wastewater tests have indicated that Class A drugs residues, specifically cocaine, are higher in some parts of Teesside, than in some major European cities like Paris and Berlin.[42]

National Prevalence and trends in illicit drug use

In 2013/14, 9% of 16-59 year old's in England and Wales used illicit drugs in the last year.[43]

It is evident from table 2 that cannabis and powder cocaine have the highest reported use in the years 2009 to 2014. Based on the survey data and statistics, these two drugs are the most prevalent among users, between the ages of 16-59. Cannabis has the highest prevalence recorded within this time frame and it has also been found to be the drug that causes most drug associated arrests in the UK. Table 2, Figures 5&6.[44]

It is clear from Figures 5&6 that the average percentage of people that used cannabis in this time period, is a lot higher than that of cocaine and the prevalence of cocaine and cannabis use is the highest within the age group 20-24 years. [45] Social factors can have a large influence with the risk of drug use, including a troubled family life, mental health, employment, educational attainment, early drug use and the n biology of a person feeling pleasure can increase the likelihood of that person to continue using.[46]

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Table 2 Reproduced table showing the percentage of 16-59 year old's, in England and Wales, that reported use of illicit drugs from 2009-2014[43]

Drug Type	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	Stat. Sig. Change (2013-14/2003-14)	Stat. Sig. Change (2013-14/2012-13)
Cannabis	6.5	6.7	6.8	6.3	6.6	Decrease	-
Powder Cocaine	2.4	2.1	2.1	1.9	2.4	Increase	-
Ecstasy	1.6	1.4	1.4	1.2	1.6	Decrease	Increase
Amphetamines	0.9	1	0.8	0.6	0.8	Decrease	-
Ketamine	0.5	0.6	0.6	0.4	0.6	-	Increase
LSD	0.2	0.2	0.2	0.2	0.3	-	Increase
Opiates	0.2	0.2	0.3	0.1	0.2	-	-
Crack Cocaine	0.2	0.2	0.1	0.1	0.1	-	-
Heroin	0.1	0.1	0.1	0.1	0.1	-	-

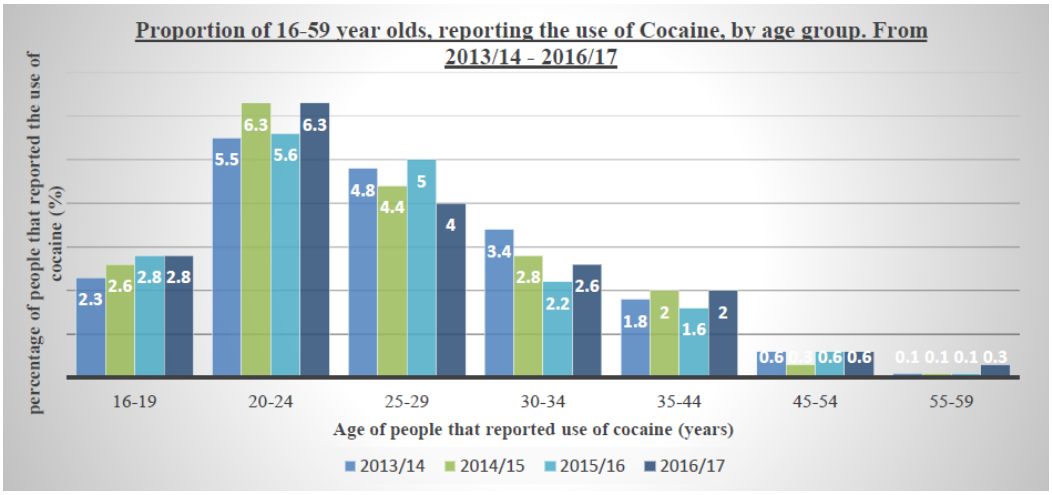

Figure 5 A graphical representation of the prevalence of cocaine use of people aged between 16-59 by age group, from the years 2013/14 to 2016/17. In England and Wales.[43]

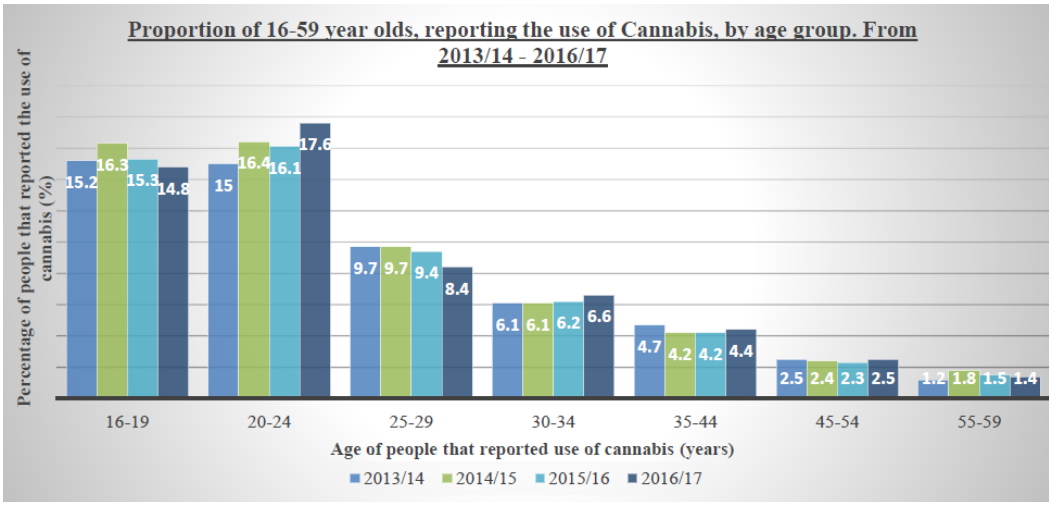

Figure 6 A graphical representation of the prevalence of cannabis use of people aged between 16-59 by age group, from the years 2013/14 to 2016/17. In England and Wales. [43]

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Prevalence due to personal characteristics

There are several suggested reasons why young people in the 21st century are becoming increasingly exposed to drug use and are becoming more inclined to take drugs. The main reasons for this includes enjoyment, as it can be considered pleasurable for users.[45] Their environment can have a large influence, as production and misuse of drugs tends to thrive in communities suffering from deprivation involving high levels of unemployment, low quality housing and poorly resourced infrastructure and local services. Curiosity and rebellion can also be their motivation to abuse drugs, as experimentation and attention seeking are stereotypical traits of young people. Lastly, a coping mechanism can be a reason why young people turn the use of drugs, due to extensive life and social pressure young people face today. Some see drug use as a distraction from their physical or emotional pain. Figures 7&8.[41]

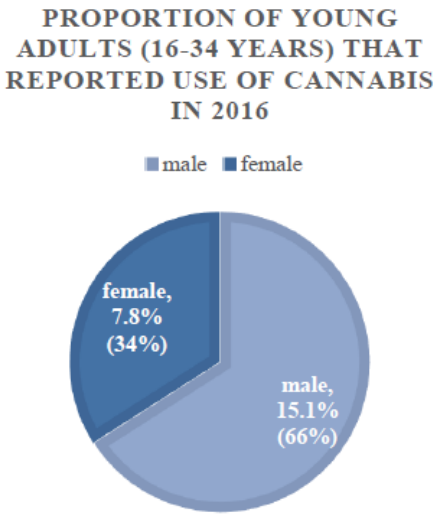

Figure 7 A graphical representation of the estimates of 2016 cannabis use among young adults (16-34 yrs), separated by gender in England and Wales.[41]

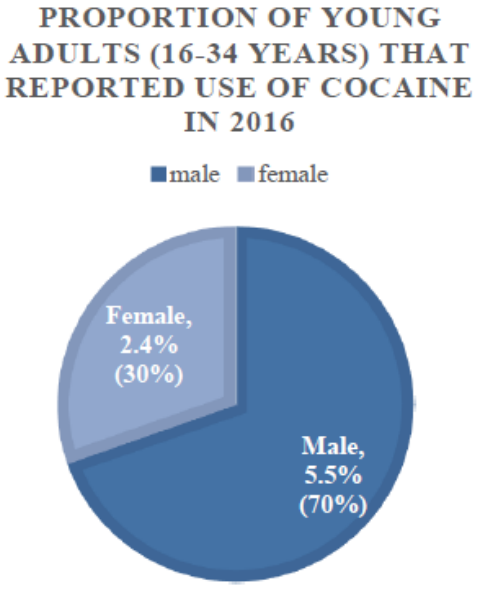

Figure 8 A graphical representation of the Estimates of 2016 cocaine use among young adults (16-34 yrs), separated by gender in England and Wales.[41]

Gender

Gender also has a role in the prevalence of drug misuse, as in 2013-2014, 76% of the national frequent drug users were male. It has been seen that the risks associated with taking drugs are not considered fully by men compared to women, for example 27% of men believed it was safe to smoke cannabis and only 15% of women agreed.[43] Sex differences are introduced at different stages of drug abuse from initiation to abstinence, with females typically administering a drug at a lower concentration to a male upon their initial dose.[47]

Social norms can be a prevailing issue, particularly for women that abuse drugs and become addicts, as it effects the expectations of their gender and role as a woman. Social expectations surrounding women still have ongoing stereotypes attached to them, including women must be respectable and remain civilised and retain their decorum.[11] However, these are not necessarily reasons why women may less frequently abuse drugs than men, they have just been norms surrounding women in certain social groups and countries for centuries.

Ethnicity

Drug use and abuse also varies with ethnicity, young adults with dual heritage having the highest percentage of reporting's at 17.1%, white young adults accounting for 9.1% and 5.8% of young adults identified as black, between the years 2013-2014.[43]

Sexual orientation

Sexual orientation is also a consideration when looking a drug use prevalence, as the highest level of use tends to be people who identify as homosexual or bisexual and are predominantly male. Overall, 8.1% of people who used drugs between 2013-2014 were heterosexual, leaving the remaining percentage identifying as homosexual or bisexual.[43]

Prevalence and house-hold income

House-hold income also has an influence on not only the prevalence of drug abuse, but also the type of drug being used. Table 5 below shows the prevalence of cocaine and cannabis use, in relation to increasing household income, between the years 2016-2017.[43] Table 5 A reproduced table of the proportion of 16 to 59 year olds reporting the use of drugs, by house hold income, in 2016/17.[43]

It is evident that with higher income, there is a significant decrease in the use of cannabis and an increase in the use of cocaine when entering the £50,000 and over achieving house-holds.[43] In a study carried out by Gill and Michaels, their results suggested that some people that consume illegal substances may do so to manage workplace stress and emotional difficulties, which can heighten productivity in the short-term.[48] In another recent study by Van Ours, the wage effects of cannabis use of prime-age males in Amsterdam were analysed. It was seen that cannabis use had a negative effect on wages and wage loss was greater for people who initiated their consumption early in life.[49] These studies can be linked to the data in Table 5.

Prevalence and social activity

Varying environments and lifestyle choices can also have an impact on a person's usage of drugs, two environments have been looked at with a comparison of the number of visits people made in one month, with their percentage of drug use. As shown in both Tables 3&4, there is a correlation between increased visits to pubs and nightclubs

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and a higher percentage of people using cocaine and cannabis, with nightclub visits having the highest frequency of drug use.[43]

It is evident from Tables 3&4, that with increased visits to nightclubs in particular, as well as to a pub in one month, can have a significant effect on the level of drug abuse.[43]

Table 3 A reproduced table of the Proportion of 16-59 year olds reporting use of drugs by frequency of pub visits in one month, in 2016/17[43]

Type of Drug	2016/17
Powder Cocaine	2.3
None	0.6
1 to 3 visits	1.8
4 to 8 visits	5.2
9 or more visits	10
Cannabis	6.6
None	4.3
1 to 3 visits	6.2
4 to 8 visits	10.5
9 or more visits	16.3

Table 4 A reproduced table of the Proportion of 16-59 year olds reporting use of drugs by frequency of nightclub visits in one month, in 2016/17[43]

Type of drug	2016/17
Powder Cocaine	2.3
Under 10,000	2.1
10,00-19,999	1.8
20,000-29,000	1.5
30,000-49,999	2
50,000 and over	3.2
Cannabis	6.6
Under 10,000	12
10,00-19,999	7.5
20,000-29,000	6
30,000-49,999	5.6
50,000 and over	5.7

Table 5 A reproduced table of the proportion of 16 to 59 year olds reporting the use of drugs, by house hold income, in 2016/17[43]

Type of Drug	2016/17
Powder Cocaine	2.3
None	1.5
1 to 3 visits	6.8
4 or more visits	16.1
Cannabis	6.6
None	5.1
1 to 3 visits	17
4 or more visits	26.6

Social consequences

There are several social consequences formed by the misuse of drugs, including the unclear explanation of the causal pathway between cocaine and aggression.[50] However, through a study by Macdonald, it was determined that cocaine plays a significant role in the multi-causal explanation for violence surrounding drug abuse.[50] Crime rates can be elevated in areas with a higher prevalence of drug movement and abuse, as people that become dependent on drugs may steal to fund their addiction and up to half of all money-orientated crime is drug-related.[43] Drug misuse and abuse can be the causal or contributing factor for homelessness, with approximately 80% of people who become homeless start using at least one new drug. The continuing abuse of drugs when homeless is likely to feed an addiction and as a coping mechanism to revert their minds from the reality of being homeless. The misuse of drugs accounts for over a third of deaths of homeless people each year.[43] Drug misuse can have a dramatic effect on families, with drug dependent parents effecting their children's wellbeing and upbringing. The abuse of drugs can reduce a parents competency to provide necessary practical and emotional care, which can lead to reduced educational achievement and attendance, mental health problems and increased risk to the children becoming involved with drug misuse themselves.[43]

Treatment and prevention

Addiction is a complicated process, especially when seeking treatment. Cravings for a drug repeatedly remind the person that maybe one more time won't hurt.[3] Then the body goes into a state of depression, where the user no longer feels or acts like themselves, because their body requires the chemical properties of the drug to feel whole again. Individual, interpersonal, societal and environmental factors all influence a person's abuse of a drug in some way. Thus, acknowledging this when producing prevention and treatment programmes can allow the individual struggling with addiction to deal with all the different pressures surrounding them.[3]

The UK has relatively high rates of crack cocaine and opiate misuse compared to many western countries, however it also has a higher proportion of drug abusers using treatment services.[41] Adult misusers often claim that opiates and stimulants like cocaine are their biggest problems with misuse and addiction, with younger people in the population reporting cannabis and psychoactive tablets are their primary problem. Studies and reports estimating high-risk drug use in the UK, can aid the identification of the extent of drug misuse and drug issues that need to be faced. Data from first-time entrants to specialised treatment centres can be considered and can give an idea of the type of drug being misused in that area and where drug abuse must be combatted.[41] Currently in the UK, first-time clients joining treatment centres to seek help are commonly cannabis users, followed by cocaine users, with a higher proportion of males entering treatment in 2016, shown in Figure 9.[41]

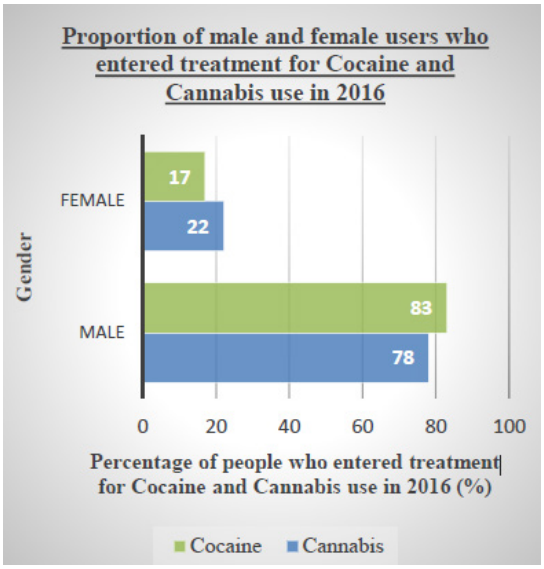

Figure 9 A graphical representation of the proportion of users separated by gender, from the 29350 entrants in 2016 that entered treatment for cannabis use. [41]

Prevention

Drug prevention can be separated into three levels, which were originally classified by Mrazek and Haggerty in 1994.[52] Firstly, primary drug prevention programs which are either nonusers who need advice and prevention against potential drug use or helping at-risk people that maybe surrounded by the use of illicit drugs, to avoid their development into use and addiction.[3,7] This involves affective education, counselling and strengthening families and community support systems. Secondary drug prevention programs involve identifying harmful substance use prior to the advancement to the dangerous problems with abuse, or intervening in early stages of drug abuse. These programs incorporate identification of abuse subgroups and individual diagnosis, with sanctions developed within schools and communities. Lastly, tertiary drug prevention programs focus on direct intervention of addicted and dependant users, who are in need of treatment.[3,7] The reality of drug prevention should enhance protective factors and reverse or reduce risk factors associated with drug use and abuse.[52] Predominantly targeting young people, social norms, skill development and interaction with peers and social life.[53]

Risk-factors surrounding drugs and their abuse can make younger people and children more likely to later use and abuse drugs. Thus, family, schools and community based programs are very important in tackling drug prevention are key to help enhance family relationships and parenting skills, whilst addressing the risks through academic and social learning.[7] Community prevention programs can enable combining family-based and school-based programs, which can make prevention more effective overall.[54]

Treatment

Treatment in the 1980's involved detoxification programmes, involving barbiturates were common when treating withdrawal from stronger drugs like cocaine, to allow for a slower, safer withdrawal.[55] A treatment method involves taking sufficient quantities of antagonistic drugs, including Nalline, Naltrexone and Cyclazocine, to cause the narcotic to pose less harmful effects. Other social methods of drug treatment that are still commonly used today include narcotic anonymous meetings and self-help groups, which involve investment of time, effort and funding in order to help support people with problems of drug abuse and addiction.[55] Over the past 20 years, the government has highlighted the role of treatment as not only helping the current abusers, but also its importance in reducing the prevalence of drug dependence throughout the UK. The expansion in the scope for different treatment services was initially promoted by the National Institute for Health and Clinical Excellence and the vast amount of evidence supporting its effectiveness has allowed treatment and prevention in the UK to continue to grow.[37]

In relation to treatments developed in the 1980's, maintenance prescriptions of methadone, buprenorphine and naltrexone are still regularly used to help detoxify the symptoms of withdrawal when reverting from highly addictive substances.[56,57] Due to the powerful reinforcement disposition cocaine has once inside a user, effective treatment to reduce its addictive nature is not straight-forward. Common targets for the treatment of cocaine abuse involves symptoms of abstinence syndrome, cravings and anhedonia and sub sequentially several agents have been discovered that are effective in limiting and delaying their actions, including carbamazepine bromocriptine and amantadine. Figure 10.[18,41]

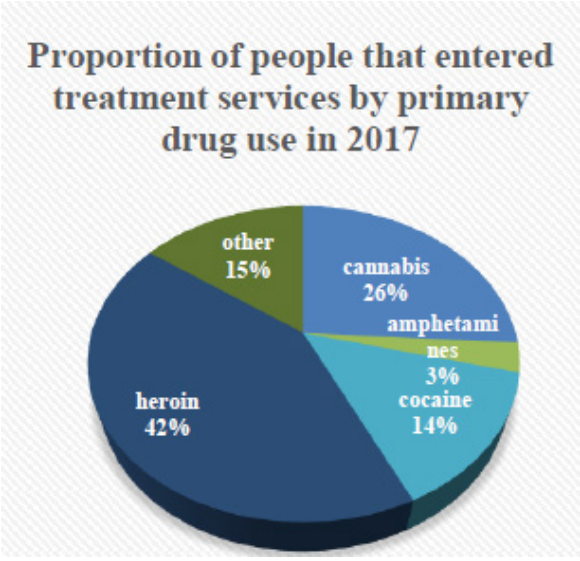

Figure 10 A graphical representation of the proportion of people in the UK that entered treatment in 2017 and their primary drug of abuse. [41]

It is clear from figure 10 that although cannabis is the most widely used illicit drug in the UK, in 2017 it was the second primary drug for people that entered treatment services.[41]

Modern approaches for clinical treatment of cocaine and cannabis abuse

Drug treatment is effectively well-delivered in the UK, the current treatment interventions have shown evidence of producing a positive effect on levels of drug use in the UK, criminal offences surrounding drug use, dependence and also allowing many patients to have long-term sustained abstinence[51] Agents that have an effect on specific components of the dopamine system, have the potential to be successful in managing cocaine abuse and can help reduce cravings during an abstinence syndrome, that many abusers experience during treatment

programmes.[18] Pilot studies into the treatment of cocaine took place in 2004 and it involved the use of topiramate for the treatment of cocaine dependence.[58] It affected GABA and glutamatergic neurotransmission and has the ability to reduce properties and the craving for cocaine. Topiramate, which is commonly used as an anticonvulsant, increases the levels of GABA in the cerebral area of the brain and inhibits glutamatergic activity at AMPA/kainite receptors, which in turn can help treat cocaine dependence.[58] Increasing use of cannabis in the UK allows further grounds for research into medications and treatment for its abuse. When analysing its mechanism of abuse, the primary target is the psychological dependence it produces, rather than the physical dependence.[59] The development for new treatment drugs have involved the use of homomeric α_7 nicotinic receptors as targets. In a systematic study, the administration of selective α_7 nicotinic acetylcholine receptor antagonist methyllycaconitine (MLA) in rats, blocks the ability of the main active ingredient in cannabis THC to cause an effect, thus reducing drug-related psychological effects of the cannabis, even at low doses.[59–63]

Conclusion

This literature review confirms that substance abuse continues to be a serious problem in the UK, especially among the younger generations. It has become apparent that is a vast amount of research and information surrounding their effects and prevalence, has allowed prevention and treatment services to be increasingly targeted. However, without addressing the youth drug culture accordingly, the prevention of dependence and addiction will continue to evolve. As discussed, social prevalence estimations can be limited due to the lack of permanent housing for some drug dependents and also the violation of the law surrounding the declaration of their abuse of illicit drugs in house-hold and national surveys.[37] Over the long-term, prevention has been unsuccessful in reducing the early initial drug use, which currently tends to be where dependence derives from. However, there is strong evidence of treatment programmes currently being effective in the UK, with the aim to reduce the damage caused by drug abuse.[54] It has been confirmed by The National Institute for Health and Care Excellence (NICE) that the increasing investment into services available for drug treatment will be cost-effective.[54,56,57]

Conclusively, the expansion of research into the adverse effects of substance abuse, as well as targeting certain areas of particularly higher prevalence, is the key to the evolution of preventing and the reducing the number of people abusing drugs. Thus, consequently reducing the harmful impact they have on people's health and wellbeing. Even though it is evident that the improvements in the prevention and treatment of both cocaine and cannabis are somewhat effective in helping current abusers, the main issue that needs addressing involves the influenced youth culture of today, who are most vulnerable and exposed to the use and exploration of drugs.

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Conflicts of interest

There is no conflict of interest.

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