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# The Comorbidity of Drug and Alcohol Consumption in Relation to Mental Health Disorders

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## Abstract

The constantly increasing use of drugs and alcohol in young adults has created great controversy in the medical community on the long-term effects of these substances. The average brain development of adolescence and young adults is not complete until the age of 25, though drug and alcohol intake occur across the United States at younger ages each year. Impulsive behavior and underdeveloped neural pathways create a strong pull for addiction formulations and the development of severe mental-health problems. This paper reviews the positive and negative effects of illicit drugs and alcohol intake and their comorbidity with mental health disorders. There have been proven positive benefits of illicit substances. Marijuana is being dubbed the “miracle drug,” and drugs like psychedelic mushrooms are being shown to cure anxiety. These theories are examined as well as how they positively and negatively affect the long-term mental health of individuals. The research substantiates the idea that this is a frontier in mental health studies and further research is needed for a clear consensus on the comorbidity of drug use and mental health disorders.

As drug and alcohol availability continually increases, more and more individuals suffer from substance use disorders (SUDs) and mental illness and have experienced discrimination (Barry et al., 2015). There is a definite stigma surrounding these ailments within modern society (Barry et al., 2015). Despite significant advances made in the treatment for SUDs, these stigmas have persisted. Often the intake of drugs and alcohol have been associated with SUDs. Research has shown that individuals who have been noted to have SUDs are viewed as more blameworthy and unsafe (Corrigan et al., 2009). When people who have SUDs are viewed as more blameworthy and unsafe, it can enforce the prerogative that the effects of substance use are negative overall and can be linked with the development of SUDs.

As recreational substance use becomes increasingly more common, the comorbidity of the use of these substances and mental disfunction is a topic that is debated more and more frequently. Research suggests that SUDs are not a causal source of mental-health disfunction, but rather merely a correlating factor that occurs frequently with mental-health disfunction (Railton, 2018).

In the case of substance use as a causal factor of mental health disorders, research suggests long-term use physically alters brain function by forming pathways that lead to addiction, making it nearly impossible to avoid substance use. These changes in brain function can also lead to the development of mental-health issues, such as depression and anxiety, and can elicit a state of short- or long-term psychosis within a patient. The use of hallucinogenic drugs can cause users to experience drug-induced psychosis (DIP), a severe mental-health condition where they are unable to tell what is reality and what is not. DIP, while often short term, can sometimes persist for years (Railton, 2018).

Though there is strong correlation in the comorbidity of SUDs and mental-health disorders, researchers argue that SUDs and psychiatric disorders can occur simultaneously but without causation. For example, patients often receive treatment for both mental illness and addiction, but these treatments occur at different times (Langås et al., 2011). It has also been shown that while substance

use occurs with mental-health disorders, about 40–60% of an individual's vulnerability to drug addiction is contingent on their genetics. SUDs can also be linked to environmental components as well as family behavior. (Langås et al., 2011). Substance intake and the associated mental-health outcome can be completely different based on an individual's genetic make-up. In addition, studies have shown negative associations between marijuana intake and levels of anxiety and depression (Railton, 2018). Marijuana has also been shown to help fight alcohol and opioid dependencies (Railton, 2018).

SUDs are a complex discussion with results varying widely across studies. This literature review will examine the genetic, neurobiological, and physical relation of drug use and its effect on the human mind and body. It will review how SUDs affect the human psyche and the role of substance use and misuse in relation to mental-health disorders. This paper will also discuss directions that further research can take to advance understanding of the comorbidity and long-term treatment options for these disorders.

## **Methods**

An electronic literature search of two databases, Google Scholar and PsycINFO EBSCO yielded a combined total of 385,258 search results relating to drug addiction and mental-health comorbidity. These specific databases were selected to best represent a wide variety of authors, viewpoints, and studies. To narrow these results and identify specific studies relating to the comorbidity of drug use and mental health disorders, the key words “drug disorder” AND “brain function,” “drug disorder” AND “behavior,” “comorbidity of drug use” AND “mental-health disorders” were implemented. More specific key word searches using terms “addiction,” “drug abuse,” “drug use,” “mental health problems,” and “addiction in young adult” were also used to vary results and obtain a larger spectrum of information.

After simplifying searches, a total of 350 sources were retrieved. Of these 350 results, 18 were specifically utilized in the compilation of this literature review because they contained studies with results pertaining specifically to the comorbidity of drug addiction and

mental health disorders. Articles were removed if they were not empirically based, published in a peer-reviewed journal, written in English or related specifically to the impact of drugs and alcohol on mental health. Secondary sources, such as books and related literature reviews, were used to enhance understanding.

## **Results**

Substance use worldwide is increasing both in type of drug use and overall human consumption (Grönbaek, 2009). This increase in drug consumption is due in part to the drastically changing perception of substance use throughout the world. This is partially affected by the increased legalization of recreational marijuana. In a study done across two universities in the Southeastern U.S., 10,000 students were surveyed to assess the personal, parental, and peer impact associated with the use of addictive tobacco related products. This study focused specifically on marijuana and the use of hookah and electronic cigarettes. Participants in this study were asked to complete an online survey with questions relating to each of these substances. Marijuana was the most positively perceived drug, followed by hookah and electronic cigarettes (Berg et al., 2015). This shows that the perceived harm of using previously illegal substances is significantly lower than in previous times. The negative narrative of marijuana is changing quickly among individuals 18–25 years old (Berg et al., 2015). This demonstrates that as illicit substances such as marijuana make the transition from illegal to legal, it changes the perception that these are not actually harmful substances. This gives the impression of instability in what is deemed harmful or unhealthy. It is then easier to justify the use of other illegal substances with the mentality that they may also become legalized soon and must not be as harmful as once thought.

### **Positive Effects**

Substance use has been a part of human interaction for ages. Early in Greek culture, a fermented blend of honey and water was one of the first alcoholic beverages to gain popularity. People discovered these beverages dulled inhibitions, making them extremely enticing. As

society continued to develop, the use of these intoxicants continued. Social gatherings throughout all eras have utilized substances to lower inhibitions, sustain friendships, and influence atmosphere (Blount et al., 2018). It is not uncommon across many cultures to gather for a drink, end the day with a glass of wine, or celebrate an event having drinks with family and friends. In a study done by the Board of Public Health in the UK and Denmark, the acceptable weekly alcohol intake was around 21 drinks per week for men, and 14 drinks for women. (Gronbaek, 2009). Globally, some forms of alcohol are recognized as acceptable daily drinks with beneficial factors, such as the prevention of heart disease. In much of the world the population of those who do not consume alcohol are only a small fraction of individuals. (Gronbaek, 2009).

In one study, the relationship between positive temperament and substance use was tested to see if a positive temperament is directly comorbid with substance use (Davis et al., 2018). The study tested both those with and without medical conditions in order to examine the components of positive temperament and whether it would be beneficial to target this in treatment programs for SUDs. Results showed that drug and alcohol use problems had a positive association with high intensity pleasure but a negative association with positive effect (Davis et al., 2018). While drug and alcohol intake caused individuals to experience pleasure, it did not correlate with whether or not they were increasingly positively tempered.

Drugs such as marijuana have been used in groundbreaking medicinal studies to lower anxiety, aid in the recovery of patients undergoing chemotherapy, and alleviate joint and limb pain for individuals suffering with arthritis (Berg et al., 2015). In a study on the effect of medicinal marijuana use in New Jersey patients, researchers reported that the use of medical marijuana received an overall positive review as a form of treatment. Increased mood and general overall condition of patient health and well-being were reported as the result of medicinal marijuana use in a poll of the 179 patients who responded to a series of three surveys. After the

second survey, individuals even reported an increase in their overall perceived quality of life. Other effects included decreased seizures, lower levels of nausea and pain, and increased energy and overall mobility (Crowell, 2017).

In addition to substance use, research has examined the effects of using cannabidiol (CBD). This is one plant-derived treatment that has received increased attention throughout the medical and health communities as a potential treatment for many neurological and psychiatric disorders (Gonzalez-Cuevas et al., 2018). CBD has also been explored as a treatment option for drug addiction. SUDs are defined as chronic relapses into drug use that persistently cause an individual clinically significant risk and distress. Usually in relation to drug use, relapse is caused by stress, anxiety, and lack of impulse control. When tested, the use of CBD attenuated each of these factors (Gonzalez-Cuevas et al., 2018). This positive research in relation to the use of CBD shows that while some drug use can associate negatively with mental-health disfunction, some substances such as CBD can improve overall mental health.

The use of psychedelic drugs is noteworthy because there are very few studies associated with the negative impact and effect of these drugs. It is a widely popular opinion among researchers in this field of study that these drugs facilitate psychological growth, increase understanding, and help people to gain a deeper understanding and appreciation for life (Russ, 2019). In a study done on the long-term consequences of psychedelic experiences (encompassing the use of psychedelic agents such as LSD, ayahuasca, and psilocybin) participants were tested to see if the significant positive psychological change associated with hallucinogenic use had long-term positive or negative effects. Patients who had consumed these substances were observed for a year to determine impact. Findings showed that the intake of these substances had little to no negative long-term impact, and overall findings show little to no detrimental long-term impact of psychedelic use (Russ, 2019). As there is little to no negative impact, addiction and reliance on these substances is relatively low, making them an enlightening experience with few, if any, detrimental long-term results.

### **Negative Effects**

While drug acceptance and the intake of drugs and alcohol use is on the rise, there is still a large population that perceives drug and alcohol use as primarily addictive and overall a negative influence for individual well-being. The repeated use of these substances challenges an individual's ability to instigate self-control and cause changes in the brain that interfere with ability to resist the temptation of consumption. One negative aspect of drug addiction is the establishment of conditioned responses that occurs with continuous drug use. These processes invoke cravings and continued drug-seeking responses (Ohana et al., 2015). For example, cocaine intake causes the left frontoparietal brain function to diminish significantly. This is the portion of the brain associated with mental processing and cognitive control (Hanlon et al., 2010). Therefore, the more cocaine consumed, the more damage the left frontoparietal lobe suffers. As an individual continuously uses drugs, it causes an increase in conditioned responses and therefore strengthens addictive patterns.

The use of drugs also correlates with increased occurrence of crime. 64.7% of females began using drugs prior to becoming engaged in illicit activity (Chen, 2009). The earlier drug use begins, the more likely it is to develop into an addiction, affect crime ratings, and increase jail time and prison populations (Chen, 2009). Other side effects of drug and alcohol consumption are decreased inhibitions and judgement. When inebriated, people often make choices that, if they had been sober, may not have occurred. These decisions often have detrimental consequences. For example, a drunk driver causing an accident could be incarcerated, be detrimentally injured, or put someone else's life in danger.

Drugs and alcohol are foreign entities that enter the human body and affect its makeup. Substance use drains and starves the body of necessary vitamins and nutrients and lower the brain's ability to function, which can also lead to the increased likelihood of dementia (Grobnaek, 2009). Another bodily side effect of extensive alcohol consumption is cirrhosis. Cirrhosis is defined as a chronic liver disease that is discernable by degeneration of cells, inflammation,

and thickening tissue. This is a major detriment associated with long-term alcohol use (Grobnaek, 2009).

In a comparison of young adults split into groups of cannabis users and nonusers testing measures of impulsive behavior, cannabis users showed a deficit in memory performance compared to non-using individuals (Diviak et al., 2012). Additionally, another study examined the long-term health outcomes of marijuana and alcohol use over a 10-year period. This study tracked 1,253 first-year college students and organized results into categories based on their history of drug use (Arria et al., 2015). Overall, occasional and even one-time marijuana use in the early twenties can put individuals at especially high risk for unfavorable health outcomes, such as lethargy, memory loss, increased anxiety, etc. (Arria et al., 2015). These studies show that though perceived as harmless, the use of drugs and alcohol has a distinct and adverse effect on the physical and mental health of a user.

### **Drug Use and Mental Health**

One of the biggest concerns with drug use is its effect on brain pathways that are still forming in youth and young adults. When foreign substances such as marijuana, alcohol, and psychedelics are taken into the body, the developing brain is prone to take these substances and, due to their effect on the body, interpret them as a need (Ohana et al., 2015). The changes these substances make in the human brain have a higher likelihood of becoming permanent the longer drug use persists and the earlier it begins (Ohana et al., 2015). This shows that preventing drug use in teens and young adults can be beneficial for their overall long-term brain development and mental health.

Drug use has also been shown to negatively associate in the minds of most people with mental health disorders (e.g., anxiety, bulimia). In one study the association of mental disorders and SUDs were examined to observe if stigmas were associated to the diagnosis of these problems (Boffo & Mannarini, 2015). This study showed that within general public opinion, SUDs ranked as one of the more dangerous disorders seen by the general public (Boffo & Mannarini,

2015). When the public was presented with a realistic treatment option for a substance use, this level of opposition reduced drastically. One of the issues with substance use is the fact that current treatment options have such high rates of relapse. Increasing the reliability of drug rehabilitation programs could help lower the public opinion on level of harm caused by drug use and over-consumption.

Mental illness significantly affects the likelihood of initial and persistent drug addiction. When looking at level of perceived control in the lives of college students, researchers found that students who had a higher level of control in their personal life experienced less problems overall and had significantly decreased marijuana use (Emery & Simons, 2017). A sense of direction suggests to an individual that they do not need extrinsic substances to be happy, but that they can find happiness in other ways. Individuals who experience mental health disorders are more likely to become addicted to drugs and alcohol and experience long-term adverse effects. It is also important to consider that substance use is a solution to problems. For example, individuals who experience a traumatic event often find solace through drugs and alcohol. In order to alleviate the control of drugs and alcohol, increased personal awareness and control in one's life can give the individual back the power in this narrative. Attention-deficient/hyperactivity disorder (ADHD) is an example of a mental health disorder that has a high correlation with drug addiction. The addiction cycle is characterized by impulsive and compulsive behaviors (Cubero & Rodríguez-Ortega, 2018). In cases of ADHD, brain function thrives on impulsive acts to experience stimulation. Individuals experiencing this disorder often engage in binge-like practice to stimulate their brain and experience rewarding properties of this practice (Cubero & Rodríguez-Ortega, 2018). Looking at the early function of impulsivity and how to train and direct this function will result in a more positive correlation between drug use and mental health.

## **Discussion**

In this review, the positive and negative effects of substance use such as marijuana, alcohol, and psychedelics were analyzed in their relation to mental health and how they truly relate to mental-

health disfunction. The effect of SUDs on mental health and overall comorbidity with mental-health disorders has created a stigma on the ability of these substances to have a positive effect and/or be used for positive purposes.

This literature review found that the consumption of substances such as alcohol and marijuana is perceived negatively overall by the general public. Understanding of all substances is still evolving—specifically in the case of marijuana as it is legalized in an increasing number of areas. Though most people who use this substance do not become addicted, more studies are being published that highlight the negative and highly addictive properties of this drug.

While the use of alcohol and marijuana is still perceived negatively, psychedelic substances are perceived to have a generally positive effect overall. These substances are involved in many groundbreaking studies testing their impact in the furthering of psychology, psychological patient treatment, and medical advancement. There were relatively few studies associated with the nature of psychedelics as a deterrent to individual health, as this is such a frontier of scientific study.

Future studies should analyze the long-term effect of psychedelics as well as their specified relation to mental health function pre- and post-drug use. The existence of confounding variables makes it difficult to directly link addiction to mental health. For example, while the intake of alcohol in moderation can be heart-healthy for one individual, it can open a path to addiction for another. The intake of drugs and alcohol have been shown to cause physiological and psychological implications, and any intake of drugs or alcohol increases risk of addiction and dependence, though only a minority of substance users become addicted, or develop a SUD. Some argued that substances such as psychedelics open the mind to a higher and enlightened state of function and increase empathy, awareness, and understanding (Boffo & Mannarini, 2015). While there are studies that validate this, there is still risk of addiction with the intake of any substance. Focusing on the longitudinal impact of psychedelics in particular would be very useful in determining if drug use is a causal factor in mental health disfunction, or how they might function as a protective factor.

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