The Impact of Cannabis on Mental Health Disorders: A Literature Review

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Chapter 1: Introduction

The topic of cannabis has been a taboo subject since the War on Drugs began decades ago. The use of cannabis in the medical setting has become more and more prominent, as it has been found to have multiple helpful properties. Cannabis is also known as marijuana and these two terms may be used interchangeably throughout this paper. There are two components in cannabis that may be mentioned throughout this literature review. Delta-9-tetrahydrocannabinol (THC) is considered the psychoactive component, while Cannobidiol (CBD) is non-psychoactive. Psychoactive substances are things that affect brain function and cause changes in mood, thoughts, and behaviors (National Institute, n.d). Although the research is limited, marijuana has been found to help people who are diagnosed with epilepsy, as well as people who suffer from chronic pain (Safakish et al., 2020).

This literature review will focus on the research associated with medical cannabis and its impact on mental health. Many believe that cannabis has a negative impact on mental health (Newton-Howes, 2018). Others believe there is no significant correlation between mental health and cannabis use (Eisen et al., 2002). While others believe that cannabis can have a positive impact (Bonn-Miller et al., 2014). There is more research on the use of cannabis for chronic pain and epilepsy than there is on the effects of cannabis on mental health, and such studies will also be discussed. Medical cannabis has been proven to help people who suffer from chronic pain decrease their pain and improve their quality of life (Newton-Howes, 2018). Cannabis has also been proven to reduce the frequency of epileptic seizures in all ages, however treatment is more successful the earlier in life it is initiated (Hausman-Kedem et al., 2018). Researchers found that those under the age of 10 showed more significant improvement than those who started cannabis

treatment later. Many of these studies mention the effect of cannabis on mental health throughout their research.

Chapter 2: Review of Mental Health Literature

Study 1: "Does marijuana use have residual effects on self-reported health measures, socio-demographics and quality of life? A monozygotic co-twin control study in men." by Eisen et al. (2002)

Introduction

This section is going to review the literature titled "Does Marijuana use have residual effects on self-reported health measures, socio-demographics, and quality of life? A monozygotic co-twin control study in men" was written by Eisen et al in 2002. This study (Eisen et al., 2002) utilized identical twins, one of whom was a cannabis smoker, while the other was not. The study went on to compare the outcomes of the twins using in-person surveys and questionnaires. Eisen et al. (2002) states that heavy marijuana use has adverse effects on long-term physical health.

Research Purpose and Hypothesis

The purpose of the study was to "assess the effects of former heavy marijuana use on selected aspects of health" (Eisen et al., 2002, p.1138) including socio-demographics, nicotine/alcohol use, utilization of physical and mental health services, and overall quality of life. The researchers hypothesized that, "because twins have the same genes and share many of the same environmental experiences" (Eisen et al., 2002, p. 1138), the study will be able to assess the long-term impact of cannabis use on mental and physical health.

Design and Methods

This research specifically looked at a beginning sample of over 7,000 people, or 3,500 sets of identical twin veterans born between 1939 and 1955 (Eisen et al., 2002). Initial interviews brought the sample down to nearly 2,000 identical twins who met the inclusion criteria for the study. Qualifications include "monozygotic twins in which one twin has heavy marijuana use (more than once a week for a year) and the other twin has not used marijuana more than five times ever" (Eisen et al., 2002, p. 1139). Through more interviewing, the researchers further shrunk the sample pool. They did this based on being an identical twin with heavy cannabis use, and another with no use, as well as if either twin had gone through alcohol withdrawal. Those who had were not eligible for participation. The current study focuses on 60 sets of twins, 120 participants total.

The researchers presented questionnaires regarding marijuana use, physical and mental health service utilization, and the SF-36, also known as the Short Form Health Survey, measures quality of life. These questionnaires were statistically analyzed to compare the long-term outcomes of identical twins and their marijuana use.

Results

At the time of the study, participants ranged in age from 38 to 51. Nine of the 60 twins who use marijuana met the criteria for abuse/dependence (Eisen et al., 2002). Research found that there was no difference in education level achieved between smoking and non-smoking twins. There was also no significant difference in marriage or employment among the twins (Eisen et al., 2002). It was found that generalized anxiety disorder was less in the twin that smoked marijuana, however there wasn't a significant correlation in risk between cannabis and mental health disorders, including generalized anxiety disorder (Eisen et al., 2002). There were

no statistically significant differences in the utilization of physical and mental health services as well as the SF-36 scale and overall quality of life.

Discussion

In general, the study concluded that there was no statistically significant difference among marijuana smoking twins and their non-smoking counterparts when it came to outcomes and overall quality of life. There were slight differences among mental health disorders and the effect of cannabis, but the differences were not statistically significant. The participants who had no other comorbidities (including alcohol use disorders, or other illicit drug use) had no significant long-term adverse effects of cannabis use (Eisen et al., 2002).

There were a few limitations to this study. One included unresponsiveness from participants on one or multiple questionnaires. This is also a self-reported study, therefore no one can determine whether the information provided by participants is one-hundred percent accurate. There was no medical evaluation performed (i.e. EKG, MRI, Stress Tests), due to limited time and financial resources (Eisen et al., 2002). This means that there could be long-term medical effects of cannabis, however this was not examined (Eisen et al.,2002).

Study 2: "Cannabis use patterns and motives: A comparison of younger, middle-aged, and older medical cannabis dispensary patients" by Haug et al., (2017)

Introduction

Haug et al. (2017) conducted a study on 217 medical cannabis patients in San Francisco, California, to research cannabis use patterns, as well as motives for use. According to Haug et al. (2017), there is little data on how cannabis use patterns and motives differ as people age.

Research Purpose and Hypothesis

Most cannabis users begin use in adolescence (Haug et al., 2017). Many typically demonstrate a pattern of "growing out of it" and dramatically reducing or ceasing use of cannabis all together (Haug et al., 2017). However, there are older individuals who still use cannabis. The aims of this study were to: "(1) characterize and compare cannabis use patterns and problematic use by age group; and (2) identify differential motives and medical/psychiatric conditions for which cannabis is used, by age group" (Haug et al., 2017, p.15). This information can be used for the healthcare team to determine if use is a problem, as well as the issues that individuals may be self-medicating for.

Design and Methods

There were a total of 217 participants in this study, ages 18 and older who obtain cannabis from a dispensary in San Francisco for either medical or mental health issues (Haug et al., 2017). Participants were given a preliminary survey regarding personal medical and psychiatric history. This was used to determine what conditions patients were using cannabis for (Haug et al., 2017). All gender identities and multiple races/ethnicities were represented in the study. The preliminary survey also utilized the numerical pain scale to assess average severity of pain in a week for participants.

Researchers administered multiple questionnaires regarding cannabis use and motives. The Marijuana Smoking History Questionnaire assessed cannabis use in the past 30 days. It also assessed the method of using cannabis, including smoking, vaporizing, and ingesting edibles (Haug et al., 2017). The Cannabis Use Disorders Identification Test was used to measure problematic cannabis use in the past six months. The Comprehensive Motives Questionnaire, which has 12 subcategories, was utilized to assess motives for cannabis use (Haug et al., 2017). This questionnaire looked for motives including boredom, enjoyment, coping, anxiety, and sleep.

The Inventory of Depression and Anxiety Scale to determine participants anxiety and depression levels using various subcategories, including well-being, suicidality, traumatic experiences, and weight changes (Haug et al., 2017). All the data collected was separated into three age groups: young users (18-30), middle-aged users (31-50), and older users (51-74) (Haug et al., 2017). The researchers analyzed data to determine if participants differed in demographics (ie: gender or ethnicity) as well as cannabis use patterns, and problematic use (Haugh et al., 2017). Researchers also analyzed cannabis use motives in relation to medical and/or psychiatric conditions (Haug et al., 2017).

Results

The Cannabis Use Disorders Identification Test showed a large difference.in the risk for having a cannabis use disorder. Researchers found that younger users had a significantly higher score than middle-aged and older users. Results for the risk of a cannabis use disorder were quite lower in older and middle-aged users, and there was no difference between these two groups (Haug et al., 2017). There were significantly more younger users who showed severe cannabis use disorder than older users. Analysis showed that the earlier the age of use, the higher the score for problematic use across all younger and middle-aged users, but not in older users (Haug et al., 2017).

Younger users were more likely to use cannabis to relieve boredom than older or middle-aged users. This was the only motive of the remaining 12 categories in the Comprehensive Motives Questionnaire that differed among age groups (Haug et al., 2017). Older users were found to use cannabis for medical conditions (i.e.: cancer and glaucoma) than younger and middle-aged users were (Haug et al., 2017). More than half of the middle-aged users were more likely to use cannabis as a sleep-aid than older or younger users. There was no difference in use

for things such as: post-traumatic stress disorder (PTSD), depression, chronic pain, and anxiety (Haug et al., 2017). This is due to the fact that many of these conditions can occur at any age.

Discussion

Interestingly, it was found that older users preferred oral ingestion of cannabis, including edible and tinctures. Younger and middle-aged users were more likely to smoke cannabis (Haug et al., 2017). It would be beneficial to implement smoking education for those who smoke their cannabis, on top of education for general cannabis use. Many of the younger users reported using cannabis to alleviate boredom. It would be beneficial to implement the use of non-substance related activities that bring pleasure to alleviate the boredom, rather than using cannabis (Haug et al., 2017).

Clinicians should have an awareness of the risks for cannabis use disorders. Clinicians should also be able to provide preventative care and education to patients on the use of cannabis and the risks of smoking (Haug et al., 2017). Interventions should be taken with younger users, particularly adolescents who are found to use cannabis for the purpose of alleviating boredom or because that is their primary coping mechanism (Haug et al., 2017). These interventions include things like art, music, or exercise. It is important to teach and implement non-substance related activities into the daily life of younger people.

Study 3: "Medical cannabis access, use, and substitution for prescription opioids and other substances: A survey of authorized medical cannabis patients." by Lucas & Walsh (2017)

Introduction

One of the benefits to legalizing cannabis is the use of it over things such as opioids or heroin. There is research that confirms cannabis users report using cannabis as a substitute for other medications (Lucas & Walsh, 2017). Due to this substitution, there has been a reduction in

the negative health outcomes associated with things like opioids (Lucas & Walsh, 2017). This study, as compared to many others, includes only patients who have a medical authorization to use cannabis.

Research Purpose and Hypothesis

The study by Lucas & Walsh (2017) aimed to evaluate the extent to which cannabis is used as a substitute for other drugs and which medical diagnoses coincide with use. This study, in particular focuses on the class of prescription drugs that cannabis is being substituted for (Lucas & Walsh, 2017). The researchers further went on to match this to a specific medical diagnosis. Lucas & Walsh (2017, p.33) hypothesized that "cannabis could play a significant role in reducing the health burden of problematic prescription drug use." By substituting cannabis for things that can cause irreversible harm, like cocaine or opioids, we can avoid life-threatening health issues.

Design and Methods

Participants were given a 107-question survey that they had two weeks to complete. The survey asked questions about demographics, patterns of use, and the effect cannabis has over another drug. Participants were able to skip questions if they were not comfortable answering (Lucas & Walsh, 2017). The survey was emailed to over 1,300 patients with a medical recommendation, who received medical cannabis from a licensed cannabis producer. Of these 1,300 released surveys, 260 surveys were used for analysis. Those that were not considered were mostly due to the survey being incomplete. Participants were able to pick what medical diagnosis cannabis was prescribed for, then further clarify what symptoms were affected by the use of cannabis. The survey was answered by 271 participants, whose main demographics were: male, Caucasian, single, disabled, and of lower income than the general public (Lucas & Walsh, 2017).

Results

Pain-related (such as chronic pain) conditions were the most commonly reported reasons for cannabis use. The second most common was mental health disorders, including eating disorders, anxiety, and PTSD (Lucas & Walsh, 2017). Although not the focus of the study, Lucas and Walsh (2017) asked participants about their recreational use prior to medical use. Over 80% of participants reported recreation use prior to starting medicinal use (Lucas & Walsh, 2017). Over 70% of participants reported using cannabis instead of alcohol, other drugs, or nicotine (Lucas & Walsh, 2017), which are all known to have adverse mental and physical health effects. Those with mental health conditions were found to be more likely to use cannabis to replace benzodiazepines and antidepressants (Lucas & Walsh, 2017).

Discussion

It wasn't surprising that cannabis was most commonly used for chronic pain, as this is the topic most researched. However, Lucas & Walsh (2017) found an interesting trend in the use of medical cannabis for things like PTSD and anxiety. This is suggestive of cannabis being useful for patients with mental health disorders. Medical use in the sense of mental health is "focused on improving psychological well-being and quality of life (Lucas & Walsh, 2017, p. 34). There were a few limitations to this study. One included the participants ability to skip questions on the survey, therefore not all questions were answered by all participants. In order to remedy this, Lucas & Walsh (2017) used percentages based on the number of responses rather than the sample size.

Chapter 3: Review of Pain and Epilepsy Literature

Study 1: "Pills to pot: Observational analyses of cannabis substitution among medical cannabis users with chronic pain." By Boehnke et al. (2019)

Introduction

Chronic pain affects over 100,000 Americans and is the most common reason for medical cannabis use. Many pharmacologic options only work for some patients and for some symptoms (Boehnke et al., 2019). Cannabis is a promising analgesic for those with chronic pain (Boehnke et al., 2019). Those who use cannabis instead of pharmacologic methods have reported better pain management, better quality of life, and decreased to no opioid use (Boehnke et al., 2019).

Research Purpose and Hypothesis

Boehnke et al. (2019) were aiming to discover if patients substitute cannabis for other medications, why they do so, and how their overall health and well-being changed since using cannabis. The researchers also examined those who used cannabis for medical purposes versus those who use it medicinally as well as recreationally.

Design and Methods

Based on the survey platform Qualtrics, Boehnke et al. (2019) sent an anonymous online survey through client databases of multiple cannabis dispensaries throughout the country. After exclusions were considered, there were over 1,300 survey participants. Participants were asked questions about their reason for cannabis use, how their health, specifically their pain, had changed since using cannabis, and whether they were using cannabis instead of taking medication, drinking alcohol, or using tobacco products (Boehnke et al., 2019).

Results

Participants reported using cannabis for pain-related symptoms and mood disorders (Boehnke et al., 2019), as well as reported improvements in pain management. More than half of participants stated using cannabis to help relieve anxiety. Most of the participants reported that they had completely ceased prescription medications, such as opioids and benzodiazepines, and

were actively substituting medical cannabis (Boehnke et al., 2019). Patients reported cannabis substitution mainly due to managing their symptoms better and having fewer side effects (Boehnke et al., 2019).

Discussion

Just as many other studies did, Boehnke et al. (2019) concluded that medical cannabis users with chronic pain reported better pain management with cannabis over opioids. This may be due to the fact that cannabis has less negative health effects than prescription medications. It would have been helpful for Boehnke et al. (2019) to report on and compare opioid overdose/death among cannabis users. As more states legalize cannabis, both medicinally and recreationally, it is important to note the change in perception when it comes to consuming cannabis. A recent analysis of a national sample showed that those who use medical cannabis also report lower alcohol use (Boehnke et al., 2019). There is a potential for polysubstance abuse with the initiation of medical cannabis, either due to medication interactions, or due to the memory deficits cannabis can cause. Due to the psychoactive nature of cannabis, there is a risk for memory deficits or 'lapses' in memory. Those who are at risk for increased memory impairment may forget they have already taken a dose of cannabis and take more, thus furthering the memory loss.

Study 2: "Efficacy of CBD-enriched medical cannabis for treatment of refractory epilepsy in children and adolescents – An observational, longitudinal study" by Hausman-Kedem et al. (2018)

Introduction

Epilepsy is a well-known seizure disorder that often presents itself in childhood. About a third of these patients have a form of epilepsy that is resistant to treatment, called refractory

epilepsy (Hausman-Kedem et al., 2018). The research on using CBD-enriched cannabis for treatment of epilepsy started in the 1970's. However, due to the controversial nature of cannabis, there is still limited research on its potential efficacy and how it works to decrease seizure activity.

Research Purpose and Hypothesis

Hausman-Kedem et al (2018) performed an observational-longitudinal study on the use of medical marijuana for refractory epilepsy in a single pediatric clinic that specializes in epilepsy treatment. An observational-longitudinal study is one in which the researchers are simply observing the subjects and do not interfere with them, over a period of time, in this case, over two years. The purpose of this study was to determine the efficacy of CBD treatment in children with refractory epilepsy.

Design and Methods

The population of the study included a total of 69 patients ages one to 20 who were being treated for epilepsy at a pediatric epilepsy clinic. Patients were offered cannabis, in addition to their other therapeutic regimens. If they accepted, the patients were then followed for two years by a neurologist and a researcher (Hausman-Kedem et al., 2018). Seizure activity was disclosed by the parent/caregiver as well as the dose of CBD-enriched cannabis oil that was given.

Response to treatment was evaluated by comparing the average number of seizures per month pre-cannabis and after cannabis was added to treatment (Hausman-Kedem et al., 2018). A 'positive' result was yielded when CBD-enriched cannabis treatment resulted in less than half the seizures per month as compared to before cannabis treatment (Hausman-Kedem et al., 2018). Hausman-Kedem et al. (2018) also took into account seizure duration.

Results

All of the patients were observed to have at least a slight clinical reduction in seizure activity. About 50% of patients showed a statistically significant reduction in seizure symptoms and activities. Two patients even reported being seizure free with the addition of CBD-enriched cannabis oil (Hausman-Kedem et al., 2018). About 40% of the patients were able to taper off other seizure medications due to their improvement rate (Hausman-Kedem et al., 2018). Hausman-Kedem et al., (2018) found that improvement rate was higher in patients who initiated treatment at a younger age. There were two patients (3.4% of the study population) that ended up with seizure exacerbation with an increase in seizure activity and symptoms. Hausman-Kedem et al., (2018) attributed the exacerbation to some sort of cannabis allergy.

Discussion

This study, among others, shows that the addition of CBD-enriched cannabis oil provides a positive response in patients with epilepsy, more specifically refractory epilepsy. There is still no clear evidence for the mechanism of action that CBD has on seizure activity (Hausman-Kedem et al., 2018). There were cases of patients who started to gain a tolerance to their CBD dose, and thus needed a dose increase throughout treatment (Hausman-Kedem et al., 2018), which has been mentioned in previous studies. Hausman-Kedem et al. (2018) are in support of using controlled medical cannabis for the treatment of epilepsy. It is important, however, to do more research on long-term efficacy, in relation to tolerance building over time.

Chapter 4: Implications for practice

Many of these studies can be used in the discussion on whether marijuana should remain a schedule I drug and whether or not it should become recreationally legalized across the country. The study by Eisen et al. (2002) discovered that there were no long-term adverse effects of heavy marijuana use when compared between identical twins. Although this is just one study,

it shows that marijuana use may not all be negative. Knowing that there are no long-term side effects can be helpful for healthcare professionals in determining long term treatment for a patient who uses marijuana.

Many people tend to find marijuana helpful. The study by Haug et al. (2017) revealed that the younger users reported use of marijuana for boredom. While some may find this unwise, it is perceived as helpful by those who do it. However, it may be beneficial to implement non-substance related activities, such as art or reading, to alleviate the boredom.

The use of marijuana can also be helpful with substitution for substances that are proven harmful, such as opioids. The study by Boehnke et al., (2019) found that many patients were substituting the use of cannabis for taking prescription opioids. This finding suggests that cannabis could lead to a decrease in the harmful effects of opioids, including overdose and death. Opioid overdose is a prevalent issue in today's world, and one step in the solution may be the legalization of marijuana.

There are also people who believe that marijuana has a negative impact on an individual. It was found by Haug et al. (2017) that the younger someone is when they begin using cannabis on a regular basis, the higher the chance of them developing a cannabis use disorder. This is a valid argument as to why adolescents should be educated on cannabis, and why many think adolescent use is completely contraindicated.

There is also a general idea in society that smoking is harmful. Since many associate cannabis with smoking, although there are other versions, it can be argued that smoking cannabis can be harmful. The study by Haug et al. (2017) suggests that patients should be educated on the risks of smoking, even if they aren't smoking cigarettes. Nurses have a responsibility to educate

patients, therefore educating on marijuana itself, as well as the risks of smoking is important to implement into practice.

It is important to note that, just like any other medication or drug, there is a chance of gaining tolerance for cannabis in patients. Patients who achieve a therapeutic level of cannabis, whether for pain, epilepsy, or mental health, may eventually become tolerant of it and may need to increase usage in order to gain the same effect. As a nurse, it is important to educate patients on how to decrease the chance of increased tolerance. Reducing this risk can be done by limiting intake to when it's necessary and not using out of boredom. It can also be done by taking a break for a day or two from cannabis or CBD and 'resetting' your tolerance (Ramaekers et al., 2016). The healthcare team must be aware of the amount needed to achieve a therapeutic effect, while trying to avoid a dependence issue.

Chapter 5: Discussion, Limitations, and Conclusion

Limitations

There is a stigma when it comes to being treated for mental health disorders. Therefore, many people will keep their mental health problems to themselves and self-medicate, including smoking cannabis. However, there is also a stigma on using cannabis. Many people will also hide the fact that they are using cannabis, let alone using it to deal with mental health issues. Due to these stigmas, patients may not wish to participate in such studies as those discussed in this literature review. It is imperative for researchers to guarantee patient privacy in these situations and maintain this privacy.

Many of these studies were also focused on very specific groups of people. The study by Eisen et al. (2002) focused on identical twins who were also both veterans and the study by Haug et al. (2017) was based on patients in a single dispensary in San Francisco. In order to get a more

accurate representation, research such as these should be performed multiple times in various places across the country with a variety of samples.

Many of the studies throughout this literature review were based on self-reporting, either by the patient themselves, or their caregiver. There is also a chance of misreporting information, which can alter data. It is difficult to assess for this, however most research has a margin of error in order to account for this.

Discussion

It is fairly common knowledge that medical cannabis has been used primarily for chronic pain. It has also been known to be used in epilepsy with children and has remained controversial. Several research studies have shown that cannabis has an analgesic effect and sometimes works better for pain relief than opioids do. It also has significant research on treating epilepsy, although the mechanism of action is still unknown.

Although there are varying opinions on the efficacy of cannabis in relation to mental health, is it important to note its proven efficacy in areas such as chronic pain and epilepsy. Hausman-Kedem et al., (2018) were able to observe this efficacy in children with epilepsy over a two year period. In terms of mental health, there is little research in general, and the conclusions and opinions of researchers are all over the map.

In order to decide whether cannabis truly has a more positive or negative mental health, more research must be conducted. Current research appears valid, however it is very specific to certain populations. Further research across populations and demographics is necessary. It may be beneficial to implement a 'placebo' study, as current research focuses mainly on patients who are using medical cannabis and often doesn't compare it to those who don't.

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