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Ingestible Cannabis Dosing for Chronic Pain Relief in Medical Marijuana Patients: A Patient Survey

Amanda Labbe, PharmD

Abstract

In the United States the "opioid epidemic" or "opioid crisis" has become a major concern in healthcare. According to the CDC the number of opiates being prescribed had nearly quadrupled from 1999 to 2010. The major concerns surrounding opiates include tolerance development, opioid use disorder (addiction), withdrawal effect, prescription abuse, drug diversion, overdose and death. Opioids, mainly synthetic opioids (other than methadone), are currently the main driver of drug overdose deaths.

From 1999 to 2017, almost 218,000 people died in the United States from overdoses related to prescription opioids. Overdose deaths involving prescription opioids were five times higher in 2017 than in 1999.[1] Opioids were involved in 47,600 overdose deaths in 2017 (67.8% of all drug overdose deaths).[2] From 2016 to 2017 Connecticut was amongst one of the top states to have a "statistically significant increase rate in drug overdose deaths".

The primary health condition for opiate prescribing is chronic pain. The World Health Organization[2] estimates that 20% of people worldwide have some form of chronic pain. Conditions involving chronic pain include fibromyalgia, multiple sclerosis, severe rheumatoid arthritis, debilitating back or neck pain, cancer pain, residual pain after spinal surgery, sciatic nerve pain and many more. The number of patients in the United States diagnosed with a chronic pain condition continues to grow. With the opiate crisis on the rise in the United States, we as healthcare professionals must consider a safer alternative for patients with chronic pain.

Cannabis as Alternative Therapy for Chronic Pain

A recent study published in 2014 found Hawaiian medical marijuana patients using marijuana for chronic pain had great success. Results from this survey reflected an average relative decrease in pain of 64% with an average pain reduction of 5 points on a scale of 0-10 pain scale. Most patients (71%) reported no adverse effects.[4] This study reflects similar findings from our Connecticut medical marijuana patients using marijuana products for chronic pain relief.

Marijuana has been used for centuries to treat various ailments, including chronic pain. However, due to its federal classification as a Schedule I drug, research and available studies are limited. It is only in the past decade that states have legalized medical marijuana programs to help patients gain access to marijuana products for their healthcare needs.

In 1996 California voters passed Proposition 215 allowing patients access to medical marijuana. In the years to come 32 additional states have passed bills allowing implementation of medical marijuana programs. Connecticut is currently one of the 33 states that allow for medical marijuana certification

for qualifying conditions. Each state regulates their own individual program in regards to statues, regulations and guidelines.

Connecticut's Medical Marijuana Program

Connecticut's Medical Marijuana Program was signed in to law in 2012, with the first six Dispensary Facilities opening in 2014. Connecticut's Medical Marijuana Program is unique in that it was the first program to require a licensed pharmacist to perform the dispensing of any medical marijuana products. Being health care professionals that are specially trained in Drug Information, a pharmacists' skill set is well-suited to aid patients in product selection, proper dosing, possible side effects, drug interactions and continued monitoring. It is very important to have well-informed healthcare professionals to aid in assisting patients with their medical marijuana therapy.

A patient may only register for a medical marijuana certificate if he or she is a Connecticut resident being treated for a debilitating medical condition by a Connecticut-licensed physician or APRN. To date there are currently 36 approved conditions for patients 18 years of age and older, as well as 10 approved conditions for pediatric patients. Connecticut currently has over 38,000 patients registered for the program and it continues to grow daily, especially as new conditions are added. Since the program was established, the amount of licensed Dispensary Facilities has been increased from 6 to 18 in total to continue to provide patient access as the number of qualified patients has grown.

Connecticut's Medical Marijuana Program offers highly regulated and tested products in differing strengths, potencies, active ingredients and dosage forms. Such dosage forms include inhaled, sublingual, ingestible, topical and transdermal products. These products are manufactured by four licensed Production Facilities located in Connecticut. These Production Facilities not only grow the raw cannabis flower, but also perform all extraction and processing of said flower to formulate these ancillary dosage forms. The combination of products being manufactured from start to finish by the same producer, coupled with Connecticut's stringent testing requirements, lead to Nation-leading product consistency and quality. In addition to these high quality formulations, pharmacists are available to assist each patient in choosing the appropriate product and dose based on the patient's specific medical needs.

Methods

We as pharmacists at The Healing Corner in Bristol, Connecticut have collected data from our patients to give more insight on the possible therapeutic benefits of marijuana, particularly pain relief. Information was received through surveys completed by our medical marijuana patients. Such information includes dosing, onset of action, duration of action, side effects, pain level before and after marijuana use and additional symptoms marijuana helped improve.

- Sample Selection: From January 26, 2018 to August 30, 2018 we hand delivered 200 surveys to patients receiving an ingestible cannabis product for pain and had been a certified patient for a minimum of 6 months. Ingestible forms include capsules, tablets, edibles, oral solutions, or pure cannabis oil.
- Survey Design and Administration: Our medical marijuana patients were hand delivered a survey with a stamped envelope for return. They were kindly asked to complete the survey in a timely manner to the best of their ability and submit anonymously through the mail.

Results

The data was retrieved from a total of 78 completed surveys. Patients include 45 females (58%) and 33 males (42%) ages ranging from 27 years old to 91 years old, average age being 49. Of these patients who had reported previous opiate use (43 total), 51% reported stopping all opiate use, 33% reported decreasing dose of opiates, 16% reported same dose and no need to increase overtime. The average dose of THC used was 25 mg. Overall 81% (61/75) reported needing to use the cannabis only once or twice daily. The average onset of the ingestible cannabis was 57.2 minutes (from 75 completed responses) with an average duration of 4.69 hours (from 70 completed responses). The average decrease in pain level from 75 patients was 5.07 points from before using the cannabis product to after onset. (Highest level of pain being 10 points and lowest level of pain being 0 points).

Data Results (Average)	
Strength	25 mg per dose
Frequency	1-2 x daily
Onset of action	57.2 minutes
Duration	4.69 hours
Decrease in pain level score	5.07 points

Other reported uses for medical marijuana included relief from anxiety, depression, inflammation, arthritic pain, neuropathic pain, insomnia, tremors, aggression, nausea, migraines, headaches, focus, acne, temperature intolerance, seizures, stomach issues, digestion and respiratory issues.

Reported side effects from marijuana use were worsened anxiety, short-term memory loss, nausea, dizziness, paranoia, increased appetite, weight gain, dry mouth, fatigue, perspiration and increased GERD. Overall 50% of patients (38/76 responses) reported no side effects from marijuana use.

Discussion

The opiate epidemic in our country can be de-escalated by creating alternative therapies for patients with chronic pain. Marijuana has been used to treat ailments for centuries. Our survey results indicate an average decrease in pain level of 5.07 points which is significant for patients with chronic pain. However, there is still much to be discussed in regards to replacing opiates with medical marijuana. Such factors include variable dosing, limited access to products, out-of-pocket expense for patients, federal classification of marijuana and the difference between drug profiles.

Variable Dosing

Medical marijuana dosing is specific to each individual patient. Connecticut medical marijuana patients have an advantage over patients from other states because they have access to pharmacists who can assist them with finding the appropriate product and dose. Variables we assess when considering a starting dose include previous cannabis history, past medical history (issues with the liver or delayed metabolism with other medications), severity of pain, and current opiate dose. In our practice, cannabis naïve patients are started with the lowest dose, roughly 2.5 to 5 mg every 4 to 6 hours as needed. Experienced marijuana users with a higher tolerance for marijuana and/or opiates may require 30 to 50 mg per dose. It is key to start with a lower dose and titrate upward depending on level of pain relief and tolerable side effects. As pharmacists, our goal to maximize the patient's pain relief while mitigating the amount of euphoria and other undesired side effects.

Limited Access

Access for medical marijuana in the country is very limited. Not all patients in the United States have access to medical marijuana. Currently only 33 states have medical marijuana programs. However, there is not an abundance of dispensaries in each state still making distance and accessibility an issue. Medical marijuana patients are also required to find a doctor willing to certify them for the program, pay the state fees in which they reside and meet other state requirements.

Expense

According to the Institute of Medicine, chronic pain afflicts 116 million Americans and costs the nation over $600 billion every year in medical treatment and lost productivity.[3] Medical marijuana would be an option for many more patients if it was just as affordable as their prescription medications. Co-pays for an opiate can cost a patient as little as $5 to $20 a month out-of-pocket, whereas medical marijuana can cost a patient a few hundred dollars a month. Due to its federal scheduling, insurance companies will not pay for medical marijuana, making opiates cheaper and more accessible for patients. Patients can being highly motivated to reduce their opioid consumption by incorporating medical marijuana into their medication regimen, but might be unable because of this financial hurdle.

Federal Law

The Federal Law continues to classify marijuana as a Schedule I drug. One of the key points in classifying a drug as Schedule I is "the drug or other substance has a high potential for abuse and has no accepted medical use in treatment in the United States".[6] Research and anecdotal evidence have since proven the safety of marijuana and its numerous health benefits. In our patient survey alone patients reported a decrease in chronic pain, reduction in anxiety, depression, aggression, nausea, migraines, stomach issues and seizures with little if any side effects. The health benefits we have witnessed as healthcare professionals are profound and significant.

Schedule I Drugs	Schedule II Drugs
(A) The drug or other substance has a high potential for abuse. **(B) The drug or other substance has no currently accepted medical use in treatment in the United States.** **(C) There is a lack of accepted safety for use of the drug or other substance under medical supervision**	(A)The drug or other substance has a high potential for abuse. (B) The drug or other substance has a currently accepted medical use in treatment in the United States or a currently accepted medical use with severe restrictions. (C) Abuse of the drug or other substances may lead to severe psychological or physical dependence.

Drug Profiles

Opiates have many issues when it comes to safety and efficacy concerns. Reported side effects from opiates include respiratory depression, sedation, nausea, constipation, itch, or primary central nervous system effects, pupillary constriction, somnolence, mental clouding, euphoria and dysphoria.[5] More serious side effects from opiates include chronic constipation, sleep-disordered breathing, fractures, hypothalamic-pituitary-adrenal dysregulation, and overdose.[9] Overdosing from opiates is a major concern, 91 Americans die every day from an opioid overdose.[2]

Comparatively, Hawaiian medical marijuana patients in the previously stated survey reported a majority (71%) of marijuana users experienced no adverse effects, while 6% reported a cough and/or throat irritation and 5% reported a fear of arrest. All other adverse effects were less than 5% such as euphoria or dysphoria, difficulty concentrating, changes in perception, short term memory loss, drowsiness, transient increase/decrease in blood pressure, anxiety. No serious adverse effects were reported.[4] There are currently no reported lethal overdoses with marijuana. It is evident that opiates

have a significantly higher number of dangerous side effects, including risk of lethal overdose, compared to marijuana.

Efficacy of Opiates

The clinical trials that have been conducted with patients using opiates to treat chronic pain do not provide adequate evidence of long-term effectiveness.[6] With long-term use of opiates, central mechanisms also lead to changes associated with hyperalgesia and decreased responsiveness to opioids (tolerance) and it has been speculated that opioid-induced hyperalgesia may be a clinically-relevant phenomenon leading to increased pain in some situations.[7] Patients who have used opiates for multiple years may experience a decrease in efficacy or even hyperalgesia leading to a significant reduction in their quality of life. The long term effectiveness of medical marijuana in the treatment of chronic pain has not been verified or studied therefore this is still an unknown factor that requires attention.

Conclusion

The marijuana plant had been used for centuries dating back to 2000 B.C. in Chinese herbal medicine. Prior to the 1937 Marihuana Tax Act marijuana was sold in pharmacies in the United States in over-the-counter products and was a primary ingredient in pharmaceutical medications. This act was put in place to deter individuals from buying and selling marijuana products. Many advocates fought against this act including the American Medical Association. Then, in 1970 the Controlled Substance Act replaced the Marijuana Tax Act and classified marijuana as a Schedule I drug. As previously stated, Schedule I drugs indicate the drug is “highly addictive and has no current medical use”. We have since proven this to be incorrect in regards to the marijuana plant. An outdated law from 49 years ago currently prevents proper access to medical use of marijuana.

Removing marijuana from the Controlled Substance Act and giving states the authority to control regulation is one proposed solution. By removing the federal illegality, this will solve other issues as well including the access to research and possible coverage by healthcare insurance. Safety and health benefits have been proven and documented; however, more concrete data from controlled trials is needed to effectively treat patients long-term. Connecticut Pharmaceutical Solutions, one of the licensed Production Facilities in Connecticut, has recently partnered with Yale School of Medicine to launch an FDA-Approved Medical Marijuana Clinical Study with human subjects. This study, along with further steps and action must continue to be taken to change our outdated laws to help patients gain access to medical marijuana as an alternative therapy option.

Medical Marijuana Patient Survey- Chronic pain

1. What is your gender? (circle) Male or Female

2. What is your age? _____

3. What was your original opiate dose prior to starting the medical marijuana program? (if any -- drug, strength, frequency) *example: oxycodone 10 mg 3 times daily*

_____

4. What is your current opiate dose? (if any-- drug, strength, frequency) *example: oxycodone 10 mg 3 times daily*

_____

5. What is the dose of THC you ingest for pain relief? dose (mg)

6. How often do you use ingestible cannabis? *Example: 2-3 times a week, once daily, twice daily, three times daily, four times daily etc.*

7. Which ingestible dosage form do you use most often? (circle one of the following)

- Capsules
- Tablets
- Edibles
- Oral cannabis solutions
- Pure cannabis oil

8. How long does the product take to start working? (onset)

9. How long does the product last? (duration)

10. What was your pain level before and after cannabis dose 1-10 (0= no pain, 10= worse pain)

Before: _____ After: _____

11. Has cannabis helped you with any other symptoms? If so what?

12. Have you experienced any side effects while using cannabis? If so what?

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