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Cannabinoid Therapy in Chronic Pain Management

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Abstract

- In 1996, the state of California was the first in the union to allow for the use of medical marijuana. Since then, 28 more states have enacted similar laws (National Conference of State Legislatures, [NCSL], 2017).
- As of 2014, the CDC reported opioid deaths were up 369%, which is more than 91 deaths per day from overdose (Centers for Disease Control, [CDC], 2017). The purpose of this study is to compare medical marijuana to opiates in safety and addiction; in addition, the efficacy of using cannabis as an alternative for individuals who deal with chronic pain will be investigated.
- A literature review was conducted to find systematic reviews, meta-analyses and randomized controlled trials (RCTs) that evaluated medical marijuana and opiates for the treatment of chronic pain.
- Four databases were surveyed with multiple sources found in CINAHL, Cochrane Database, PubMed and PsycINFO.
- Current literature shows that cannabinoids may provide potential benefit with short-term use, but not without possible adverse effects. With the current lack of research on long-term treatment of chronic pain with cannabinoids, additional research needs to be conducted to further understand the potential adverse effects associated with cannabinoid use.
- *Keywords:* adverse effects, cannabinoid addiction, cannabinoids, chronic pain, efficacy, medical marijuana, pain management.

Introduction

- Cannabis, cannabinoids and medical marijuana all encompass a topic that is highly controversial, as well as lacking in scientifically based evidence for chronic pain therapy. To date, the Food and Drug Administration (FDA) has approved three different cannabinoid based products that are currently being used for various medical issues, such as Dronabinol (Marinol and Syndros) and Nabilone (Cesamet).
- Limited amounts of research have been conducted due to the Drug Enforcement Administrations (DEA) schedule of cannabis as a Schedule I drug.
- Chronic pain is also a highly discussed topic due to the difficult nature of finding proper therapy to improve overall quality of life. Patients who deal with chronic pain are often left with prescription opiates for pain management, all of which have adverse effects. Authors Feingold, Goor-Aryeh, Bril, Delayahu, and Lev-Ran (2017) state long-term treatment with opioids may be complicated due to tolerance and addiction, which may not be adequately managed and potentially worsen the pain.
- An in-depth evaluation of the adverse reactions, addictive effects, as well as clinical and statistical significance will be examined in those who choose to try cannabinoid products for chronic pain therapy.

Statement of the Problem

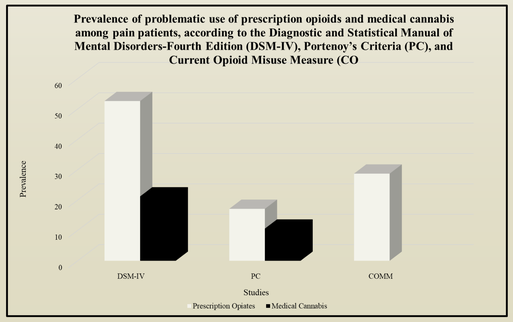
- According to Boehnke, Litinas, and Clauw (2016), opiates are one of the most commonly used medications to treat chronic pain. With that notion, opiates are also ineffective for many types of pain as well as associated with addictive and significant morbidity and mortality rates.
- With the ever-growing opiate epidemic, an alternative treatment modality would be of great benefit. Cannabinoid therapy could be a potential secondary option rather than continued opiate therapy if research supports the advocacy and safety.

Research Questions

- Is medical cannabis safe to use for chronic pain? What are the documented adverse effects associated with using this medication?
- How addictive is medical cannabis compared to other addictive substances? What addictive qualities are associated with starting this medication?
- What has been shown to be more effective in the treatment of chronic pain, medical cannabis or opiates?

Literature Review

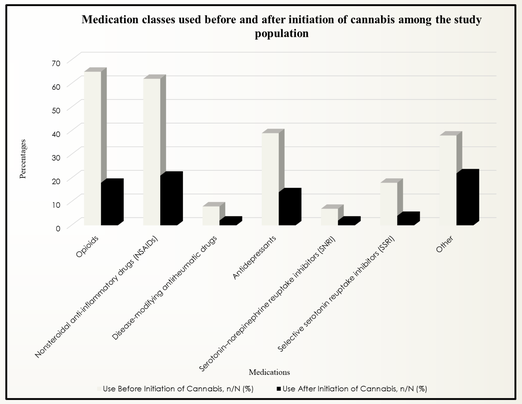
- **Cannabinoids for Chronic Pain- Safety and Adverse Events**
  - Whiting et al. (2015) found in eight of the 28 studies, patients who reported at least 30% decrease in pain were those who used cannabinoids rather than those who used a placebo (OR = 1.41; 95% CI =0.99-2.00). They also found common adverse events that included dizziness, dry mouth, nausea, fatigue, hallucinations, drowsiness and confusion.
  - Results found by Ware, Wang, Shapiro, and Collet (2015), showed medical cannabis users were at increased risk of non-serious adverse events, 818, ranging from mild to moderate events such as: headache, nasopharyngitis, nausea, somnolence, and dizziness compared to the 581 events documented in the control (IRR = 1.64, 95% CI = 1.35-1.99). Overall, individuals in the medical cannabis group experienced better pain control than the control (change = .92; 95% CI = .62-1.23) vs (change = .18; 95% CI = -.13).
  - Nugent et al. (2017) found no detection of significant differences between the cannabis group compared to the control group when it came to serious adverse events (IRR = 1.08; 95% CI = 0.57-2.04). This study did evaluate long-term effects associated with cannabis use and found it to be associated with cannabinoid hyperemesis syndrome as well as incident cannabis use disorder (OR = 9.5; 95% CI = 6.4-14.1)
- **Comparison of Addictive Substances to Cannabinoids**
  - Feingold, Goor-Aryeh, Bril, Delayahu, and Lev-Ran (2017) studied whether or not these patients were more apt to abuse opioids or medical cannabis. Figure I shows the results.
  - Richter, Pugh, Smith, and Ball (2016) examined alcohol, marijuana, as well as other illicit drugs and prescription drugs as possible correlates to nicotine product use. Results revealed any form of nicotine use, co-occurring use with other substances was documented (79.4% alcohol (OR = 11.5; 95% CI = 8.4- 15.7), 59.7% marijuana (OR = 12.7%; 95% CI = 9.5- 16.8), 53.9% poly-substance use (OR = 15.5; 95% CI = 11.4- 21.0), 18.8% prescription drugs (OR = 8.3; 95% CI = 5.4- 12.8), 8.5% other illicit drugs (OR = 19.1; 95% CI = 9.0- 40.6).



D. Feingold, I. Goor-Aryeh, S. Bril, Y. Delayahu, and S. Lev-Ran, 2017

Literature Review Cont.

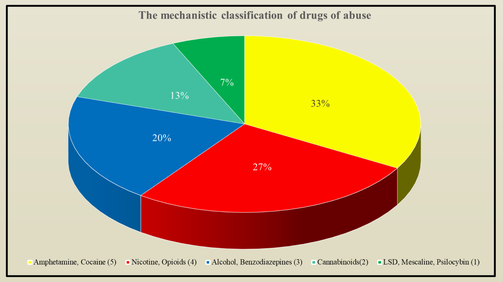
- **Medical Cannabis vs Opiate Efficacy**
  - Goldenberg, Reid, IsHak, and Danovitch (2017) found cannabis use for increased health-related quality of life (HRQoL) had vague results and most effects were non-significant or nearing zero. Some reports showed a mild benefit in some pain conditions while in others there was a decrease in HRQoL.
  - Narang, Gibson, Wasan, Ross, Michna, Nedeljkovic, and Jamison (2008) conducted two phases and found Dronabinol in Phase I had significant pain relief after 8 hours per the total pain relief at 8 hours score (TOTPAR), (20 mg vs placebo at $p < .01$, 10 mg vs placebo at $p < .05$). For adjuvant therapy in Phase II, dronabinol proved to have a significant effect in lowering pain from baseline ($p < .001$), decreasing pain bothersomeness, as well as increased satisfaction in their therapy ($p < .01$).
  - Boehnke, Litinas, and Clauw (2016) evaluated the efficacy of medical cannabis compared to opiates in chronic pain patients. Figure II highlights the changes before and after cannabis use.



K. Boehnke, E. Litinas, D. Clauw, 2016

Discussion

- The National Institutes of Health (NIH) has supported around 281 projects totaling over $111 million on cannabinoid research, 49 projects ($21 million) examined therapeutic properties of cannabinoids, and 15 projects ($9 million) focused on (CBD)
- Medical cannabis has multiple adverse events similar to other drugs
- Medical cannabis has been found to be less addictive and problematic than opiates according to the literature review, reference the pie chart
- Medical cannabis has been shown to improve overall HRQoL and reduce medication need, not always statistically but clinically
- More research is needed to understand the long term effects as well as short term outcomes in larger populations



B.G. Katzung (Ed.), 2014

Applicability to Clinical Practice

- It is difficult to find effective treatments for chronic pain, but having multiple therapy modalities increases the likelihood of controlling pain
- Alternative therapies will aid in alleviating the current opiate epidemic
- Medical cannabis has also been shown to be effective for other diseases such as fibromyalgia, neuropathy, multiple sclerosis, cystic fibrosis, migraines and gastrointestinal conditions
- Medical cannabis is associated with reduced risk of addiction, lessened side effects and a possible decrease in other pain medications compared to opiates

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