

**Sigma's 30th International Nursing Research Congress**  
**The Use of Medical Cannabis for Treatment of Chronic Neuropathic Pain: An Integrative Research Review**

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Chronic neuropathic pain is a common problem that affects patients globally. In the United States (US), Australia and Canada, chronic neuropathic pain treatment includes a substantial use of opioids, however, with the growing epidemic, alternative options are being sought. The use of medical cannabis as treatment for chronic pain is increasing in popularity as an alternative for opioids. The aim of this integrative research review (IRR) was to explore the efficacy of medical cannabis for chronic neuropathic pain treatment. PubMed and Google Scholar were used for literature search engines. Keywords used to retrieve articles were efficacy, medical cannabis, medical marijuana, non-cancer chronic pain, neuropathic pain, opioids, cannabinoid, and treatment. Inclusion criteria were articles published in the US, Canada, and Australia, and those written in the English language. Exclusion criteria were articles prior to 2010 and subjects less than 18 years of age. Eleven articles were included in the IRR: five systematic reviews of randomized controlled trials, one randomized controlled trial, two cross-sectional observational studies, one secondary data analysis, one prospective cohort study, and one historical cohort study. Pain was measured using the Visual Analog Scale (VAS), Descriptor Differential Scale (DDS), numerical rating scale, Brief Pain Inventory (BPI), and/or quality of life in these studies. Most results showed that medical cannabis was an effective treatment for the reduction of chronic neuropathic pain and increased quality of life, with the exception of the Australian prospective cohort study. Adverse effects of cannabis included short-term neurocognitive decline and worsening of psychiatric illness. Cannabis was also associated with a reduction or cessation of opioid use in the US and Canadian articles, prescribing patterns and spending in Medicare enrollees in states where medical cannabis laws were implemented. Findings suggest that clinical practice should include substituting medical cannabis for opioids in the long-term management of chronic neuropathic pain in countries with medical cannabis laws.

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### **Abstract Summary:**

The use of medical cannabis as treatment for chronic neuropathic pain is increasing in popularity as an alternative for opioids and other neuropathic agents. The aim of this integrative research review (IRR) was to explore the efficacy of medical cannabis for chronic neuropathic pain treatment.

### **Content Outline:**

#### **Introduction**

Chronic neuropathic pain is a worldwide issue that can be devastating to patients if not managed appropriately. Opioids have been the drug of choice for several years in the treatment of chronic pain. The overuse of opioids has led to the current opioid epidemic. Medical cannabis laws permit the use of cannabis for neuralgia pain management as a safe alternative to opioids.

The purpose of this integrative review was to examine the use of medical cannabis as a treatment option for chronic neuropathic pain. The goal of this review was to determine how medical cannabis was used in the treatment of chronic neuropathic pain in patients who were 18 years and older in the last eight years from 2010 to 2018.

## **Background**

Medical cannabis has been explored as a therapeutic option for pain management throughout the United States (U.S.), Australia and Canada. In the U.S., federal regulations limit researchers to conduct rigorous studies on medical cannabis due to its schedule I status. On the other hand, in Canada, medical cannabis is legal both for medical and recreational purposes. Since cannabis is classified in the same category as heroin in the U.S. at the federal level with no currently accepted medical use and high potential for abuse, it hinders researchers' ability to explore its treatment efficacy and safety (Drug Enforcement Administration [DEA], 2018). However, at the state level, cannabis is legalized for medicinal use in 31 states (Voelker, 2018). Therefore, studies can be conducted in certain states due to its legality. Additionally, medical cannabis use was decriminalized in Australia on October 20, 2016 (Campbell et al., 2018). Although, randomization of a sample may not be feasible since statewide cannabis programs involve patient self-enrollment into a medical cannabis program. With these barriers to research studies, medical cannabis access to patients and physicians is limited when exploring it as a safe alternative to opioids.

## **Theoretical Framework**

Betty Neuman's Systems Model was used as a theoretical framework for this integrative review (Butts & Rich, 2011). The Neuman's Systems Model posits the idea of holistic orientation to wellness, which include five variables of the person: physiological, psychological, sociocultural, developmental and spiritual (Butts & Rich, 2011). The three variables pertinent to this review were physiological, psychological, and developmental.

## **Methods**

The databases used for the literature search were PubMed and Google Scholar. Keywords used to retrieve articles included: efficacy, medical, cannabis, cannabinoids, marijuana, chronic pain, neuropathic pain, opioids, substitution, and treatment. Inclusion criteria included articles that were published in the US, Canada, and Australia, and those written in the English language from 2010-2018. Reviews outside of the US, Canada, and Australia, such as in Europe were excluded due to differences in the cannabis laws and lower use of opioids. Exclusion criteria included articles prior to 2010 and subjects less than eighteen years of age.

## **Evaluation Table**

Appendix A is the evaluation table, Table 1, of all articles included in the IRR. Table 1 includes an evaluation of the data collection for the IRR. The table includes all eleven studies used to answer the research questions. The variables of the studies include the following: citation, sample/setting, major study variables and definitions, measurement of major variables, data analysis, study findings, level of evidence, and appraisal of worth.

## **Results**

Initial electronic database search yielded 120 articles. Eleven articles that fit the inclusion and exclusion criteria were included for review. Articles included in the review were five systematic reviews, one randomized controlled trial, two cross sectional observational studies, one secondary data analysis, one prospective cohort study, and one historical cohort study. The Rating system for the Hierarchy of Evidence for Intervention and Treatment Questions by Melnyk and Fineout-Overholt's (2015) was used to evaluate the level of evidence for each study.

## **Discussion**

This IRR supports medical cannabis as a therapeutic alternative to opioids with sufficient evidence. In nine studies, medical cannabis was evaluated to test its effects on pain intensity. In the five systematic reviews of RCT's, the use of medical cannabis containing tetrahydrocannabinol (THC), the psychoactive ingredient in cannabis, demonstrated reductions in pain for all studies. However, there were about five RCT's that were used in all five systematic reviews, which clearly lead to identical results. Additionally, Bowen and McRae-Clark (2017) discovered that medical cannabis had therapeutic benefits such as decreased spasticity in Multiple Sclerosis and increased appetite and caloric intake in HIV associated anorexia. Cannabis also decreased intraocular pressure in glaucoma for a short duration. Adverse effects such as neurocognitive decline were consistent in all studies, however. Similarly, decreased spasticity was also evident in Hill's (2015) review. Although, Hill (2015) found adverse events including addiction and worsening of psychiatric illness.

## **Limitations**

Most of the studies mentioned a lack of randomized controlled trials due to cannabis' schedule I status, which creates a barrier to randomly assign patients in RCT's. Therefore, medical cannabis patients self-enrolled into a program to be included in the U.S. study samples. Most studies were limited by small sample sizes, and in almost all of the systematic reviews there was variability of THC doses and short study durations. Additionally, cannabis doses were inconsistent across the study population. There was also an inability to blind patients related to psychoactive effects of cannabis, which caused a few patients to drop out of studies.

## **Conclusion**

This IRR was supported by adequate evidence that medical cannabis is an effective treatment for chronic neuropathic pain management and can be substituted for opioids. Although there are some negative adverse effects, they do not measure up to the harsh consequences of opioids and the amount of overdose deaths. Most of the studies reviewed indicated the positive effects and efficacy of medical cannabis as an option or alternative to opioids in the management and treatment of chronic pain associated with neurological, musculoskeletal, non-cancer as well as cancer conditions.

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