



# Cannabis Use and Opioid Prescription Reduction in Chronic Pain Management



## INTRODUCTION

The opioid epidemic remains a critical public health issue, contributing to over 564,000 deaths from opioid overdoses between 1999 and 2020 in the United States alone.<sup>1</sup> In 2021, opioid-involved deaths surpassed 100,000 annually, a significant increase from previous years, with prescription opioids responsible for a large portion of these deaths.<sup>2</sup> Chronic pain affects an estimated 50 million adults in the U.S. and is a primary driver of long-term prescription opioid use, leading to dependence and addiction.<sup>3</sup> Cannabis has emerged as a promising alternative for managing chronic pain, particularly for patients seeking to reduce or discontinue opioid usage.<sup>4</sup>

A systematic review conducted by the National Academies of Sciences, Engineering, and Medicine found substantial evidence that cannabis is effective for treating chronic pain in adults, particularly in neuropathic conditions.<sup>5</sup> Furthermore, Boehnke et al. showed that patients using cannabis for chronic pain reported a 64% reduction in opioid use.<sup>6</sup> Campbell et al. echoed these findings, noting that cannabinoids, particularly those containing a balanced THC/CBD ratio, can help alleviate chronic pain.<sup>7</sup> This body of evidence supports the hypothesis that cannabis could reduce reliance on prescription opioids while maintaining effective pain control.<sup>8</sup> Further research is needed to elucidate which conditions and types of cannabis products are most likely to benefit patients suffering from various types of pain.

## METHODS

For this analysis we included 188 adults from 34-86 years old, diagnosed with conditions related to chronic pain, identified by the International Classification of Diseases, Tenth Revision (ICD-10) codes. Pain types were classified according to the latest guidelines from the International Association for the Study of Pain (IASP). We matched cannabis consumption data from registered transactions from Vireo Health Medical Cannabis dispensaries with medical records of these patients using MSA patented, HIPAA compliant de-identification system.

The study focused on chronic cancer pain, neuropathic pain, musculoskeletal pain, and other less common pain types. The primary outcome was a reduction in opioid prescriptions, measured by milligrams of morphine equivalent (MME) per month, analyzed comparing the periods before, during, and after cannabis use.

## RESULTS

### *Opioid Prescription Reduction:*

The most significant reduction in opioid prescriptions was observed in patients with cancer pain, showing a 71% decrease in MME/month during cannabis use. Patients with neuropathic pain experienced a 19% reduction, while those with musculoskeletal pain saw a 3% decrease in opioid prescriptions during the period of use of cannabis products.

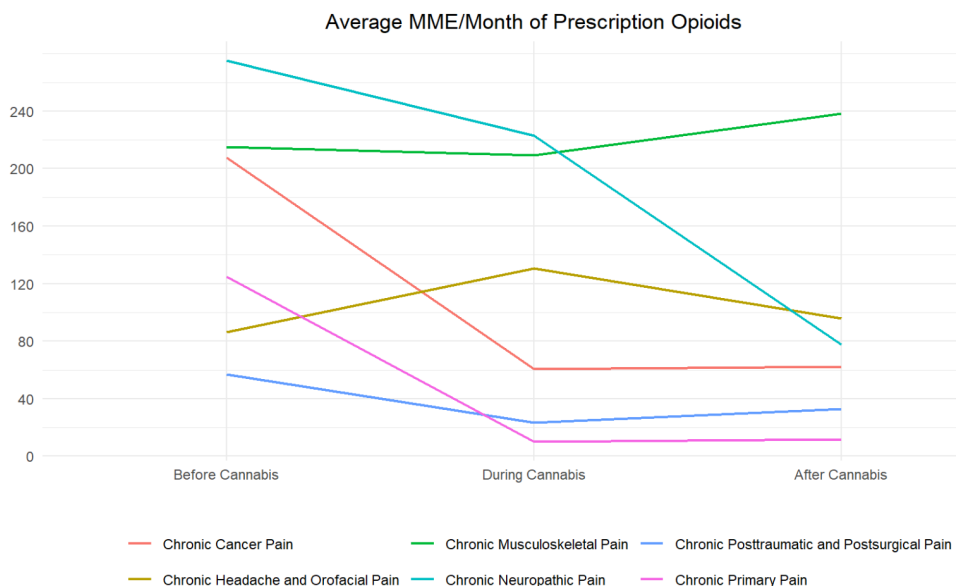


Figure 1. Trend of opioid prescriptions before, during and after cannabis use in different types of chronic pain.

### *Cannabis Product Preference*

Tablets were the most used cannabis product across all pain categories, except in the post-traumatic pain group, where capsules were preferred.

Product Form	Cancer Pain % patients	Neuropathic pain % patients	Musculoskeletal Pain % patients
Tablet	36%	41%	28%
Vaporizer	23%	26%	34%
Capsule	9%	15%	16%
Topical	23%	4%	10%
Oral	5%	4%	4%
Other	4%	10%	8%

Table 1. Distribution of types of Cannabis products by Chronic Pain categories.

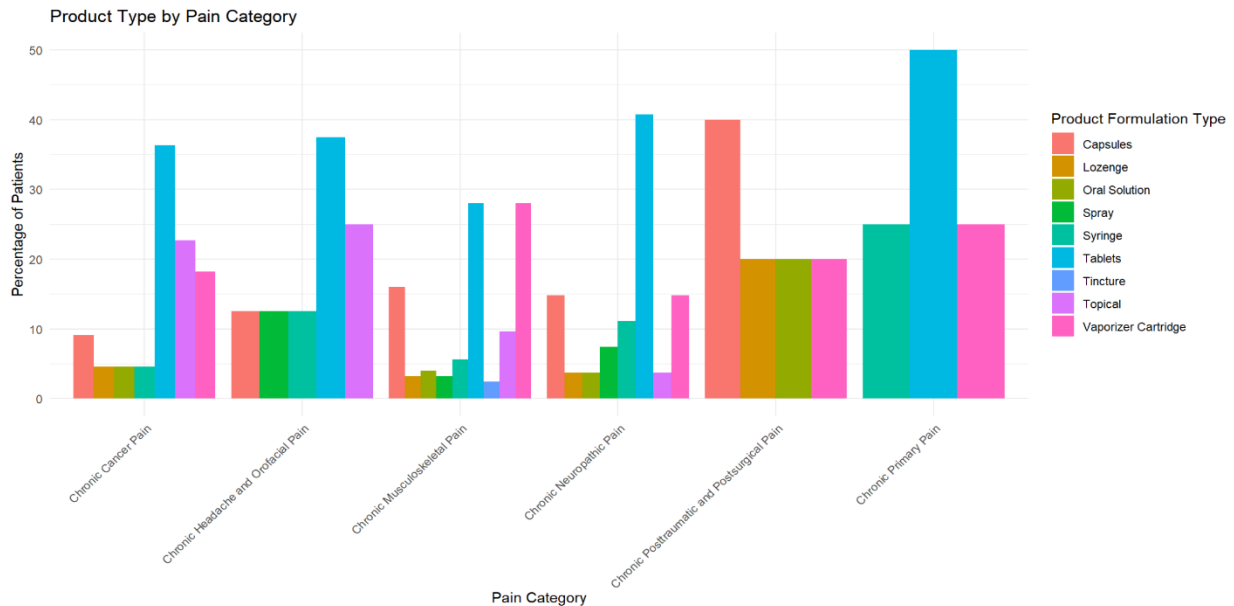


Figure 2. Preferred types of Cannabis products according to chronic pain categories.

Cannabis products with THC:CBD ratios of 1:1 and 19:1 were the most used among cancer pain patients, and 19:1 THC:CBD ratio products were preferred by patients with musculoskeletal and neuropathic pain, compared to other product types.

THC:CBD Ratio	Cancer Pain % patients	Neuropathic pain % patients	Musculoskeletal Pain % patients
20:1	5.8%	9%	9.7%
19:1	23.5%	40.9%	33.9%
18:1	5.8%	4.5%	2.9%
1:1	23.5%	31.8%	16.5%
Other	41.4%	13.8%	37%

Table 2. Distribution of product THC:CBD ratio by Chronic Pain Categories

### ***Reduction in Opioid Prescriptions by Pain Category and Gender***

In Chronic Cancer Pain 41% of female patients and 40% of male patients reduced opioid prescriptions, whereas in Chronic Musculoskeletal Pain 45% of female patients and 40% of male patients reduced opioid use. For Chronic Neuropathic Pain, we observed 46% of female patients and 33% of male patients reduced opioid prescriptions.

### ***THC:CBD ratio and reduction of opioid prescriptions***

Most patients experiencing chronic neuropathic pain who reduced opioid prescriptions were using cannabis products with a balanced 1:1 THC:CBD ratio, whereas most patients with musculoskeletal pain who reduced opioid prescriptions were using cannabis products with a 19:1 THC:CBD ratio.

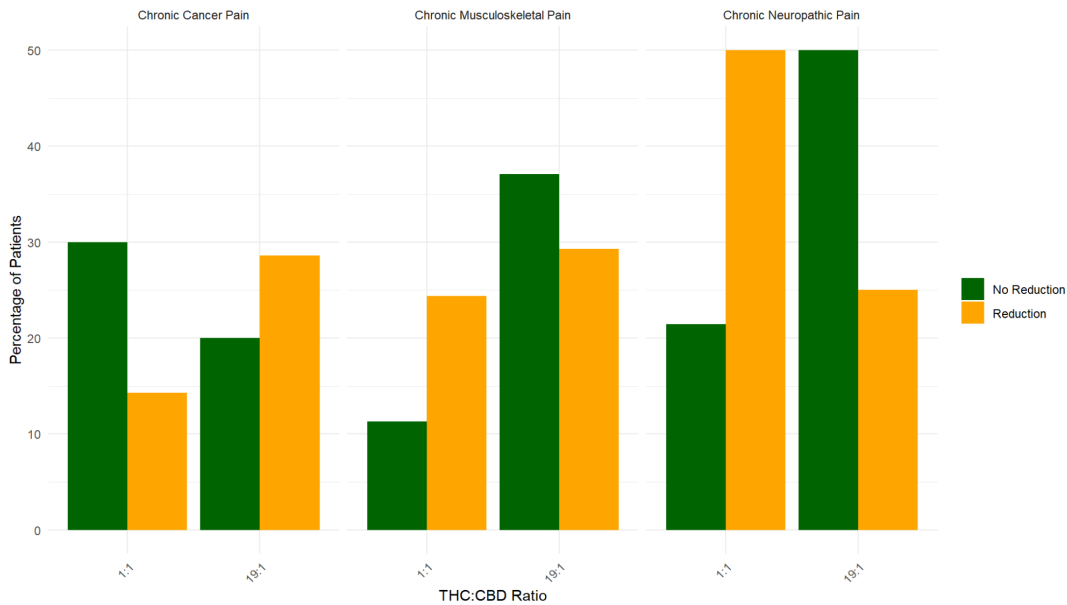


Figure 3. THC:CBD ratio and opioid reduction by Chronic Pain categories

## CONCLUSIONS

These results underscore the potential of cannabis as an effective adjunct or alternative therapy for managing pain, particularly for those with cancer and neuropathic pain. The preference for tablet forms and specific THC:CBD ratios highlights the potential for personalized cannabis-based treatment plans. Cannabis products with THC:CBD ratios of 1:1 and 19:1 were found to be the most used among patients with chronic pain who successfully reduced opioid use. A significant proportion of both male and female patients experiencing different types of chronic pain have been able to reduce their opioid prescriptions. This indicates that alternative pain management strategies, such as the use of cannabis products, may be effective for a considerable portion of patients, regardless of gender or the specific type of chronic pain they are experiencing.

## DISCUSSION

The findings from this preliminary analysis suggest a potential benefit of cannabis as an adjunct or alternative therapy for chronic pain management, particularly in reducing opioid prescription reliance. We observed a reduction in opioid prescriptions among all types of pain, but especially among patients with cancer, neuropathic pain, and musculoskeletal pain. The preference for cannabis products with specific THC ratios and the forms being used by patients who successfully reduced opioid prescriptions for each type of pain indicates the importance of personalized treatment plans tailored to patient needs. Both male and female patients demonstrated substantial reductions in opioid use, suggesting the broad applicability of cannabis across different demographics. These results are promising; however, the small sample size when

classified into various types of pain and the observational nature of this analysis warrant further research with larger, more diverse populations to fully understand the long-term efficacy and safety of cannabis in chronic pain management, as well as characterizing the type of cannabis products that would be more effective for specific patient profiles. These results align with previous research that suggests cannabinoids can be effective in pain management and contribute to the growing body of evidence supporting the use of cannabis in addressing the opioid crisis and improving pain management strategies.

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