

# Efficacy of medical cannabis for the treatment of chronic pain



## Introduction

Chronic pain has been defined as pain that persists past normal healing time. Pain is usually classed as chronic when it lasts or reoccurs for more than 3 to 6 months.(1) Chronic pain has been found to be a very common condition. One study estimated that in the UK, the prevalence of chronic pain was 43% which is approximately 28 million people. This study also found that the prevalence of chronic pain increases with age, affecting 62% of the population over the age of 75. However, only 10.4 to 14.3% of patients reported pain that was either moderately or severely limiting.(2) The high prevalence of chronic pain has a significant impact on healthcare recourses. For example, the management of therapy in these patients accounts for 4.6 million GP appointments per year at a cost of £69 million.(3) Chronic pain also has an impact on the economy due to work absences, reduced levels of productivity and leaving work and moving into long term disability. In 1998, back pain alone was estimated to cost the UK economy between £5 and £10.7 billion through indirect costs.(4)

Management of chronic pain can be very challenging due to the current analgesics available often providing limited pain relief and the side effects associated with these medications. For example, one study found that 50% of patients with neuropathic pain do not obtain clinically meaningful pain relief from current therapeutic options.(5) These problems highlight the need for new therapeutic options for the management of chronic pain. In the past few years, there has been an increase interest in the use of cannabis for the management of chronic pain. For example, in America chronic pain is the most commonly cited reason for accessing medicinal cannabis.(6)

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The cannabis sativa plant is known to contain over 400 different compounds. However, the majority of research into cannabis has focused on two main compounds. These compounds are delta-9-tetrahydrocannabinol (THC) and cannabidiol.(5) Some research has suggested that THC, which is the psychoactive component of Cannabis sativa, has beneficial analgesic, anti-inflammatory, and anti-emetic effects. Research has also suggested that cannabidiol, which is the primary non-psychoactive component of Cannabis sativa, has anti-inflammatory, neuroprotective, anxiolytic, and anti-psychotic actions.(5) However, even though some reviews have reported moderate to large effect, others have reported low to no beneficial effects.(7) There has also been several adverse events reported from cannabis medications. These include dizziness, drowsiness, gastrointestinal issues and dry mouth.(8)(9) Evidence from previous studies have shown the NNTH for 1 person to experience any adverse event was 6.(7)

On the 1<sup>st</sup> November 2018, the UK government changed cannabis based products for medical use from a scheduled 1 to a scheduled 2 drug.(10) This means that cannabis based products can be prescribed medicinally where there is an unmet clinical need. However, NHS England has advised that “cannabis medications should only be prescribed for indications where there is clear published evidence of benefit or UK Guidelines and in patients where there is a clinical need which cannot be met by a licensed medicine and where established treatment options have been exhausted.” (10) UK guidelines currently recommend that cannabis can be used in three conditions. This includes treatment resistant epilepsy, chemotherapy induced nausea and vomiting and MS-related muscle spasticity.(11) The

royal college of physicians current guidelines do not recommend the use of cannabis in chronic pain.(12) One reason for this recommendation was because of findings from a recent Cochrane review. This review by Mucke et al concluded that “ the potential benefits of cannabis-based medicine in chronic neuropathic pain might be outweighed by their potential harms”.(13) Therefore, the aim of this review is to look at research released following the review by Mucke et al in 2018 to examine the efficacy of cannabis for the treatment of chronic pain.

## Methods

### *Aim*

The aim of this review is to analyse new research considering the efficacy of cannabis for the management of chronic pain to see if cannabis should be offered as a treatment option for chronic pain.

### *Search Strategy*

Searches were conducted in the database Pubmed. The following search term were used; ‘ chronic pain cannabis’. Hand searches were also conducted of the reference lists from relevant articles for any more potential studies.

### *Inclusion Criteria*

Studies were included in this review if they met the following criteria; (1) analyse the efficacy of cannabis based medications, (2) sample comprised of patients with a diagnosis of chronic non cancer pain, (3) sample comprised of

patients who were over the age of 18 years, (4) published between July 2017 and May 2019, (5) published in English.

### *Data Extraction*

The investigator conducted the extraction of data through scanning the titles and abstracts of identified studies to determine the articles which fit the criteria. Full texts were then gained of all potentially relevant studies, if full texts were unobtainable then the study was excluded. Information from these studies fulfilling the inclusion criteria was then extracted and placed in the data extraction table (Table 1). A total of 7 papers were identified which fit the inclusion criteria.

### Results

The researcher's literature search found 7 randomized controlled trials or observational reviews since July 2017 looking at the effectiveness of cannabis in chronic pain. 4 of these studies analysed the effect of cannabis on specific groups of patients with chronic non-cancer pain including fibromyalgia, failed back surgery syndrome and chronic abdominal pain. 2 of the studies were randomized controlled trials using a placebo. Varies et al analysed the effectiveness of a THC tablet against placebo in patients with chronic abdominal pain. They found no significant difference between placebo and THC tablet in pain scores after 52 days of treatment.

The other placebo controlled trial analysed the effectiveness of a single inhaled dose of cannabis on fibromyalgia pain. Spontaneous, electrical and pressure pain was analysed pre-and post cannabis administration. They

found that none of the treatments had an effect greater than placebo on spontaneous pain scores or electrical pain responses. However, they did find that the cannabis variety that contained high doses of both THC and CBD caused a significant increase in tolerance to the pressure. Another study identified and analysed the effectiveness of cannabis for the treatment of fibromyalgia pain. This study analysed the effect of smoked medicinal cannabis over an average 10.4 month period. They found that after commencing treatment with medicinal cannabis, all patients reported a significant reduction in all areas of the Revised Fibromyalgia Impact Questionnaire. They also found that 50% of patients stopped taking any other medications for fibromyalgia. Medello et al. researched the effectiveness of cannabis for patients with failed back surgery syndrome who have already tried and failed using a Spinal cord stimulator. They found that in 11 patients studied, a THC and CBD suspension had a significant effect in the reduction of pain over a 12 month period.

Three of the studies studied patients with various different types of chronic non-cancer pain. One of these was a large 4 year cohort study. They found that patients who used cannabis illicitly reported greater pain severity and pain interference, lower pain self-efficacy, and higher levels of generalized anxiety disorder than those not using cannabis. Even though cannabis users reported that the mean effectiveness of cannabis on pain was 7 out of 10, they found no evidence that cannabis use reduced prescribed opioid use or increased opioid discontinuation. Another study analysed the effect of 338 patients with chronic non-cancer pain taking medicinal smoked cannabis for 12 months in addition to pharmacological therapy. They found a statistically

significant reduction in pain intensity, pain disability and anxiety and depression at 12 months when compared to baseline. Finally, Crowley et al found that cannabis lozenges used for 12 weeks found a reduction from baseline in self-reported pain assessment score. They also found that 84% of patients using opiate medication voluntarily reduced or discontinued their opioid medications.

Study	Patient group	Study design	Placebo control	Type of cannabis studied	Number of participants	Conclusion
Habib et al(14)	Fibromyalgia	Observational review	No	Smoked or inhaled medical cannabis	26	After commencing MC treatment, all the patients reported a significant improvement in every parameter on the Revised Fibromyalgia Impact Questionnaire
de Vries et al (15)	Chronic Abdominal Pain	Randomized double-blind,	Yes	Namisol (oral $\Delta^9$ -	65	No difference was found between a THC tablet and a

		placebo-controlled, study		THC tablet)		placebo tablet in reducing pain in patients with chronic abdominal pain.
Mondello et al (16)	Failed back surgery syndrome with SCS which had not be effective	Observational review	No	Oleic suspension of THC (19%) and CBD (<1%)	11	Pain perception decreased from a baseline by the end of the 12 month study duration
Van de Donket al (17)	Fibromyalgia	Double-blind, placebo-controlled, 4-way crossover study	Yes	Inhaled cannabis with THC and cannibidiol	25	Single vapor inhalation of cannabis did not have an effect greater than placebo on spontaneous or electrical pain. Cannabis varieties containing THC



caused a significant increase in pressure pain threshold relative to placebo.

People who used cannabis had greater pain and lower self-efficacy in managing pain, and there was no evidence that cannabis use reduced pain severity or interference or exerted an opioid-sparing effect.

Campbell et al (6)	Chronic non-cancer pain	4-year prospective cohort study	No	Mixed	1514
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Poli et al (18)	Chronic non-cancer pain	Observational review	No	Cannabis Fl 3380s 19% decoction for 12 months
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Our study suggests that Cannabis therapy, as an adjunct to

						traditional analgesic therapy, can be an efficacious tool to manage chronic pain more effectively.
Crowley et al (19)	Chronic non-cancer pain	Observational review	No	Trokie <sup>®</sup> lozenges (buccal)	49	The use of Trokie <sup>®</sup> lozenges is associated with a self-reported pain reduction.

Table 1: Summary of research studies used in the guideline review

### Discussion

The research in this review has been published since the Cochrane review by Mucke et al in 2018. The results from the studies included in this review vary significantly with some showing little to no benefit and some showing moderate to high benefit. This is consistent with the studies in previous reviews on the use of medicinal cannabis for the treatment of chronic pain.

(7)

The studies included in this review looking at patients with a diagnosis of fibromyalgia did show a benefit to cannabis treatment. This includes single use of cannabis improving pressure pain threshold and long term use of

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smoked cannabis having a beneficial effect on Revised Fibromyalgia Impact Questionnaire scores. However, both studies only had a small sample size (25 and 26 participants) and therefore more research with a larger sample is required in order to improve the validity of these results.

The three studies analyzing all patients with chronic non-cancer pain also had varied results. With studies from Poli et al and Crowley et al reporting significant improvement in chronic pain symptoms with cannabis medication. This suggests that there may be some benefit on chronic pain with the use of cannabis. However, they did not separate types of chronic pain, making it difficult to produce specific guidelines on what patients would benefit from chronic pain and when they should be prescribed.

Campbell et al found that those patients reporting the highest pain scores were most likely to access illegal cannabis. These people did report that cannabis helped with pain management however they were unable to reduce their opioid medication and they had lower self-efficacy for managing symptoms of depression and anxiety. This suggests that cannabis medications may not be an effective alternative to opioid medications or useful in helping to reduce opioids as previously suggested.(20) It also suggests that people seeking cannabis medications are less able to manage symptoms associated with chronic pain such as anxiety and depression.

### Conclusion

The recent evidence found in this study shows that cannabis may have a beneficial effect on chronic non-cancer pain. However, there is not enough current research to show what patients would benefit from cannabis

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treatment, the best way to deliver cannabis medications and at what line therapy should be introduced. Additionally, research has shown there are several adverse effects of cannabis and it has been found that the number needed to harm for cannabis is low. Therefore, the researcher agrees with the current guidelines that cannabis should not be used for the management of chronic pain.

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