

## CHRONIC PAIN TREATMENT: UPDATES ON CANNABIS USE

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**Abstract: GOAL:** Chronic pain is pain that extends beyond nociceptor activation, resulting from injuries or long-term changes in the Nervous System. Some of it can be caused by sensitization of nerve endings near the site of injury when the body releases chemical mediators in response to damage. The treatment of chronic pain is carried out based on some general principles determined by the WHO, among which stand out the individualization of the therapeutic scheme that must be done according to the condition of each patient and the analgesic ladder, developed in order to help it. in pain therapy, according to its intensity. The objective of this work is to carry out a survey on the treatment of chronic pain with the use of cannabis. **METHODS:** This is a literature review, of the narrative type, which aims to describe the characteristics of the treatment of chronic pain with the use of cannabis, from a theoretical point of view, through materials that have already been published on the subject in question, through analysis and interpretation of the literature. Inclusion criteria were: articles in Portuguese and English; published in the period from 2020 to 2023 and that addressed the themes proposed for this research, review-type studies available in full. After the selection criteria, 5 articles remained, which were subjected to thorough reading for data collection. The results were presented in a descriptive way, divided into thematic categories addressing: describe the subtitles or points that were mentioned in the discussion. **RESULTS AND DISCUSSIONS:** More than half of adults who used cannabis to manage chronic pain reported that cannabis use led them to decrease their use of prescription opioids, prescription non-opioids, and over-the-counter pain relievers, and less than 1% reported that cannabis use increased. use of these medications. A report from the National Academies of Science,

Engineering, and Medicine concluded that there is substantial evidence that cannabis is an effective treatment for chronic pain in adults. It cited 5 systematic reviews of good to reasonable quality that addressed the use of cannabinoids as an analgesic method in people with chronic pain. Conclusions from all reviews, according to the report, were broadly consistent in suggesting that cannabinoids demonstrate a modest effect on chronic pain, however, more research is still needed on the various forms of presentation, routes of administration and combination of cannabinoids. **CONCLUSION:** This review described the potential effect of Cannabis as an analgesic method for individuals suffering from chronic pain. Of the selected studies, all showed positive results for the use of this substance for analgesic purposes, and most reported adverse effects of very low relevance, which makes this a very promising issue at a time when dependence on the use of opioids and its effects is being discussed in the world. harmful to the organism.

**Keywords;** Chronic pain; cannabis; Treatment.

## INTRODUCTION

The cannabis plant has been used by humans for many years in medicine for its sedative/hypnotic, antidepressant, analgesic, anticonvulsant, antiemetic, anti-inflammatory, antispasmodic, and appetite-stimulating effects (Zuardi, A.W 2006).

The composition of the plant is a complex chemical mixture that includes phytocannabinoids, terpenoids, flavonoids, steroids and enzymes (Elsohly, M.A.; 2005). Phytocannabinoids, the most cannabis-specific of these constituents, bind to receptor sites normally activated by endogenous cannabinoids such as anandamide and 2-arachidonylglycerol (2-AG). The most psychoactive cannabinoid is widely believed to be delta-9-tetrahydrocannabinol ( $\Delta$ 9-

THC), which acts as a partial agonist at cannabinoid CB1 receptors - found primarily in the central nervous system (CNS) and CB2 receptors - found primarily in cells of the immune system (Jones, N.A. et al. 2010).

Currently, opioids are used in most cases to control chronic pain, including neuropathic and oncological pain. However, the adverse effects of these substances are worrying, as their high frequency use is capable of increasing the risks of tolerance and, subsequently, a dependence that can lead to adverse effects such as drowsiness and constipation, and the potential for death from overdose. Because of this, many efforts are being made to find alternative, safe and effective ways (Capano A, Weaver R, Burkman E. 2020).

The objective of this work is to address chronic pain and the current treatment of it with the use of cannabis.

## METHOD

This is a literature review, of the narrative type, which aims to describe the results with the treatment of chronic pain with cannabis today and its characteristics from a theoretical point of view, through materials that have already been published on the subject. In question, through analysis and interpretation of the literature. Inclusion criteria were: articles in Portuguese and English; published in the period from 2020 to 2023 and that addressed the themes proposed for this research, review-type studies available in full. Exclusion criteria were: duplicate articles, available in summary form, which did not directly address the studied proposal and which did not meet the other inclusion criteria.

The review was carried out from July to August 2023, through searches in the Virtual Health Library (VHL), Latin American and Caribbean Literature in Health Sciences (LILACS), *National Institutes of Health's Library of Medicine* (PubMed) e *Scientific*

*Electronic Library Online* (SciELO). The following descriptors were used: "Cannabis", "Chronic diseases", "Treatment", "News", in order to find articles relevant to the subject addressed.

After the selection criteria, 5 articles remained, which were subjected to thorough reading for data collection. The results were presented in a descriptive way, divided into thematic categories addressing: describing the subtitles or points that were mentioned in the discussion.

## RESULTS AND DISCUSSION

According to the World Health Organization (WHO), about 30% of the world's population has chronic pain (WHO 2023). In 2015, a study was carried out by the Brazilian society for the study of pain (SBED), where 919 people from the five regions of Brazil were interviewed by telephone. It was pointed out that 42% of the participants reported some type of pain and 37% said they had been living with pain for at least six months. This study also pointed out some differences between the regions of the country, with the highest incidence being the South with 42%, followed by the Southeast region with 38% and the North with 36%. Regarding gender, the data revealed a higher prevalence of pain in females, especially in the North region with 67%, however, in the Northeast region the highest incidence of pain was in men with 52%. (WHO 2023).

In the physiology of the human body, pain is linked to the Sensory System which is a part of the Nervous System responsible for capturing information/internal and external stimuli that reach the human body. These sensory perceptions can be processed at an unconscious level, such as: somatic stimuli (muscle length and tension, proprioception) and visceral stimuli (blood pressure, internal body temperature, pH, among other internal parameters that are monitored in order to

maintain physiological homeostasis).

In addition to these, there are stimuli with conscious processing, among them: the special senses (vision, hearing, taste, smell and balance) and the somatic senses (touch, temperature, itching, proprioception and pain). Its receptors are divided into the main groups chemoreceptors, mechanoreceptors, thermoreceptors, based on greater sensitivity to a certain type of stimulus, and pain receptors called nociceptors (Silverthorn DU 2017; Koeppen BM, Stanton BA. Berne and Levy 2018).

Chronic pain is more than nociceptor activation, it is the result of long-term injuries or changes in the Nervous System. In parts it can be caused by sensitization of nerve endings near the site of injury when the body releases chemical mediators in response to damage (Preston RR, Wilson TE 2014).

The IASP also presents six explanatory notes that, in short, bring important questions to be reflected and internalized, such as: 1. Pain is a personal experience and can be influenced by biological, social and psychological factors; 2. The difference between pain and nociception, in which pain is not exclusively determined by the activity of nociceptive neurons; 3. The concept of pain is learned from people's life experiences; 4. The report of the human being in a condition of pain must be respected; 5. Although pain has an adaptive role, it can have adverse effects on function and socio-psychological well-being; 6. The recognition that there are different ways of expressing pain, and the lack of verbal communication would not be a way to invalidate the possibility of human beings or animals to feel pain. (Raja SN 2020).

The treatment of chronic pain is carried out based on some general principles determined by the WHO, among which stand out the individualization of the therapeutic scheme that must be done according to the

condition of each patient and the analgesic ladder, developed in order to help it. in pain therapy, according to its intensity. This ladder consists of three steps, the first one contains non-opioid analgesic drugs (non-steroidal anti-inflammatory drugs and other analgesics) for mild pain. On the intermediate step are weak opioids, which can be associated with non-opioid analgesics or first-step anti-inflammatory drugs, indicated for moderate pain. Finally, at the top of the ladder are strong opioids, which can be used in association or not with non-opioid analgesics or anti-inflammatory drugs, being indicated for severe pain. In addition, adjuvant drugs can be added to any of the steps, such as antidepressants, anticonvulsants, corticosteroids and antispasmodics (Rodrigues Da Silva J ET SL 2000).

Currently, opioids are used in most cases to control chronic pain, including neuropathic and oncological pain. However, the adverse effects of these substances are worrying, as their high frequency use is capable of increasing the risks of tolerance and, subsequently, a dependence that can lead to adverse effects such as drowsiness and constipation, and the potential for death from overdose. Because of this, many efforts are being made to find alternative, safe and effective ways. (Capano A, Weaver R, Burkman E 2020).

A report from the National Academies of Science, Engineering, and Medicine concluded that there is substantial evidence that cannabis is an effective treatment for chronic pain in adults. It cited 5 systematic reviews of good to reasonable quality that addressed the use of cannabinoids as an analgesic method in people with chronic pain. The conclusions of all the reviews, according to the report, were broadly consistent in suggesting that cannabinoids demonstrate a modest effect on chronic pain, however, more research is still needed on the various forms of presentation,

routes of administration and combination of cannabinoids (Washington, AD 2017).

According to Zuardi. (2006) “*Cannabis sativa* is among one of the first plants cultivated by man, having its first evidence, through archaeological finds, in China where it was cultivated since 4000 years BC and was used for medicinal purposes from its seeds and hallucinogens in shamanism, a popular religion in Central Asia “. In India, the use of medicinal and recreational Cannabis was considerably expanded, since it maintained a direct connection with religious rituals that even attributed sacred characteristics to the plant. Over the centuries and periods of colonization of western territories, both cultivation and consumption spread to other continents.

*Cannabis sativa* presents in its composition more than 100 types of phytocannabinoids that interact with the receptors of the endocannabinoid system present in the human body, since the main and most studied are tetrahydrocannabinol (THC) and cannabidiol (CBD). The first compound is responsible for psychoactive effects: euphoria, coordination, dizziness, in addition to beneficial effects on pain control, nausea, anxiety, insomnia, anorexia and spasticity. The second has antiepileptic, analgesic, anxiolytic and sedative effects, with less psychoactive effects. In addition, both phytocannabinoids have anti-inflammatory action (Chaves C, Bittencourt PCT, Pelegrini A 2020).

In the same context, other illnesses responsible for this painful condition, such as fibromyalgia, sickle cell anemia, cancer pain, diabetic neuropathy, among others, are also found in the selection of some other studies that use Cannabis or its components as a form of treatment to reduce or relieve the pain process in which patients find themselves. (Wallace MS ET AL 2005; Chaves C, Bittencourt PCT, Pelegrini A.2020; Johnson

JR. ET AL 2010; Abrams DI. et al. 2020).

Today, the medicinal use of Cannabis is present in about 50 nations around the world. The first country to allow the use of this substance was Canada, which made its use legal in 2001 for medicinal purposes only, recreational use of the plant was released in 2018, but individual possession of more than 30 grams remains a crime. In the US of the 50 states, 38 have legalized medical cannabis and 16 allow recreational use. (Medical Cannabis in the world 2020).

In Brazil, the National Health Surveillance Agency (ANVISA) authorized the therapeutic use of Cannabidiol in January 2015 and since then, more than 800 Brazilian doctors have already prescribed the medication and more than 78,000 units of plant-based products have been imported. cross country. (Leticia Mori 2023).

Studies carried out both in Canada, New York (USA) and Florianópolis (Brazil) showed positive results regarding the use of Cannabis as an analgesic method for neuropathic pain; oncological and non-oncological and fibromyalgia, respectively. In the Canadian study, the authors concluded that the average intensity of daily pain was lower in 9.4% potency of Cannabis than in 0% of this substance ( $p=0.023$ ). In the American study, it was observed that after therapy with Cannabis, there was a decrease in paroxysmal pain, from 6.76 to 2.04 ( $p<.0001$ ); superficial pain, from 4.20 to 1.30 ( $p<.0001$ ); profound pain from 5.87 to 2.03 ( $p<.0001$ ) and unpleasant rating declined from “miserable” to “annoying”.

Many of the therapeutic effects may be a result of the complex pharmacological mechanisms of CBD (Wallace MS. ET AL 2015). Aside from  $\Delta^9$ -THC, CBD is the only cannabinoid that has been extensively tested on humans in numerous controlled experimental studies, as well as clinical trials for multiple sclerosis, neuropathic pain,

schizophrenia, bipolar mania, social anxiety disorder, insomnia, Huntington's disease and epilepsy. Surprisingly, however – up to this point – reviews and meta-analyses on the topic of CBD in humans have not considered many experimental and clinical studies that administered CBD alone and/or in combination with  $\Delta$ 9-THC, versus  $\Delta$ 9-THC alone (Wallace MS 2020; Blanken TF ET AL 2019).

A total of 1724 individuals were identified as having chronic pain, 1661 (96.3%) completed the full survey (948 [57.1%] women; mean age [SD], 52.3 [16.9] years); 31.0% (95% CI, 28.2%-34.1%) of adults with chronic pain reported ever using cannabis to manage pain; 25.9% (95% CI, 23.2%-28.8%) reported using cannabis to control chronic pain in the last 12 months and 23.2% (95% CI, 20.6%-26.0 %) reported cannabis use in the last 30 days. Most people who reported using cannabis to manage chronic pain also reported having used at least one other pharmacological (94.7%; 95% CI, 91.3% -96.8%) or non-pharmacological (70.6%; 95% CI, 64.8% -75.7). %).

More than half of adults who used cannabis to manage chronic pain reported that cannabis use led them to decrease their use of prescription opioids, prescription non-opioids, and over-the-counter pain relievers, and less than 1% reported that cannabis use increased. use of these medications. Less than half of respondents reported that cannabis use altered their use of non-pharmacological pain treatments. Among adults with chronic pain in this study, 38.7% reported that cannabis use led to decreased physical therapy use (5.9% reported that it led to increased use), 19.1% reported that it led to decreased use of meditation (23.7% reported this). led to

increased use) and 26.0% reported that it led to decreased use of cognitive behavioral therapy (17.1% reported that it led to increased use). Among adults with chronic pain in states with medical cannabis laws, 3 out of 10 people reported using cannabis to manage pain. Most people who have used cannabis as a treatment for chronic pain have reported switching to other pain medications, including prescription opiates. The high degree of substitution of cannabis for opioid and non-opioid treatments underscores the importance of research to clarify the efficacy and potential adverse consequences of cannabis for chronic pain.

## CONCLUSION

This review described the potential effect of Cannabis as an analgesic method for individuals suffering from chronic pain. Of the selected studies, the majority showed positive results with the use of this substance for analgesic purposes, and the majority reported adverse effects of very low relevance, which makes this a very promising issue at a time when addiction to the use of opioids and their effects is discussed worldwide. harmful effects to the organism, the mode of use is also of great relevance, with the oil being the most promising for the treatment.

The methodological quality of the selected articles showed considerable relevance, however the generalization of the findings of this review was relatively compromised, since small samples were used. Even with the limited studies, cannabis shows a good response to pain in patients with chronic pain, and we hope that there can be a promising future with the advancement of technologies and pharmaceuticals.

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