

Post-Traumatic Stress Disorder

Post-traumatic stress disorder (PTSD) is a psychiatric health response to a traumatic event. Symptoms of post-traumatic stress may include flashbacks, nightmares, and severe anxiety, as well as uncontrollable thoughts about the event. These symptoms may persist long after the triggering event and may be unresponsive to conventional therapeutic treatments. An estimated one in 10 Americans suffers from post-traumatic stress.

Those diagnosed with PTSD report using cannabis at rates far greater than the general population.¹ US military veterans, who often suffer from symptoms of post-traumatic stress, similarly report elevated rates of cannabis use compared to the overall population. According to survey data compiled by the American Legion, 22 percent of veterans acknowledge that they “use cannabis to treat a mental or physical condition” and 39 percent of respondents “know a veteran” who is using it therapeutically.

A growing number of scientists believe that the endogenous cannabinoid system plays a “critical role ... in the etiology of PTSD in humans.”² Researchers have theorized, “Cannabis may dampen the strength or emotional impact of traumatic memories through synergistic mechanisms that might make it easier for people with PTSD to rest or sleep and to feel less anxious and less involved with flashback memories. ... Evidence is increasingly accumulating that cannabinoids might play a role in fear extinction and anti-depressive effects.”³ Studies show that cannabinoid administration can facilitate fear extinction memory recall in both animals and in humans.⁴⁻⁵ Specifically, the administration of nabilone, a synthetic cannabinoid, has been documented to safely mitigate various symptoms of post-traumatic stress, including insomnia, chronic pain, and treatment-resistant nightmares.⁶⁻⁷ Similarly, the adjunctive administration of orally absorbable THC has been shown to “cause a statistically significant improvement in global symptom severity, sleep quality, frequency of nightmares, and PTSD hyperarousal symptoms” in a cohort of ten subjects.⁸

Thus far, however, observational trial data assessing the efficacy of cannabis in patients with PTSD has yielded inconsistent results.

A retrospective review of PTSD patients’ symptoms published in 2014 in the *Journal of Psychoactive Drugs* reported a greater than 75 percent reduction in CAPS (Clinician Administered Posttraumatic Scale) symptom scores following cannabis therapy.⁹ But a larger observational study of PTSD subjects reported that “those who never used marijuana had significantly lower symptom severity four months later than those who continued or started use after treatment.”¹⁰ Similarly, a 2015 case-control study found no association between self-reported cannabis use and mental health symptom severity in a cohort of veterans with probable PTSD.¹¹ A 2017 study also reported “no significant positive nor negative associations between baseline cannabis use and end-of-treatment PTSD symptom severity and days of primary substance use.”¹²

By contrast, a 2019 analysis by the Minnesota Department of Health of 700 patients with PTSD enrolled in that state’s medical cannabis access program identified “clinically meaningful” reductions in symptom severity, specifically reduced levels of anxiety, stress, and chronic pain as well as improved sleep and mood regulation. Similarly, data published in 2020 from 404 medical cannabis patients who self-identified as suffering from post-traumatic stress reported that cannabis inhalation temporarily mitigated their symptoms, including anxiety and flashbacks. On average, respondents “reported a 62 percent reduction in the severity of intrusive thoughts, a 51 percent reduction in flashbacks, a 67 percent reduction in irritability, and a 57 percent reduction in the severity of anxiety, from before to after inhaling cannabis.”¹³

More recent studies continue to yield mixed results. A 2020 study of US veterans reported, “Cannabis use was not associated with ... either improvement or worsening of PTSD symptoms in this population.”¹⁴ Another study assessing cannabis use in 361 veterans reported “No evidence of improvement in PTSD-related intrusion symptoms or remission in PTSD diagnosis in association with long-term use of cannabis.”¹⁵ By contrast, a study published in December 2020 concluded that PTSD patients who consumed state-licensed cannabis products exhibit reduced symptoms over time as compared to nonusers.

The authors of that study reported: “Participants who used primarily THC-dominant cannabis reported a greater reduction in PTSD symptom severity over time compared to controls. Cannabis users also showed a greater than two-fold rate of remission from their PTSD diagnosis (defined by no longer meeting criteria for a PTSD diagnosis on the CAPS-5) compared to controls by the 1-year follow-up assessment.” They concluded: “This study provides evidence that the types of cannabis available in recreational and medical cannabis dispensaries might hold promise as an alternative treatment for PTSD. ... This study’s primary outcome supports the theory that cannabis should be [tested in clinical trials] as a potential therapeutic for PTSD.”¹⁶

Two recently published literature reviews suggest that the totality of the available evidence is supportive of the use of cannabinoids for symptoms of post-traumatic stress. A 2020 review paper by a team of Brazilian researchers concluded, “Available data suggest that low doses of THC potentiate fear memory extinction in healthy volunteers and reduce anxiety responses in ... PTSD patients without inducing a psychotic effect.”¹⁷ A 2021 review paper by a pair of Dutch researchers similarly concluded, “Cannabinoids have been shown to be an effective treatment option for patients with PTSD.”¹⁸

Nonetheless, the results from the first-ever randomized, placebo-controlled trial, published in 2021, found cannabis’ efficacy to be limited – at least in the short-term. Investigators evaluated the short-term (three weeks) safety and efficacy of three types of whole-plant cannabis (12 percent THC, 11 percent CBD, approximately equal percentages of THC and CBD) versus placebo in a cohort of military veterans with PTSD. Authors identified “no significant between-group differences” in total severity scores. Specifically, they determined that “all four treatment groups, including placebo, achieved significant within-subject reductions in total CAPS-5 Total Severity scores from Stage 1 baseline (visit 0) to end of treatment (visit 5). Specifically, participants who received placebo in Stage 1 reported a mean reduction of 13.1 points, participants who received High THC reported a mean reduction of 15.2 points, High CBD participants reported a mean reduction of 8.4 points, and THC+CBD participants reported a mean reduction of 8.5 points.”¹⁹

Authors speculated that the study’s limited findings could be because of the trial’s short-term duration or because researchers were unable to obtain “high-quality cannabis flower” from federal government sources, which are of notoriously low quality. They concluded, “Additional well-controlled and adequately powered studies with cannabis suitable for FDA drug development are needed to determine whether smoked cannabis improves symptoms of PTSD.”²⁰

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