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## Attention-Deficit Hyperactivity Disorder and Therapeutic Cannabis Use Motives

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### Keywords

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### INTRODUCTION

Attention-deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized by impairing symptoms of age-inappropriate inattention and impulsivity across multiple settings.<sup>1</sup> It is primarily a disorder of executive dysfunction that manifests as poor regulation of attentional, behavioral, and emotional processes. The estimated prevalence of a lifetime ADHD diagnosis in the United States (US) pediatric population (ages 2–17 years) is 8.4%, with a global prevalence estimated at 5%.<sup>2–4</sup> While it is believed that most youth exhibit remittance from ADHD symptoms over time, recent findings from the Multimodal Treatment Study of ADHD (MTA) demonstrated fluctuating patterns of ADHD symptomology and impairment for 90% of the sample over the course of 16 years, with only 9.1% of participants evincing sustained remission from ADHD symptoms into young adulthood.<sup>5</sup> The prevalence of ADHD in adults is estimated to be between 2.5% and 4.4% in the US and 3.4% globally.<sup>6,7</sup>

Childhood ADHD is a widely identified risk factor for substance use and its associated problems.<sup>8–10</sup> Longitudinal studies on ADHD trajectories have shown that adolescents with ADHD are more likely to initiate substance use earlier, and escalate to regular use more quickly than their neurotypical peers, placing them at risk of developing a substance use disorder (SUD).<sup>11,12</sup> Additionally, ADHD is over-represented in substance use treatment settings and is often associated with more severe pathology.<sup>13,14</sup> While alcohol and nicotine (both legal and widely available) are the most commonly used psychoactive substances, cannabis use has been increasing as more states decriminalize marijuana for personal use, particularly in young adults aged 18 to 25 years.<sup>15</sup> Genetic and longitudinal study findings

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#### DISCLOSURE

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strongly suggest ADHD is a risk factor for cannabis use and developing a cannabis use disorder (CUD). A recent study found a causal relation between ADHD and lifetime cannabis use, with a staggering odds ratio of 7.9 for cannabis use in those with ADHD compared with non-ADHD peers (95% CI: 3.72, 15.51,  $P = 5.88 \times 10^{-5}$ ).<sup>16</sup> Another study of 483 adolescents referred for SUD treatment reported that 32% and 47% of participants met DSM-IV criteria for cannabis abuse and dependence, respectively.<sup>17</sup> Furthermore, those with CUDs were twice as likely to be diagnosed with ADHD compared with their peers without a CUD.<sup>17</sup> Given the growing accessibility and decreasing perceptions of harm, individuals with ADHD may be at an increased risk for cannabis use problems, particularly due to shared deficits in self-regulation found in externalizing disorders such as ADHD and SUDs.<sup>15,18</sup>

Adolescents and young adults with ADHD are at great risk for substance use problems due to neurodevelopmental processes underlying the impulsivity and emotional lability characteristic of these developmental stages. This risk is conceptualized here as multi-pronged: first, symptoms of impulsivity and inattention may predispose individuals with ADHD to experience negative consequences following use, such as using more than intended and subsequently being unable to fulfill social, academic, or occupational responsibilities. Second, individuals with ADHD may self-medicate with cannabis to treat symptoms of psychological distress (eg., insomnia, anxiety) that may cooccur with or exist independently of ADHD.<sup>19</sup> Others diagnosed with ADHD may prefer to use cannabis instead of pharmacologic interventions or alongside them to temper unwanted side effects of ADHD medication.<sup>20</sup>

While experimentation with psychoactive substances is relatively normative for adolescents and young adults, those with ADHD are more likely to experience negative consequences of use compared with neurotypical peers and despite comparable rates of use.<sup>21,22</sup> A closer look at the worsening risk of cannabis use problems in ADHD populations is warranted, starting with cannabis use trends, effects on cognition, and motivators for use. As the availability of cannabis grows alongside the increasing diversity of formulations and routes of administration (ROA), clinicians are tasked with consolidating concerns of neurodevelopmental effects of substance use in adolescents with the reductions in perceived harm and decriminalization of cannabis. The following questions arise:

- What are the trends in cannabis use across age groups?
- What are the effects of cannabis use on cognition in teenagers and emerging adults? Are these effects related to recreational or chronic use?
- What are the perceived benefits of cannabis use, particularly for those with ADHD? What are the harms? Is there a dose-dependent threshold for therapeutic vs harmful?

### **Cannabis Use Trends**

Cannabis, also known as marijuana, is a psychoactive drug originating from the cannabis plant. Numerous derivatives and isolates are being assessed for therapeutic benefit across mental and physical problems; for the purposes of this summary, we will focus on

the uses of tetrahydrocannabinol (THC) and cannabidiol (CBD), the 2 most common phytocannabinoids of the cannabis plant, and the most frequently found in cannabis products.<sup>23,24</sup> THC is the most potent and well-known psychoactive element of the cannabis plant, associated with a “high.” CBD does not share those psychoactive properties but has gained widespread popularity for alleviating pain, anxiety, and facilitating sleep.<sup>23</sup>

In the US, whereby an increasing number of states have adapted medical marijuana laws and are decriminalizing cannabis for personal use, the 2020 National Survey on Drug Use and Health (NSDUH) reports show steadily increasing rates of individuals using cannabis. Trends in NSDUH 2020 reports shows an overall increase in past-year cannabis use initiation for individuals 12 and older, with 2.8 million people reporting first time use in the past year. Nearly 25% of these new users were 26 years of age.<sup>15</sup> Findings reveal past-year cannabis use was greatest in the 18 to 25 age group (34.5%), followed by 16.3% in adults 26 years and older, and 10.1% in adolescents 12 to 17 years of age.<sup>15</sup> In 2020, 4% of respondents reported daily or almost daily cannabis use in the past month, compared with 1.3% in 2002.<sup>15</sup> Finally, the 2020 NSDUH Highlights noted only 27.4% of respondents aged 12 and older reported they perceived great risk of harm from smoking cannabis 1–2x/week while emerging adults aged 18 to 25 were less likely than their counterparts to regard weekly cannabis use as harmful.<sup>15</sup> Although the NSDUH data do not show increased cannabis use in adolescents, longitudinal and cohort studies suggest growing trends of cannabis use in this age group. A recent systematic review and meta-analysis of adolescent vaping of cannabis in the US and Canada shows dramatic increases in lifetime (6.1% to 13.6%), past year (7.2% to 13.2%), and past month (1.6% to 8.4%) prevalence from 2013 to 2020.<sup>25</sup> The authors raised concerns that preference for cannabis products may be shifting from dried herb to cannabis oil, which is more potent due to higher concentrations of THC.<sup>25</sup> These data may support the high percentage of adolescents with cannabis use problems found in substance use treatment settings.<sup>17</sup> Roehler and colleagues (2022) recently published data showing a steady average 12.1% increase in cannabis use-related ER visits from 2006 to 2014,<sup>26</sup> highlighting a rising public health burden likely associated with increasing use.

Thus, with the growing decriminalization of cannabis, reported rates of initiation, use, and frequency of use have increased over the past 2 decades, especially among those 18 and older. Cannabis use initiation may be due to several factors, such as decriminalization making it more socially acceptable to use or disclose cannabis use, greater availability of products, as well as possible therapeutic use. With no consensus on dosing and reduced perceptions of harm, individuals using cannabis recreationally may be particularly vulnerable to using more than intended, with potentially serious consequences.

### **Cannabis and Cognition**

As with any psychoactive substance, clinicians and researchers alike have concerns about the effects of repeated cannabis use on the brain. For individuals with ADHD, a disorder associated with both neuroanatomical and functional differences in comparison to neurotypical peers,<sup>27</sup> it is important to investigate whether cannabis use has any effect on preexisting neurocognitive vulnerabilities in ADHD. Cannabinoid receptors are typically concentrated in the temporal and midbrain regions of the brain, structures associated with

memory, emotion regulation, and reward processing. Cannabis use affects not only cortical and subcortical structures but also functional connectivity between regions. How harmful is occasional recreational use compared with chronic, problem use? Can cannabis instigate structural changes in the brain?

These are difficult questions researchers have been trying to answer, with imaging studies reporting conflicting findings. A recent review found no net differences, between cannabis users and nonusers, in volumetric changes in the whole brain, the amygdala, striatum, cerebellum, prefrontal cortex, or anterior cingulate cortex.<sup>28</sup> The most consistent findings on morphologic changes in regular cannabis users (compared with nonusers) are volumetric reductions in the hippocampus and orbitofrontal cortex,<sup>29</sup> as well as atypical structural connectivity and diffusivity.<sup>28</sup> Other studies have published findings on both increased and decreased cerebellar and striatal volumes in cannabis users compared with nonusers, highlighting the need for further research to better characterize these effects.

Cognitive effects of both occasional and chronic cannabis use include impaired verbal learning, memory, and attention, with psychomotor reduction in acute intoxication.<sup>30</sup> Importantly, several studies found that acute THC administration impaired decision making by increasing risk taking in both recreational and regular cannabis users compared with nonusers.<sup>31</sup> For individuals with ADHD, who are already predisposed to riskier choices, lowering this threshold elevates the likelihood of adverse consequences. Some studies show that cannabis effects on brain volume and cognition can persist following periods of abstinence in non-ADHD users, but more research is needed.<sup>30,31</sup>

Findings from studies comparing substance use in individuals with and without ADHD (also ADHD users and nonusers) in terms of brain structure and function suggest that ADHD neurocognitive effects are significantly more pronounced than the perhaps more subtle influence of recreational substance use.<sup>32,33</sup> Prospective longitudinal studies (beyond adolescence and young adulthood) of ADHD and cannabis use trajectories are needed to better understand the neural underpinnings of regular cannabis use in the ADHD brain.

A potential explanation for the inconsistent outcomes is the possibility that cannabinoids may have both neurotoxic and neuroprotective attributes, particularly CBD.<sup>28,34</sup> Baseline and posttreatment structural imaging of 18 adult regular cannabis users participating in a 10-week trial of daily 200 mg of cannabidiol showed significantly *increased* volume in hippocampal subregions, especially for the heavy users.<sup>35</sup>

Taken together, these results present compelling evidence of structural and functional differences in the brains of chronic cannabis users compared with nonusers. Adolescents are at greatest risk due to the critical neurodevelopmental period and the potentially long-lasting neurotoxic effects of psychoactive substances, which may persist even after prolonged periods of abstinence.<sup>31,36</sup> In terms of cannabis use and ADHD, findings have been inconsistent across studies, possibly due to variability in substance use histories, and differences in cannabis use quantity, frequency, formulation, and ROA. Chronic cannabis users with ADHD may worsen preexisting deficits in working memory and executive function in ways that may not become apparent until later in life, with long-

lasting, persistent effects despite discontinuing use.<sup>31</sup> More studies of cannabis users with comparable use histories and co-occurring ADHD are needed to better elucidate the effects of cannabis on cognition in this population, *especially* considering general beliefs about the therapeutic benefits of cannabis-derived products.

### Cannabis Use Motives

The expanding decriminalization of cannabis in the US and concurrent reductions in perceptions of harm have impacted reported initiation and escalation in the use of cannabis, particularly for young adults.<sup>15</sup> With greater availability and destigmatization of cannabis products, as well as a diverse array of options for ingesting (tinctures, concentrates, edibles, and so forth), users are now able to tailor their use to their needs, potentially leading to increases in new users due to more discreet methods of delivery (eg, edibles). For those with ADHD, a disorder characterized by deficits in self-regulation and impulsivity, greater access to cannabis products may accelerate trajectories to a CUD.

Recent studies have shown that individuals with ADHD and concurrent cannabis use may do so to treat other ailments.<sup>19,20,37</sup> To date, the FDA has only approved the prescription use of 3 cannabis-derived products: one CBD medication (Epidiolex) for severe epilepsy, nabilone (Cesamet) and dronabinol (Marinol, Syndros) for nausea related to chemotherapy.<sup>38</sup> Despite the short list of FDA approved indications, there is a widespread use of cannabis-derived products for treating nausea and somatic pain, with some research support.<sup>39,40</sup> Unfortunately, there is still a dearth of consistent evidence in favor of the therapeutic use of cannabis for psychiatric illness. Studies examining ADHD and cannabis use have noted an association between greater hyperactive/impulsive symptoms and likelihood of heavy cannabis use.<sup>41,42</sup> While this finding is consistent with reported therapeutic use motivations to treat sleep problems and anxiety, individuals with more severe ADHD presentations may be chronically undertreated and use drugs to manage mood and ADHD symptoms.

Mitchell and colleagues completed a qualitative analysis of online discussion forums related to cannabis use and ADHD, finding that 25% reported therapeutic benefits of cannabis for ADHD symptoms, compared with 8% of posts stating cannabis was harmful to ADHD, 5% who believed it was both, and 2% who believe it had no effect.<sup>19</sup> Importantly, the spread in these findings did not extend to mood symptoms and other psychiatric disorders. For example, while 14% stated that cannabis is therapeutic for their mood, 13% stated it was harmful and 3% of posts indicated that it was both harmful and therapeutic.

*Sleep.* One of the most frequently reported motives for cannabis use is to treat sleep problems.<sup>20,37</sup> Individuals with ADHD may be especially drawn to using cannabis therapeutically to address sleep issues, due to the increased likelihood of experiencing sleep problems if one has ADHD,<sup>43</sup> and the soporific effects of cannabis. A Dutch national survey study found individuals with ADHD were significantly more likely than their non-ADHD peers to report insomnia and alterations in sleep duration.<sup>43</sup>

A prospective study examined multiple motivational pathways from baseline ADHD symptomology to 12-month cannabis use problems in 361 veterans with a lifetime history of cannabis use.<sup>37</sup> Findings revealed sleep motives at 6 months to be a strong mediator

for frequency of use, while coping with negative affect emerged as a proximal predictor of cannabis use problems. Cannabis use problems were defined as interpersonal conflict, job loss, financial problems, and so forth, resulting from cannabis use. Thus, a CUD is measured more by the negative consequences related to how one accommodates the drug use into their lifestyle, at the expense of relationships, responsibilities, physical health, and safety. As individuals with ADHD build tolerance to substances, even if it is cannabis for sleep, they may be susceptible to cannabis use problems that can affect all aspects of their daily lives, especially in the absence of other behavioral coping strategies.

Importantly, there is insufficient data to support the therapeutic use of cannabis for sleep. A recent review of cannabinoids and sleep disorders noted that with short-term use, THC can increase sleep duration, reduce sleep onset latency (SOL), and reduce wakefulness after sleep onset (WASO), while long-term use of THC for sleep was associated with longer SOL and reduced overall sleep duration.<sup>44</sup> The authors posited that tolerance to THC from chronic use may underlie these changes and further noted that withdrawal from cannabis was associated with sleep disturbances. Although CBD can have alerting effects, it has been associated with improved sleep. CBD and THC formulations to treat insomnia are currently being studied, and authors note improvement in sleep with the therapeutic use of cannabis for insomnia secondary to chronic pain conditions, though it is unclear whether cannabis effects on sleep are direct or indirect, via pain relief.<sup>44</sup>

**Pain relief**—Individuals may also use cannabis therapeutically for its analgesic properties, as there is a significant overlap in the distribution of endogenous opioid and cannabinoid receptors in the brain.<sup>45</sup> There is a nascent literature suggesting an association between ADHD and chronic pain disorders. One national survey study of community-dwelling adults in England reported a significant association between elevated ADHD symptoms and extreme pain, an effect which was sustained even after controlling for common comorbid mental disorders (depression, anxiety) also associated with somatic pain.<sup>46</sup> In the US, an interim analysis of 37 adult patients using cannabis therapeutically via a medical marijuana certification for chronic pain showed reductions in pain after 6 months of treatment, which was associated with improved sleep, mood, anxiety, and overall quality of life.<sup>39</sup> These findings suggest an indirect pathway whereby at least short-term therapeutic use of cannabis to alleviate chronic pain conditions can also lead to improvements in sleep, mood, and cognition.

One potentially overlooked motive for cannabis use in women is to treat somatic pain, particularly pelvic pain associated with relatively common medical conditions, such as endometriosis.<sup>47</sup> Dorani and colleagues (2021) investigated hormone-related mood problems in 209 women with ADHD, finding that participants had high rates of co-occurring premenstrual dysphoric disorder, postpartum depression, and more severe climacteric (perimenopausal, menopausal) symptoms than the general population.<sup>48</sup> These studies suggest that cannabis products are potent analgesics in women with severe pelvic pain. Additional research is needed on the long-term use of cannabis to treat somatic pain, as tolerance to the effects of THC may result in more frequent use, increasing the risk of CUD. There is research suggesting that cannabis is a “gateway drug” to opioid use,<sup>49</sup> particularly for youth. However, there is also evidence that supports cannabis as an analgesic alternative to opioids

and its utility in treating opioid use disorders (OUD).<sup>45</sup> More research is needed on the therapeutic use of cannabis and progression to other psychoactive substances.

Other studies have reported high rates of childhood ADHD in chronic pain treatment settings. One study of 106 women with Fibromyalgia Syndrome (FMS) found nearly 25% of the sample had ADHD, which was associated with higher ratings of FMS symptom severity and diminished functioning, especially in the occupational/academic domain; 38.5% of patients with FMS and co-occurring ADHD also had a SUD (primarily opioid use), compared with only 3.8% of patients with FMS alone.<sup>50</sup> The greater use of opioids in the ADHD + FMS participants in addition to reports of more severe pain in this group, suggests that even with opioid treatment, the pain is not being well-managed. Kerekes and colleagues (2021) hypothesized that neuroinflammation underlies pain perception and sensitization in ADHD, proposing a mechanism whereby inflammation in the brain can affect dopamine levels and subsequent pro or anti-inflammatory cellular processes that can lead to ADHD and sensitization to pain.<sup>51</sup>

Future research studies should investigate whether interventions that reduce neuroinflammation are a potential therapeutic target to treat ADHD and chronic pain.

In summary, there is burgeoning evidence that individuals with ADHD are more likely to report somatic pain and experience more severe symptoms of chronic pain disorders. Alleviating this pain is a potential pathway for developing substance use problems with cannabis and/or opioid products.

**Attention-deficit hyperactivity disorder symptoms and side effects of attention-deficit hyperactivity disorder treatment**—Another motive for cannabis use may be to treat ADHD symptoms, and, although it is believed that treating ADHD can reduce the risk of substance use problems, individuals with ADHD may use cannabis therapeutically to treat symptoms missed by ADHD medication and/or unpleasant side effects of medication. A recent study analyzed online survey data of cannabis effects on ADHD symptoms, ADHD medication side effects, and ADHD-related executive function from predominantly female college students with ADHD who reported using cannabis to manage ADHD symptoms.<sup>20</sup> Participants reported that acute cannabis use improved ADHD symptoms of restlessness (88.17%), hyperactivity (80.47%), and mental frustration (75.74%) while it worsened memory (66.86%) and inattention (43.20% compared with 39.64% reporting it improved inattention). Nearly 92% of respondents reported acute cannabis use improved ADHD symptoms overall. Participant-reported effects of chronic cannabis use on ADHD symptoms were more modest, with about 35% reporting overall improvement with chronic use, 14.20% reporting an overall worsening of ADHD symptoms, and nearly 37% reporting no effect.<sup>20</sup> The limited appraisals of how cannabis use impacts ADHD symptoms in chronic users may reflect an increased tolerance for the psychoactive effects of cannabis. Notably, few participants reported an overall worsening of ADHD symptoms. The stark contrast in perceived benefit between acute and chronic use begs the question of what motives underlie continued cannabis use when there is low perception of the improvement of ADHD symptoms, suggesting other motives for chronic use and/or physical dependence. For the subset of participants with ADHD who reported using cannabis to treat adverse

side effects of ADHD medication (n = 72), cannabis improved many of the negative side effects.<sup>20</sup> Nearly 82% reported that cannabis improved loss of appetite and about 67% reported that cannabis improved sleep problems.

Executive dysfunction, a core component of ADHD, may pose as both a motive and by-product of cannabis use. Analyses of cannabis use frequency, ADHD symptoms, and executive dysfunction showed cannabis use frequency was a significant moderator of the association between executive dysfunction and ADHD symptom total scores, with a trending decrease in the strength of the association between ADHD total score and executive dysfunction as the frequency of cannabis use increased.<sup>20</sup> The authors unexpectedly found that for the top 0.08% of cannabis users, there was no significant relation between impulsivity or hyperactivity symptom severity and executive dysfunction. These findings underscore the challenge of determining whether for chronic cannabis users who report improvement in ADHD symptomatology, the subjective impression is consistent with their actual functioning. It may be that the mood-altering effects of cannabis may desensitize users to the negative effect/distress associated with ADHD symptoms and/or that users modify their required tasks to accommodate frequent use.

To date, there is one known randomized placebo-controlled trial of cannabis to treat ADHD. A 6-week placebo-controlled RCT compared cognitive performance in 30 adults with ADHD 1-h after the administration of Sativex, an oral mucosal spray with low dose of THC, or placebo.<sup>52</sup> Participants exhibited comparable cognitive performance with placebo vs active treatment, with trends toward improved performance in the active treatment arm. The authors noted the absence of any worsening of performance on the cognitive task in active treatment participants compared with placebo.<sup>52</sup> The strength and generalizability of the findings were limited by a small sample size, emphasizing the need for more studies with larger samples.

## DISCUSSION

ADHD is a complex, highly heritable neurodevelopmental disorder with significant heterogeneity in presentations over time. The moniker “ADHD” may be misleading, since, for many, ADHD is experienced as difficulty in *regulating* attention. This can manifest as hypersensitivity to both internal and external distractors, making it difficult to prioritize attentional targets, as well as perseverative hyper-focus on a rewarding activity or hobby, even at the expense of food and sleep. These seemingly opposite presentations of an attentional problem can be confusing and frustrating for parents of children and adolescents with ADHD, as well as partners and friends of adults with persistent ADHD. The same attentional dysregulation can predispose those with ADHD to use psychoactive substances, such as cannabis. For those with ADHD seeking relief from boredom, cannabis (and other drugs) may be appealing due to known psychoactive effects of lowering the threshold for amusement. Individuals with ADHD may also turn to substances to cope with negative affect related to interpersonal conflict, and address some of the undesirable sequelae of the attentional dysregulation, such as anxiety and disruptive sleep patterns.



In co-occurring CUD and ADHD, it is important to consider the perceived benefits of cannabis, particularly its effects on relieving pain and anxiety, as well as facilitating sleep. The use of illicit substances to address these symptoms likely reflects inadequately treated conditions necessitating adjunctive behavioral interventions, dose adjustments, or changes in medication regimen. While a harm reduction approach respects the individual's decision to use illicit substances and attempts to mitigate risks related to use, there is evidence that cannabis use by those with ADHD can be motivated by untreated or inadequately treated symptoms of ADHD, pain, anxiety, and sleep disturbances.

In the US, the privatized health care system and financial barriers to quality psychiatric care may compel individuals with undiagnosed ADHD to use substances to treat symptoms, as they are more readily accessible than a diagnostic evaluation and pharmacologic treatment under the care of a qualified practitioner. Further, as cannabis is increasingly legalized in the US, prevailing public discourse about the therapeutic benefits of cannabis and diminishing perceptions of harm can overshadow scientific findings on the negative impact that chronic cannabis use has on neuroanatomy,<sup>37</sup> cognition,<sup>36</sup> and risk for cardiovascular and pulmonary diseases associated with smoking cannabis.<sup>53</sup> While increasing access to psychiatric treatment of underserved populations is paramount in addressing therapeutic use of illicit drugs, exploring motivations for use in existing patients gives clinicians the opportunity to discuss alternative treatment options that are potentially more effective and less risky for those with ADHD.

One of the shared traits in ADHD and SUD is impulsivity and deficits in inhibitory control. Psychoactive substances can lower the threshold for impulsivity and risk-taking in many individuals, but it can lead to more serious consequences for those with ADHD, who may accidentally overuse cannabis while waiting to feel the psychoactive effects of edible formulations. Therefore, one of the clinical concerns about the increasing availability of cannabis and perceptions of benefit is that individuals with ADHD are vulnerable to excessive, impulsive use that can result in adverse physical outcomes.

Potential impediments to attentional focus and overall functioning in individuals with and without ADHD are sleep disturbances, pain, and physical restlessness. For those with hyperactive symptoms, the sedating effects of cannabis can sufficiently reduce physical restlessness for an individual to attend to a task. Similarly, for individuals with ADHD and chronic pain, the severity of the pain may be disabling in the absence of therapeutic intervention, and thus impair functioning more than any cognitive effects of acute cannabis use. So, as clinicians deliberate cannabis's potential for harm against the potential for therapeutic benefit, patients with ADHD, chronic pain, and co-occurring cannabis use may be weighing the immediate and persistent pain symptoms against a potent and effective analgesic, despite the unclear long-term effects. More research on both recreational and therapeutic cannabis use effects in ADHD populations are needed.

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**KEY POINTS**

- Attention-deficit hyperactivity disorder (ADHD) is a risk factor for cannabis use problems.
- Widespread decriminalization of cannabis in the United States (US) has led to increased use in young adults and lower perceptions of harm, augmenting the risk for developing cannabis use problems.
- Cannabis users with ADHD report the therapeutic use of cannabis to treat sleep problems and physical pain.
- Clinicians should inquire about motivations for cannabis use.

**CLINICS CARE POINTS**

- There is evidence that cannabis use by those with ADHD can be motivated by untreated or inadequately treated symptoms of ADHD, pain, anxiety, and sleep disturbances.
- Practitioners should inquire about motivations for cannabis use, such as to help with sleep, anxiety, or physical pain. These symptoms may be more effectively treated by pharmacologic or behavioral interventions, which can be part of a treatment plan alongside reducing cannabis use. Changes in conventional medication regimens may be warranted.