

REVIEW

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The Impact of Regular Cannabis Use on Mood and Anxiety Levels in Young Adults Compared to Non-Users: A Literature Review

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Abstract

Introduction: Cannabis, otherwise known as marijuana, is one of the most commonly used psychoactive substances among young adults, yet its impact on mental health, particularly mood and anxiety disorders, remains contested. While some studies suggest potential anxiolytic and mood-stabilizing effects, primarily related to cannabidiol (CBD), a growing body of longitudinal and clinical evidence links regular cannabis use to heightened risks of depression, anxiety, and emotional dysregulation. Despite its widespread use, there is conflicting evidence regarding the therapeutic effects of cannabis on mood and anxiety and its long-term effects.

Methods: This literature review systematically examines the relationship between regular cannabis use (defined as using it at least once per week) and mood and anxiety levels in young adults aged 18–25, a demographic especially vulnerable to mood and anxiety disorders due to ongoing neurodevelopment and high prevalence of cannabis use.⁷ Studies were identified using PubMed, OVID Medline, and the Cochrane Library, with inclusion criteria focused on observational studies, randomized controlled trials, and meta-analyses published in English over the last decade. Data regarding mood and anxiety outcomes were extracted, including depressive, anxiety, and emotional dysregulation symptoms, and analyzed to determine a potential relationship between cannabis use and mood disorder symptoms.

Results: The review finds consistent evidence that regular cannabis use is associated with increased symptoms of depression, anxiety, and, in some cases, suicidal ideation. These associations appear stronger in females and in individuals with lower emotional regulation capacity. Neurobiological mechanisms, such as dysregulation of Cannabinoid Receptor 1 (CB1) in the endocannabinoid system and psychosocial factors, including cannabis use as a maladaptive coping strategy, are discussed as underlying contributors.

Discussion: While cannabis may provide short-term relief for some, its regular use is linked to increased depression, anxiety, and suicidality and poses a significant risk to emotional well-being during a critical period of psychological development.

Conclusion: These findings emphasize the need for early screening, sex-specific risk assessments, and targeted public health messaging. Further longitudinal and mechanistic studies are needed to clarify causality and guide effective harm reduction strategies.

Keywords: cannabis use; cannabis; mood disorders; anxiety disorders; young adult; tetrahydrocannabinol; THC; cannabidiol; CBD; mental health

Introduction

Due to the growing prevalence of cannabis usage worldwide, research on the connection between cannabis use and its effects on mood and anxiety disorders has been ongoing. In Canada, where cannabis was legalized in 2018, national survey data indicated that more than one-third (35.5%) of people between the ages of 18 and 24 reported using cannabis in the previous year, which was higher than any other age group [1]. Since regular cannabis has been associated with long-lasting neurobiological and psychological impacts, this review focused specifically on

regular cannabis use, which was often defined as at least once per week [2].

Among the many cannabinoids included in cannabis, distinguishing between tetrahydrocannabinol (THC) and cannabidiol (CBD) is important for interpreting mood and anxiety outcomes. The primary psychoactive ingredient, THC, produces euphoric, altered sensory perception, and relaxing effects. However, at higher dosages or with repeated usage, it has also been linked to increased anxiety, emotional instability, and psychotic symptoms [3, 4]. Contrarily, CBD is non-intoxicating and has been shown to

have anxiolytic, antipsychotic, and anti-inflammatory qualities. In therapeutic settings, it has also shown promise in lowering feelings of anxiety [5]. The endocannabinoid system (ECS), an intricate neuromodulator network involved in mood regulation, stress responses, emotional memory, and homeostasis, is influenced by THC and CBD because the amygdala, hippocampus, and prefrontal cortex are home to a large number of CB1 receptors [5-7].

An increasing body of research indicates that many cannabis users experienced a paradoxical impact, even if some people claimed symptom improvement from the drug, such as reduced anxiety or elevated happiness [8, 9]. In a longitudinal cohort, for instance, Gripe et al. discovered that adolescent boys who had increased their cannabis usage had significantly greater odds of suicidal ideation (RR = 3.43, $p = .012$), depression (RR = 1.49, $p < .001$), and anxiety (RR = 1.72, $p = .009$) [6]. Although the effect sizes were slightly different, the trends were comparable for females. In a different study, Lydiard et al. used data from the National Consortium on Alcohol and Neurodevelopment in Adolescence (NCANDA) to find a bidirectional association between cannabis usage and depressive symptoms in people between the ages of 15 and 24 [8]. The study discovered that, independent of alcohol use, cannabis usage also predicted later increases in depression symptoms ($\beta = 0.002$, SE = 0.001, $p = .08$), while depressive symptoms predicted later cannabis use ($\beta = 0.740$, SE = 0.320, $p = .02$). This demonstrates how cannabis may both reflect and reinforce mood disorders [8].

Furthermore, a deeper understanding of cannabis's psychological and health consequences is necessary, given its growing legal and social acceptance [9, 10]. This review of the literature aims to highlight knowledge gaps, summarise recent findings, and suggest further study to provide insight into the relationship between cannabis usage and mood and anxiety disorders. This review examines recent research on the connection between regular cannabis use and the onset or worsening of anxiety disorders (such as panic disorder, social anxiety disorder, and generalized anxiety disorder) and mood disorders (such as bipolar disorder and depression) among young adults. To identify knowledge gaps and guide future research, special attention is given to sex differences, usage patterns, and the neurobiological foundations of cannabis-related mood and anxiety disorders, including the role of the endocannabinoid system in stress and emotional regulation [5].

Methods

This study is a systematic review designed to examine the impact of regular cannabis use on mood (such as “bipolar and related disorders, depressive disorders & cyclothymic disorders) and anxiety levels in young adults compared to those who do not use cannabis. This review follows PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency and meticulousness in study

selection, data extraction and synthesis [11]. A comprehensive literature search was conducted using PubMed, OVID Medline, and the Cochrane Library, databases known for their extensive coverage of clinical, psychological, and systematic review studies. The search strategy included a combination of Medical Subject Headings (MeSH) terms and relevant keywords to capture all pertinent studies and was limited to articles published between 2014-2024. The primary search terms used included “anxiety disorders,” “cannabis use disorder,” “cannabis,” “mood disorders,” (such as “bipolar and related disorders,” “depressive disorders,” & “cyclothymic disorders”), “emerging adulthood,” and “young adults.” Boolean operators (AND, OR) were used to refine the search and ensure relevant articles were identified. Reference lists of included studies were manually screened for additional sources.

Studies were only included if they examined young adults (18–25 years) with and without cannabis use, utilized observational designs (cross-sectional, cohort, case-control), randomized controlled trials (RCTs), or meta-analyses, and assessed mood disorders (e.g., depression, bipolar disorder) or anxiety disorders (e.g., generalized anxiety disorder, social anxiety disorder, panic disorder). The specific age demographic was chosen due to developmental vulnerability, high prevalence of use and increased mental health risk [7, 12-13]. Only English-language, peer-reviewed studies were included. Exclusion criteria encompassed studies lacking primary data, those published 10 years before 2014 and those investigating only acute cannabis effects rather than regular use, which is defined as use once a week or more [14]. Regular use was chosen as a criterion since regular use is more likely to produce chronic neurobiological and psychological changes, provides insight into potential mental health risks and clinical interventions, as well as demonstrates consistent results to compare. Two independent reviewers screened articles based on titles and abstracts, followed by full-text reviews for relevant studies. Data extraction was performed using a standardized form to collect study characteristics, participant demographics, mood and anxiety outcomes, and key findings. Study quality was assessed using the Newcastle-Ottawa Scale (NOS) for observational studies and the Cochrane Risk of Bias tool for RCTs [15, 16]. Given the heterogeneity in study designs and outcome measures, a narrative synthesis approach was used, summarizing quantitative data from studies utilizing comparable scales (e.g., Hamilton Anxiety Rating Scale, Beck Depression Inventory) with effect sizes where applicable.

In addition, subgroup patterns (such as sex differences, variations in cannabis use frequency or dose, and differences by study quality) were noted qualitatively when reported by the included studies, although no formal subgroup meta-analysis was conducted.

Results

Several studies reported an association between regular cannabis use and increased symptoms of depression. Gripe et al. found that increased cannabis use during adolescence and young adulthood was associated with elevated risks of depressive and anxiety symptoms, including depression and anxiety [6]. The study analyzed data from Norwegian youth and identified that within-person increases in cannabis use correlated with higher levels of depressive symptoms over time. Researchers found that increases in cannabis use, particularly moving from no use to more than ten times per year, were significantly associated with heightened symptoms of anxiety (RR = 1.72, $p = .009$), depression (RR = 1.49, $p < .001$), and suicidal ideation (RR = 3.43, $p = .012$) among males. For females, similar trends were observed, with elevated risks for anxiety (RR = 1.38, $p = .023$) and suicidal ideation (RR = 2.47, $p = .002$), suggesting gender identity differences as the author describes, in vulnerability.

Similarly, a population-based cohort study published by McDonald et al. found that cannabis use in youth was associated with an increased likelihood of seeking health services for mood and anxiety disorders [10]. The study identified a significant relationship between cannabis use frequency and mental health outcomes, with less-than-weekly cannabis use linked to a higher risk of seeking mental health services for mood and anxiety disorders (RR = 1.52, 95% CI: 1.30–1.78, $p < 0.001$). This is a statistically significant finding, supported by its narrow confidence interval. No significant sex interactions were observed, so subgroup analyses by biological sex were not reported. This pattern is also mirrored in a longitudinal study published by Lydiard et al., finding a bidirectional relationship between cannabis use and depressive symptoms in individuals aged 15 to 24 that approached significance [8]. Using data from the National Consortium on Alcohol and Neurodevelopment in Adolescence (NCANDA), the study revealed that depressive symptoms predicted future cannabis use ($\beta = 0.740$, SE = 0.320, $p = .02$), a statistically significant result, while cannabis use also predicted subsequent increases in depressive symptoms one year later ($\beta = 0.002$, SE = 0.001, $p = .08$), independent of binge drinking behaviors. Therefore, while the direction of effect suggests a potential trend, this latter finding should be interpreted with caution. Additionally, among cannabis users, depressive symptoms were associated with a greater number of days of use ($\beta = 1.19$, SE = 0.24, $p < .001$), with a stronger effect observed in females ($\beta = 1.466$, $p < .001$) compared to males ($\beta = 0.821$, $p = .02$). Both of these associations reached statistical significance. These findings highlight the complex interplay between cannabis consumption and mood disturbances in young adults, with notable biological sex differences in these associations.

A neurobiological study by Ferreira et al. investigated the role of cannabinoid type-1 receptors (CB₁R) in the amygdala, a brain region involved in emotion regulation

[17]. The researchers found that knocking down CB₁R in the amygdala of adult marmosets induced anxiety-like behaviours, indicating that CB₁R activity influences anxiety responses. While this animal model does not establish direct causality in humans, it provides insight into potential mechanisms through which chronic cannabis exposure, which affects these receptors, may influence anxiety vulnerability.

Other studies explored the psychosocial context. For instance, Shukla et al. investigated the relationship between cannabis use, sleep, and mood disturbances among individuals with epilepsy [18]. The researchers found that cannabis users exhibited higher levels of anxiety and depression compared to non-users, as measured by standardized scales. Specifically, cannabis use was associated with increased scores on the Beck Depression Inventory-II (BDI-II) and the Beck Anxiety Inventory (BAI), indicating more severe mood disturbances. These findings suggest a significant association between cannabis use and increased likelihood of social anxiety disorder in this population. A study published by Single et al. examined the association between cannabis use and social anxiety disorder (SAD) in emerging adults aged 18 to 25 [19]. Utilizing data from the National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III), the researchers found that 1.10% of participants reported co-occurring cannabis use and SAD. The study identified significant associations between co-occurring cannabis use and SAD and other psychiatric disorders, including major depressive disorder, bipolar I disorder, generalized anxiety disorder, specific phobia, agoraphobia, and panic disorder (Adjusted Odds Ratios [AOR] ranging from 3.03 to 19.05). These findings suggest a complex interplay between cannabis use and various mood and anxiety disorders in emerging adulthood.

Additionally, a cross-sectional study published by Savulich et al. examined biological sex differences in neuropsychological functioning among adolescent and young adult regular cannabis users [2]. The study included 171 participants aged 13 to 25 years, with 46.2% being female. The researchers found that female cannabis users exhibited greater mood instability and anxiety symptoms compared to males, with effect sizes ranging from moderate to high (Cohen's $d = 0.52$ – 0.78 , $p < 0.05$). A study published by Walukevich-Dienst et al. investigated the daily relationships between negative affect, negative emotion differentiation (NED), and cannabis use behaviours among a high-risk sample of young adults [2]. The study found that on days with higher reported negative affect, individuals with higher NED were more likely to experience cannabis craving and reported higher coping motives for cannabis use. These findings suggest that individuals who can distinguish between different negative emotions may be more inclined to use cannabis as a coping mechanism during periods of heightened negative affect. Moreover, a study published by Rahal et al. discovered that

individuals with lower negative emotion differentiation (NED) were more likely to use cannabis as a form of emotional regulation, suggesting that some young users may turn to cannabis as a maladaptive strategy to manage emotional distress [21]. Together, these studies form a cohesive narrative that highlights not only statistical associations but also the psychological and neurobiological mechanisms underlying cannabis use in young people.

Where available, confidence intervals were reported (e.g., McDonald et al.), but some studies only provided p-values or regression coefficients [10]. This variability in reporting should be considered when interpreting the strength and precision of the associations.

Discussion

According to the review's findings, regular cannabis use was consistently linked to negative mood and anxiety consequences in young people, especially during a crucial neurodevelopmental period [7, 11-12]. Regular use was associated with greater susceptibility to depression, anxiety, and suicidal thoughts rather than providing protective effects [6-8, 10]. These correlations were particularly noticeable in research looking at longitudinal trajectories, indicating that the relationship might have been cumulative over time rather than purely cross-sectional [7-8, 10].

This relationship could have been explained by a number of mechanisms. A major cause of mood instability and increased anxiety, according to neurobiological data, was the dysregulation of the endocannabinoid system, namely the CB₁ receptor pathways in emotion-regulating brain areas [5, 17]. These results were consistent with a larger body of psychiatric research that had highlighted the critical role that prefrontal and amygdala dysfunction play in affective disorders [5]. A feedback loop might have also been maintained by psychosocial factors, including poor emotional regulation and cannabis use as a coping mechanism: those who had experienced more mood instability may have been subject to increased cannabis use on a regular basis to use cannabis on a regular basis, which seemed to have worsened these symptoms [1, 20].

Differences based on sex have been identified as a significant risk factor. The severity of mood and anxiety symptoms was consistently higher among female users, which may be due to underlying neuroendocrine sensitivity or social pressures that intensify the emotional effects of cannabis [2, 19, 22]. When addressing cannabis use in teenage populations, these trends emphasized the significance of customized harm reduction measures that take into account both sex and emotional regulation profiles [21]. Additionally, the review also supports the notion that cannabis use in this age range may be a part of a larger constellation of mental vulnerability [4, 19]. If cannabis use obscures or complicates symptomatology, those with co-occurring mood or anxiety disorders may be especially vulnerable, not only to worse outcomes but also to delayed diagnosis or treatment [2, 9-10, 19].

Additionally, these findings have wider public health implications in addition to those at the individual level. Cannabis usage is becoming more and more legal and accepted, which could lead to a perception of safety that is at odds with the data about its detrimental effects on mental health [7, 9, 22]. Education campaigns should highlight that, especially for people who are already dealing with emotional dysregulation or psychiatric symptoms, putative therapeutic benefits—like relaxation or short-term mood enhancement—do not always translate into long-term safety [4, 22].

Notwithstanding these findings, it is important to acknowledge a few of the studied literature's limitations. First of all, cannabis is not a homogenous drug; results from different research are hard to generalize due to variations in formulations, doses and THC/CBD ratios [5, 7]. Secondly, a large portion of the study is based on self-report measures, which can add bias or mistakes in predicting mental health outcomes and frequency of use [6, 20]. Lastly, because there are still few randomized controlled trials (RCTs), a large portion of the evidence is observational and should be evaluated cautiously [4, 10]. Understanding these restrictions helps to balance how results are interpreted and emphasizes the need for more thorough standardized research.

When combined, these results highlighted the necessity of early screening and preventative mental health programs aimed at young adults, especially in environments where cannabis use is common or accepted [9, 13]. Although some people may experience short-term symptom alleviation, the overall body of research cautions against frequent cannabis use among young people who are at risk [6-8, 10]. Future studies should concentrate on establishing clinical tools to identify individuals most at risk of cannabis-exacerbated emotional dysfunction, as well as on eliminating causality through prospective designs and mechanistic studies [4-5].

Conclusions

In contrast to non-users, this literature review explored the association between young adults' regular cannabis use and their mood and anxiety outcomes. Research repeatedly indicated that regular cannabis usage is linked to higher levels of anxiety, depression, and, occasionally, suicidal thoughts. Both general populations and clinical groups with underlying health vulnerabilities exhibited these relationships, suggesting a wide-ranging and clinically significant influence. The examined research points to a possible reciprocal link in which continued cannabis usage contribute to and reinforce mood disorders. Females, who frequently exhibited higher emotional reactivity and psychiatric symptom severity, seemed to be more affected. Cannabis use as a maladaptive coping mechanism and the function of CB₁ receptors in emotional regulation are two examples of neurobiological and psychological factors that may help explain these patterns. Current evidence indicates

that regular cannabis use may increase vulnerability to emotional wellness throughout a critical phase of brain development, despite the subjective mood relief reported by some users. These findings highlight the necessity of early screening, customized public health advertising, and focused intervention techniques. In this high-risk age range, more longitudinal and mechanistic research is necessary to elucidate possible pathways of influence and guide harm reduction initiatives.

List of Abbreviations

AOR: adjusted odds ratio
BAI: Beck Anxiety Inventory
BDI-II: Beck Depression Inventory-II
CB₁R / CB₁: cannabinoid receptor type 1
CB₂: cannabinoid receptor type 2
CBD: cannabidiol
CI: confidence interval
ECS: endocannabinoid system
MeSH: Medical Subject Headings
NCANDA: National Consortium on Alcohol and Neurodevelopment in Adolescence
NED: negative emotion differentiation
NESARC-III: National Epidemiologic Survey on Alcohol and Related Conditions-III
NOS: Newcastle-Ottawa Scale
PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RCT: randomized controlled trial
RR: relative risk
SAD: social anxiety disorder
THC: tetrahydrocannabinol

Conflicts of Interest

The authors Angela Henein and Jasmine Henain declare that they have no conflicts of interest.

Ethics Approval and/or Participant Consent

Since this study was a systematic literature review and did not entail the gathering of new data from human participants, it was exempt from ethics approval and participant permission requirements.

Authors' Contributions

AH: made substantial contributions to the conception and design of the study, collected, analyzed, and interpreted the data, drafted and critically revised the manuscript for important intellectual content, gave final approval of the version to be published, and agreed to be accountable for all aspects of the work.

JH: made substantial contributions to the conception and design of the study, collected, analysed, and interpreted the data, drafted and critically revised the manuscript for important intellectual content, gave final approval of the version to be published, and agreed to be accountable for all aspects of the work.

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