TRAJECTORIES OF MARIJUANA USE, AND CO-OCCURRING DEPRESSION AND ALCOHOL USE DISORDER AMONG ADOLESCENT IN THE UNITED STATES

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Theme of the Article: Mental Health

Research Objectives: Examine the predictive prevalence of major depressive episodes (MDE), MDE with severe impairment, MDE with alcohol use disorder in relation to sociodemographic disparity and frequency of cannabis use.

BIO

Dr. Ismatara Reena, Ed.D, MBBS, CHES, serves as an Assistant Professor in the Health Promotion and Wellness Program at the University of Louisiana at Lafayette, USA. Her diverse research portfolio spans underrepresented groups, mental health literacy, social determinants of health, COVID-19's effects on higher education, and health equity. With a passion for promoting wellness and addressing disparities, she contributes invaluable insights to the field. Dr. Reena's work underscores her commitment to advancing knowledge and fostering positive change in healthcare and education. Her multidisciplinary approach and dedication to improving health outcomes make her a valuable asset to the academic community and beyond.

Abstract

Youth substance use is a major public health concern. Marijuana and alcohol, the two most common illicit drugs among adolescents are increasing being studied for affective risk. Despite the steady fall of teens substance use since pandemic, teens depressive symptoms elevated, and mental health condition worsened. This study investigates the association between adolescent marijuana use, depression, and alcohol use disorder (AUD) using data from the 2021 National Survey of Drug Use and Health (NSDUH). Descriptive statices and binary logistic regression were used analyze the data.

The findings reveal that adolescent marijuana use is significantly associated with higher odds of lifetime MDE, past-year MDE, past-year MDE with severe role impairment, and past-year MDE with AUD. Female gender and White race followed by Hispanic have statistically higher marijuana consumption. Two out of five adolescent lifetime marijuana user had past year MDE, and 9% had MDE with AUD. A significant portion of adolescents, ranging from 63% to 75%, perceive moderate to heavy marijuana use as lacking substantial risks. A consistent and particular escalating odds is identified between

past-year cannabis use frequency and the likelihood of experiencing MDE with co-occurring AUD.

Keywords:

marijuana, depression, cannabis, severe role impairment, alcohol use disorder (AUD)

1.0 Introduction

Marijuana and alcohol are among the most common form of psychoactive polysubstance use globally particularly among adolescents (Banks et al., 2017; Jones & McCance-Katz, 2019). In 2020, nearly 900,000 adolescents had alcohol use disorder and 1.3 million people had marijuana use disorder (Substance Abuse and Mental Health Services Administration [SAMHSA], 2022). Cannabis reforms such as decriminalization, medicalization, and legalization have had varied consequences youth in the United States, including some advantages and detrimental consequences on adolescent mental health (Hammond et al., 2020). Marijuana and alcohol alone or when used together has disproportionate population distribution (McHugh, 2019; Gajos et al., 2021; Pedroni et al., 2021; Siddiqui et al., 2022). Both substances are linked to a wide range of acute and long-term

health hazards and repercussions (Aloi et al., 2019; Crocker et al., Marijuana and alcohol are among the most common form of psychoactive polysubstance use globally particularly among adolescents (Banks et al., 2017; Jones & McCance-Katz, 2019). In 2020, nearly 900,000 adolescents had alcohol use disorder and 1.3 million people had marijuana use disorder (Substance Abuse and Mental Health Services Administration [SAMHSA], 2022). Cannabis reforms such as decriminalization, medicalization, and legalization have had varied consequences youth in the United States, including some advantages and detrimental consequences on adolescent mental health (Hammond et al., 2020). Marijuana and alcohol alone or when used together has disproportionate population distribution (McHugh, 2019; Gajos et al., 2021; Pedroni et al., 2021; Siddiqui et al., 2022). Both substances are linked to a wide range of acute and long-term health hazards and repercussions (Aloi et al., 2019; Crocker et al., 2021; Pasman et al., 2018; Reece & Hulse, 2020).

Overall, a steady fall of substance use has been noticed among adolescents since the pandemic culmination, yet the upward trajectory of depression prevalence remains same among all demographics (Patalay & Gage, 2019). Higher marijuana con-

sumption attributed to the discourse on cannabis reform can translate into a greater mental healthcare burden (Bodden et al., 2018; Mojtabai et al., 2016; Ssegonja et al., 2019; Twenge, 2020; Zuckermann et al., 2019). Converging evidence of robust literatures indicate the association of cannabis use to depression in adolescents (Chadi et al., 2019; Langlois et al., 2021; Weinberger et al., 2020), however the directionality is not clear. The relationship between cannabis uses and depression has three hypotheses so far: depression preceding cannabis use, cannabis-induced brain changes increasing MDD risk, and confounding factors (Gukasyan & Strain, 2020). In contrast, ample scholarly works have demonstrated the association of risk of depression with alcohol misuse.

However, the results of extensive population-based surveys show that depression brought on by solely drinking alcohol is not extremely prevalent. Studies have revealed that many cases that were initially diagnosed as alcohol-induced depression were later reclassified as independent depression (i.e., not substance caused), as the condition persisted even after a period of abstinence (McHugh, 2019).
Marijuana use can potentially lead to use of other substances including alcohol (Hines et al., 2020; Nugent et al., 2018;

Ramlagan et al., 2021). A large number of adolescents in the U.S. are engaged in substance use according to recent national surveys (SAMHSA. 2022). In 2021, The percentage for marijuana vaping in the past month among current marijuana users was highest among adolescents. In 2020, Nearly 900,000 adolescents had alcohol use disorder and 1.3 million people had marijuana use disorder. In addition, 20.1 percent (weighted 5.0 million adolescents) had major depressive episode (MDE), and 14.7 percent (weighted 3.7 million adolescents) had MDE with severe impairment in various roles of life. Among adolescents aged 12 to 17, 2.9 percent (weighted 724,000 people) had both an MDE with severe impairment and an substance use disorder (SUD). Additionally, a concerning prevalence of depression effects like suicidal thoughts, plans, and attempts among adolescents was observed. The estimates are derived from surveying in the subsequent year. This high prevalence raises the concern for outlining the predictors of depression related to substance use.

Although co-use of alcohol and marijuana and its associated risk of moderate depression has been studied several times in several demographics (Claus et al., 2017; Lipperman-Kreda et al., 2017; Thompson et al., 2021; White et al., 2019),

the impact of cannabis use on MDE with alcohol use disorder (AUD) has not been studied enough. The relevance to identify the sociodemographic disparity is paramount importance to recognize target strata of population. With shifting cannabis legalization in the US, and alcohol being the second most common used substance, it's crucial to investigate the link between adolescent cannabis use with adolescent with major depressive episodes and with alcohol use disorder and the pattern of population distribution.

The objective of the current study is to examine the predictive prevalence of major depressive episodes (MDE), MDE with severe impairment, MDE with alcohol use disorder in relation to sociodemographic disparity and frequency of cannabis use.

2.0 Method

This research employed a secondary data analysis approach, utilizing data from the 2021 National Survey of Drug Use and Health (NSDUH). The study included a total of 10,743 adolescent participants aged 12-17, drawn from the NSDUH database. The data were nationally representative of the United States population. The NSDUH conducted multimod-

al data collections throughout 2021, compiling information from households, noninstitutionalized group quarters, and civilians on military bases. Data were anonymized and available for public use.

The primary outcome measures were lifetime major depressive episodes (MDE), past year MDE, past year MDE with alcohol use disorder (AUD) and past year MDE with severe role impairment. All outcomes were binary dichotomous variables, with responses categorized as "Yes" or "No." The NSDUH adapted discrete adolescent depression criteria from the Diagnostic and Statistical Manual of Mental Disorders-5 (American Psychiatric Association, 2013) to define lifetime MDE.

Past year depression was determined for those with lifetime MDE reporting a 2-week or longer period of depression in the past 12 months. Adolescents concurrently reporting alcohol abuse underwent assessments for alcohol use disorder. The Sheehan Disability Scale (Leon et al., 1997) measured the impact of a disorder on adolescents' life, assessing role functioning in chores, relationships, and social life.

Adolescents were classified as having an MDE with severe impairment if their depression caused severe problems with their ability to do

chores at home, do well at work or school, get along with their family or have a social life. Scores ≥7 in any domain indicated MDD with severe role impairment. Independent variable, cannabis use frequency was obtained by classifying past year cannabis use into four categories: non-user, mild user (1-11 days a year), moderate user (12-49 days a year), and heavy user (≥50 days a year) (Gukasyan & Strain, 2020).

Descriptive analysis characterized participant demographics and assessed the prevalence of cannabis use. Binary logistic regression analyses were conducted to predict the probabilities of experiencing lifetime major depressive episode, past year major depressive episode, major depressive episode with severe role impairment, major depressive episode with alcohol use disorder based on sociodemographic factors and cannabis use frequency. Odds ratios (OR) with 95% confidence intervals (CI) quantified the observed associations. All statistical analyses were performed using SPSS version 26.0, with a significance cutoff of 0.05 and a 95% confidence level.

3.0 Result

Participants Characteristic

Table 1 presents sociodemographic characteristic of participants (N= 10743, weighted about 25 millionadolescents) by marijuana use. Weighted column percents and unweighted n of the total sample adolescents who had lifetime marijuana use across various sociodemographic variables and depression outcomes including severe impairment and alcohol use disorder (AUD).

Most of the adolescent participants with lifetime marijuana use are older adolescents (age 16-17, 63.9%), females (54.7%), non-Hispanic white (51.4%) followed by Hispanic (23.3%), with a total annual family income $50,000 or more (58.1) and are found to be statistically significant with crosstab chi-square analysis. In 2021, nearly 50% of adolescents who used cannabis experienced at least one major depressive episode (MDE) in their lifetime. Additionally, around 40% reported MDEs in the preceding year, with about 31% encountering MDEs associated with severe role impairment, and roughly 9% with co-occurring alcohol use disorder. All the depression outcomes including past year MDE with AUD demonstrated significant associations with marijuana use (p < 0.01).

Table 1. Baseline characteristics of study participants (n=10743 adolescents)

	Marijuana n (%) Use(Yes)	P value
Age		**<0.01**
12-13	84 (6)	
14-15	422 (30.1)	
16-17	895 (63.9)	
Gender		**<0.01**
Adolescents Male	634(45.3)	
Adolescent Female	767(54.7)	
Race		**<0.01**
Nonhispanic white	720 (51.4)	
African american	183 (13.1)	
Hispanic	326 (23.3)	
Others	172 (12.2)	
Total Family Income		**<0.05**
Less than $20,000	209 (14.9)	
$20,000-$49,999	378 (27)	
$50,000 or more	814 (58.1)	
Lifetime Major depressive Episode		<0.01
No	717(52.6)	
Yes	646(47.4)	
Major Depressive Episode in the Past Years		**<0.01**
No	831(61.6)	
Yes	517(38.4)	
Pat Year Major Depressive Episode with Alcohol Use Disorder		**<0.01**
No	1226 (90.9)	
Yes	122 (9.1)	
Past Year Major Depressive Episode with Severe Role Impairment		**<0.01**
No	925 (68.9)	
Yes	418 (31.1)	

Note.crosstab chi square analysis was conducted to obtain the distribution, un-weighted n and weighted percentages were reported, p value is significant at <0.05

Prediction by sociodemographic variables

The findings of the study (see Table 2) reveal significant associations between various demographic factors and the likelihood of experiencing depression outcomes. For lifetime MDE, adolescents aged 14-15 years exhibited a significantly higher likelihood (OR = 1.69, 95% CI: 1.50-1.89, p < 0.001), while those aged 16-17 years had an even greater likelihood (OR = 2.45, 95% CI: 2.19-2.74, p < 0.001) compared to the reference group (12-13 years). A similar pattern was observed for past year MDE, with higher odds for both the 14-15 years group (OR = 1.72, 95% CI: 1.52-1.96, p < 0.001) and the 16-17 years group (OR = 2.29, 95% CI: 2.02-2.6, p < 0.001). Concerning past year MDE with alcohol use disorder, the odds were significantly elevated for adolescents aged 14-15 years (OR = 4.75, 95% CI: 2.54-8.88, p < 0.001) and 16-17 years (OR = 7.56, 95% CI: 4.13-13.86, p < 0.001) compared to the reference group. Similarly, for past year MDE with severe role impairment, both the 14-15 years group (OR = 1.92, 95% CI: 1.66-2.23, p < 0.001) and the 16-17 years group (OR = 2.35, 95% CI: 2.03-2.71, p < 0.001) displayed significantly higher odds.

For lifetime MDE, males demonstrated a significantly lower likelihood than female (OR = 0.30, 95% CI: 0.27-0.33, p < 0.001), and this pattern persisted for past year MDE (OR = 0.30, 95% CI: 0.27-0.34, p < 0.001). Similarly, for past year MDE with alcohol use disorder, male adolescents exhibited a markedly reduced likelihood (OR = 0.32, 95% CI: 0.22-0.46, p < 0.001), as did for past year MDE with severe role impairment (OR = 0.29, 95% CI: 0.26-0.33, p < 0.001).

In comparison with non-Hispanic white adolescents, the odds of lifetime MDE among African American adolescents were significantly lower (OR = 0.69, 95% CI: 0.59-0.79, p < 0.001), and this pattern persisted for past year MDE (OR = 0.66, 95% CI: 0.56-0.77, p < 0.001) and past year MDE with severe role impairment (OR = 0.68, 95% CI: 0.57-0.81, p < 0.001). However, for past year MDE with alcohol use disorder, the odds were significantly lower only for African American adolescents (OR = 0.37, 95% CI: 0.18-0.73, p = 0.004). In the Hispanic group, the odds of lifetime MDE were slightly higher (OR = 1.124, 95% CI: 1.01-1.25, p = 0.033), but there were no significant associations for past year MDE, past year MDE with alcohol use disorder, or past year MDE with severe role impairment.

For adolescents in families with an income of $20,000-$49,999, the odds of lifetime MDE were slightly elevated (OR = 1.19, 95% CI: 1.02-1.38, p = 0.02) than less than $20,000 group. Although a similar trend was observed for past year MDE, it did not reach statistical significance (OR = 1.12, 95% CI: 0.95-1.31, p = 0.19). There were no significant associations between this income range and past year MDE with alcohol use disorder or past year MDE with severe role impairment. In contrast, families with an income of $50,000 or more did not show any significant association with lifetime MDE (OR = 1.10, 95% CI: 0.967-1.258, p = 0.14) or past year MDE (OR = 1.12, 95% CI: 0.97-1.30, p = 0.11) or past year MDE with severe role impairment (OR = 1.16, 95% CI: 0.98-1.37, p = 0.08). A statistically significant increase in the odds of past year MDE with alcohol use disorder (OR = 1.68, 95% CI: 0.99-2.85, p = 0.05) has been observed.

Table 2. Binary logistic regression analysis of characteristics associated with depression outcome and depression with alcohol use disorder (AUD)

Variable	Lifetime MDE		Past Year MDE		Past Year MDE with AUD		Past Year MDE with Severe Role Impairment	
	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p
Age								
12-13 Years	Reference							
14-15 Years	1.69(1.50-1.89)	**<0.001**	1.72(1.52-1.96)	**<0.001**	4.75(2.54-8.88)	**<0.001**	1.92(1.66-2.23)	**<0.001**
16-17 Years	2.45(2.19-2.74)	**<0.001**	2.29(2.02-2.6)	**<0.001**	7.56(4.13-13.86)	**<0.001**	2.35(2.03-2.71)	**<0.001**
Sex								
Female	Reference							
Male	0.30(0.27-0.33)	**<0.001**	0.30(0.27-0.34)	**<0.001**	0.32(0.22-0.46)	**<0.001**	0.29(0.26-0.33)	**<0.001**
Race								
Non-Hispanic White	Reference							
African American	0.69(0.59-0.79)	**<0.001**	0.66(0.56-0.77)	**<0.001**	0.37(0.18-0.73)	**0.004**	0.68(0.57-0.81)	**<0.001**
Hispanic	1.124(1.01-1.25)	**0.033**	1.06(0.94-1.2)	0.33	0.97(0.67-1.42)	0.89	1.05(0.92-1.20)	0.45
Others	0.85(0.99-.86)	1.13	0.98(0.84-1.14)	0.79	0.84(0.50-1.39)	0.49	0.94(0.79-1.12))	0.50

Total Family Income								
Less than $20,000	Reference							
$20,000-$49,999	1.19(1.02-1.38)	0.02	1.12(0.95-1.31)	0.19	0.97(0.52-1.81)	0.93	1.21(1.002-1.45)	0.04
$50,000 or more	1.10(0.967-1.258)	0.14	1.12(0.97-1.30)	0.11	1.68(0.99-2.85)	0.05	1.16(0.98-1.37)	0.08
Past Year Cannabis Use Frequency								
Never Use	reference							
Mild User	2.89(2.37-3.53)	<0.001	3.14(2.56-3.85)	<0.001	18(11.2-29.04)	<0.001	3.22(2.59-4.0)	<0.001
Moderate User	2.59(1.98-3.41)	<0.001	2.73(2.05-3.62)	<0.001	29(17.4-49)	<0.001	3.0(2.22-4.04)	<0.001
Heavy User	2.95(2.43-3.57)	<0.001	2.91(2.38-3.55)	<0.001	33(22.5-50.24)	<0.001	2.99(2.42-3.70)	<0.001

Note. Odds ratio calculated at 95% confidence interval, statistical significance at <0.05

Prediction by Cannabis use Frequency

Compared to those who never used cannabis, mild, moderate, and heavy cannabis users displayed progressively higher odds of lifetime MDE, past-year MDE, past-year MDE with alcohol use disorder, and past-year MDE with severe role impairment.

For mild cannabis users, the odds of lifetime MDE were substantially higher (OR = 2.89, 95% CI: 2.37-3.53, p < 0.001), and this trend persisted for past year MDE (OR = 3.14, 95% CI: 2.56-3.85, p < 0.001), and past year MDE with severe role impairment (OR = 3.22, 95% CI: 2.59-4.0, p < 0.001). Similarly, moderate cannabis users exhibited increased odds for all outcomes: lifetime MDE (OR = 2.59, 95% CI: 1.98-3.41, p < 0.001), past year MDE (OR = 2.73, 95% CI: 2.05-3.62, p < 0.001), and past year MDE with severe role impairment (OR = 3.0, 95% CI: 2.22-4.04, p < 0.001).For heavy cannabis users, the odds were similarly elevated across all outcomes: lifetime MDE (OR = 2.95, 95% CI: 2.43-3.57, p < 0.001), past year MDE (OR = 2.91, 95% CI: 2.38-3.55, p < 0.001, and past year MDE with severe role impairment (OR = 2.99, 95% CI: 2.42-3.70, p < 0.001).

The study findings indicate a consistent and escalating association between past-year cannabis use frequency and the likelihood of experiencing major depressive episodes (MDE) with co-occurring alcohol use disorder among adolescents. Compared to individuals who reported never using cannabis, mild cannabis users demonstrated a substantially higher odds ratio (OR = 18.0, 95% CI: 11.2-29.04, p < 0.001) for past-year MDE with alcohol use disorder. This pattern continued for moderate cannabis users, with a dramatic increase in the odds (OR = 29.0, 95% CI: 17.4-49.0, p < 0.001). Heavy cannabis users exhibited the highest risk, with an even greater odds ratio (OR = 33.0, 95% CI: 22.5-50.24, p < 0.001).

3.0 Discussion

The Depression has been reported as a common affective adverse event in adolescent marijuana users.However, current literature remains divisive on the depression risk in adolescent marijuana users. Most literature (Bolanis et al., 2020; Chadi et al., 2019; Schoeler et al., 2018) we found showed that adolescent marijuana users had higher odds of depression even after adjusting for concomitant substance use, which contrasts with other studies (Gobbi et al., 2019) showing low risk association. Such duality of findings regarding the adolescent's depression association with marijuana use raises the possibility that cannabis use may increase depression under certain conditions, such as other substance use, adverse childhood experience. Those conditions might not always be mutually exclusive. Our result showed greater odds of depression, depression with severe impairment, and depression with alcohol disorder in any frequency of marijuana use. This study uniquely contributes by utilizing data from a recent national survey with larger sample size and sampling weights that allow authors to approximate the young marijuana users on a national level.

This population-based study is the first, to our knowledge, to examine the if the frequency of cannabis use can predict depression, depression with severe impairment, and depression with alcohol use disorder (AUD) simultaneously during adolescence from recent NSDUH data.

On top of that, predictive probability of sociodemographic variables todepression outcome and sociodemographic and depression outcomes correlates of marijuana use have been explored (see Table 1 and 2). Our study has following main findings. Female gender and White race followed by Hispanic have statistically higher marijuana consumption while some most studies (Assari et al., 2018; Hamilton et al., 2019;

Terry-McElrath et al., 2020) reported otherwise. The gender gap was already narrowing over time (Hemsing & Greaves, 2020), and the racial sample size difference might play a role here for this finding. Significantly higher likelihood of lifetime and past year major depressive episode (MDE), MDE with severe role impairment, as well as MDE with alcohol use disorder (p < 0.01), were observed among adolescents with a history of cannabis use.

As for the subjective dimension to the cannabis consumption among adolescents, between 63% and 75% of adolescents view moderate to heavy marijuana use as not posing a significant risk, and 35% of adolescents consider acquiring marijuana to be quite accessible. As cannabis use frequency increased, predicted prevalence of lifetime and past-year MDE, past year MDE with severe role impairment, past year MDE with AUD increased significantly (p < 0.001). The moderate (12-49 days a year) and heavy (≥50 days a year) cannabis users showed particularly elevated odds in relation to MDE with alcohol use disorder.

Overall, 13% adolescents (weighted about 3 million adolescents) reported lifetime marijuana use. Any frequency of past year marijuana use predicted both depression and depression with AUD

in adolescence. As far as we are aware no studies have investigated associations from cannabis use to both severe depression and depression with alcohol use disorder simultaneously. Few studies have investigated depression to cannabis use (Hoffmann, 2018), cannabis use to depression (Hengartner et al., 2020; Lawn et al., 2022; Mustonen et al., 2021), cannabis and alcohol use to depression (Fleming et al., 2021), depression to alcohol and cannabis use disorder (Rhew et al., 2017).

Most studies in our literature search demonstrated that depression was associated with increased subsequent cannabis use, alcohol use or simultaneous use of alcohol and marijuana (SAM) during adolescence. Our study extends the current body of knowledge by predicting depression with alcohol use disorder by increasing frequency category of cannabis use (mild, moderate, heavy use) among adolescents. Compared to studies that have investigated the bidirectional associations between depression and cannabis use simultaneously, our study had the advantage of also examining alcohol use disorder and was based on a representative sample of today's adolescents.

Our study findings bring out the hypothesis in the table of discussion that depression precedes cannabis use,

whereby adolescents may use cannabis to reduce stress or relaxation (Moreno-Mansilla et al., 2021). Research also shows that the therapeutic efficacy of cannabis to alleviate negative affect is largely short-term benefit rather it increases baseline depression in long term (Cuttler et al., 2018). While adolescents might be taking marijuana, the gateway drug as a coping strategy for alleviation of stress, it increases their likelihood to consume other substance use like alcohol (Borodovsky and Budney, 2018; Scheier & Griffin, 2021).

Limitations and Strengths

Dosage of cannabis use could not be known from the NSDUH dataset; hence, the frequency of use was taken as a crude estimate. This can cause the borderline data from categories of use severity, in some instance to be intermingling given that an adolescent may consume cannabis at very high amount attributed a mild user to moderate category. The self-reported nature of data, frequency of cannabis use data may be prone to response bias and potential underreporting. The diagnosis of alcohol abuse disorder or depression were not confirmed through clinician assessment or objective measures like urine drug screen tests. Furthermore, The NSDUH data do not allow for the determination of the chronological onset sequence between

Alcohol Use Disorders (SUD) and Major Depressive Episodes (MDE) among adolescents aged 12 to 17, preventing the establishment of whether SUD preceded MDE or vice versa. The authors would also like to acknowledge the presence of potential confounders especially developmental environment related factors.

Despite those limitations, the study's strength is the large, nationally representative sample of the U.S. adolescent population aged 12 to 17. The study updates and contributes to the existing knowledge base by providing information from a recent NSDUH. The research addresses a significant gap in the literature by exploring factors associated with depression, depression with severe role impairment, or alcohol use disorder. It also investigates marijuana use frequency as a predictor for depression with Alcohol Use Disorder (AUD).

4.0 Conclusion

Our analyses identified use of marijuana as significant risk factors for all depression-related outcomes. Higher use of marijuana (moderate and heavy user) was also strongly associated with all depression outcomes, and the association with depression with alcohol use disorder was somewhat

greater in magnitude than expected. Further research is needed to investigate the dose relationship between cannabis use frequency on depressive symptomatology with and without alcohol use disorder.

Misconceptions about marijuana safety and easy access might contribute to higher MDE rates among frequent users, necessitating further research on underlying motivation of substance use and youth sensitive corrective education. Clinicians should be aware that even any lifetime cannabis use in an adolescent suggests a higher likelihood of depression. Careful screening for depression and history co use of alcohol in an adolescent with any history of cannabis use should be investigated.

The limitations of NSDUH may constrain any deeper understanding between the cannabis user categories, nonetheless this work provides a starting point for further prospective research on the relationship between cannabis use frequency and affective disorders with and without polysubstance use in adolescence.

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