Risk Factors for Quantity of Cannabis Use Per Day among College Students Who Violated Their University Drug Use Policy

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ABSTRACT

Background: Cannabis use among college students represents a continued public health issue. The objective was to assess risk factors and reasons for cannabis use among students who violated their university's drug use policy, and whether risk factors influenced cannabis use quantity. **Methods**: This cross-sectional survey study included 99 college students enrolled at a large U.S. public university. Descriptive statistics were calculated, and an ordinary least squares regression analysis was conducted. **Results**: Students reported using cannabis an average of 7.4 ($SD = 10.2$) days in the past month, with 8% reporting daily use. On average, students consumed slightly over 0.25 ($SD = 0.25$) grams per day, with 40% reporting greater than one gram per day. The average age of onset of cannabis use was 16.8 ($SD = 1.8$) years old. The top reasons for cannabis use were to: relax or relieve tension (75.8%), feel good or get high (62.6%), and have a good time with friends (60.6%). Students perceived an average of 47% of their peers engaged in past-month cannabis use and only slight risk was associated with regular use. Students perceived their loved ones would mostly approve of a reduction in their cannabis use. Regression results indicated past-month cannabis frequency ($p = .002$) and being of racial/ethnic minority descent ($p = .05$) were positively associated with quantity of cannabis per day, while perceived risk of regular cannabis use ($\beta = -0.21$) was negatively associated. **Conclusion**: Evidence-based cannabis interventions for students who violate their university's drug use policies are critically needed that aim to reduce cannabis use and mitigate its associated negative consequences.

Key words: = cannabis; risk factors; interventions; college students; policy violators

Cannabis use among college students represents a continued public health issue throughout the U.S. (Gunn et al., 2021; Hammond et al., 2020; Office of Disease Prevention and Health Promotion, ODPHP, 2021; Sznitman et al., 2022; Welsh et al., 2019). Data from the Monitoring the Future Study (2023) indicated that 24% of college students engaged in past-month cannabis use (Patrick et al., 2023). This represents a significant 10-year increase in students' cannabis use prevalence, likely influenced by the declines in the perceived risk of harm associated with cannabis use (Carliner et al., 2017; Hammond et al., 2020), and the ongoing decriminalization and legalization of cannabis throughout the United States (U.S.; Hall & Lynskey, 2020; Zellers et al., 2022). Traditionally, substance use-related behaviors pose unique challenges among college students and are often associated with poor academic performance and potential substance use disorders (SUDs; Welsh et al., 2019). Additionally, the use of cannabis and alcohol together is prevalent among college students with nearly one-third reporting

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concurrent (ingestion in the same time period) polysubstance use, thus increasing their vulnerability to negative consequences such as vomiting, blackouts, driving under the influence, and SUDs (Haas et al., 2015; Subbaraman & Kerr, 2015).

A particularly important high-risk subpopulation known to engage in substance use more often are students who violate their university's drug use policy, and as a result, receive disciplinary referrals to intervention programs (Terlecki et al., 2015). Most universities require students to adhere to specific drug use policies while on campus. Regarding cannabis, university regulations largely prohibit the use of cannabis on campus regardless of age or the state policy surrounding cannabis. This is particularly true for public universities that receive federal funds and are obligated to adhere to the federal cannabis use policy, which involves the prohibition of the use of cannabis containing over 0.3% of the cannabinoid Tetrahydrocannabinol (THC; Caulkins & Kilborn, 2019). Those found in violation of campus policies are typically adjudicated to some form of education or intervention programming. Compared to non-policy violators, students who have violated their university's policy engage in drug use more frequently, experience more negative consequences, are at an increased risk of being diagnosed with a SUD or a cannabis use disorder (CUD; Buckner et al., 2018), and are often more reticent to seek help or express they are ready for a change (Palmer et al., 2010; Terlecki et al., 2015). However, few evidence-based prevention intervention programs exist aimed at reducing cannabis use and associated consequences that complement the ever-changing landscape (Montemayor et al., 2022b).

Although many universities purchase online education programs or adapt alcohol programming to inform cannabis prevention/intervention programs, these approaches have limitations. For example, most of the programs included in Montemayor et al.'s (2022b) cannabis systematic review, which explored cannabis use outcomes among substance use policy violators, were alcohol-centered programs. Due to the different physiological interactions of alcohol and cannabis within individuals, curriculum not tailored to cannabis use motives, education, and consequences likely overlook key risk-factors of cannabis use (Haas et al., 2015). Additionally, while programs like the Cannabis eCHECKUP TO GO are easily accessible and provide important information such as immediate personalized feedback of cannabis use, the financial burden of cannabis use, and consequences of use, the content included in these programs does not always account for various potential factors (San Diego State Research Foundation, 2014). This includes current information on the diverse ingestion methods in which students are experimenting with cannabis use (e.g., dabbing, gravity bong, etc.) and the associated hazards, sociocultural factors impacting cannabis use (e.g., culture, religion, values), or the state cannabis policy where the user resides and its potential influence in generating permissive norms that cannabis use is allowed (Carliner et al., 2017; Daniulaityte et al., 2017; Schauer et al., 2016). Thus, some institution's cannabis prevention and intervention programming potentially fail to address the complicated nature of cannabis in our society.

Various risk factors for increased levels of cannabis use among young adults have been identified. Adults who reported an initiation of cannabis use as young teenagers reported increases in use of cannabis as adults (Griffin et al., 2010). For college students who began using cannabis prior to college, the college environment can potentially act as a facilitator for further increases in cannabis use (Wetherill et al., 2016). Furthermore, early initiation of substance use increases the likelihood of engagement in other risky behaviors (Barry et al., 2016). For example, Montemayor et al. (2022a) revealed among high-risk college students who were active drinkers, an early initiation of alcohol use significantly predicted participation in recent cannabis use. Studies commonly report around a quarter of young alcohol users also engaging in cannabis polysubstance use (Bravo et al., 2021; Montemayor et al., 2022a; Terry-McElrath & Patrick 2023).

Intra-individual reasons and beliefs are also positively associated with cannabis use. For example, reasons or motives for cannabis use have been associated with higher frequency of cannabis use among college students (Buckner, 2013; Glodosky & Cuttler, 2020). Regarding mental health, a common conception for cannabis use

motives among young adults, reasons for cannabis use were highly correlated with stress, depression, and anxiety, and significantly moderated the relationship between stress and depression (Glodosky & Cuttler, 2020). Additionally, an individual's perceived injunctive and descriptive norms regarding cannabis use are considered predictors of increases in use. More specifically, those who possess greater descriptive norms of cannabis use or who perceive more permissive injunctive norms from those they love and respect have been shown to result in higher use of cannabis (Ecker et al., 2017; Napper et al., 2015). Relatedly, perceived risk associated with cannabis use has declined in the U.S. (Han et al., 2021). Among a representative national sample of U.S. adults, significant decreases in perceived risk surrounding cannabis use was associated with increases in occasional and regular cannabis use (Okaneku et al., 2015).

Campuses report university substance use policy violations as the most frequent reason students receive disciplinary referrals every year (Suffoletto et al., 2016). Despite the understandings of the associations between cannabis use and various risk factors among young adults, there remains a significant gap regarding the investigation of reasons and risk factors for cannabis use among college students who violated their universities drug use policy. Among college students who violated their university's cannabis use policy, we hypothesize quantity of cannabis use per day will be associated with past-month cannabis frequency and polysubstance use with alcohol. Additionally, we hypothesize quantity of cannabis use per day will be associated with injunctive and descriptive norms. Finally, we hypothesize an association between quantity of cannabis use per day and age-of-onset of cannabis use and perceived risks related to cannabis use. It is important to inform future programming for policy violators by investigating reasons and risk factors of cannabis use among students adjudicated to a drug use course for violating their university's policy (Buckner et al., 2018).

METHODS

Participants and Procedures

This cross-sectional survey study was conducted at a large, U.S. Southeastern public university with >30,000 enrolled students that has a zero-tolerance drug use campus policy. This includes the prohibition (e.g., possession, use, distribution, serving, using) of all federally illicit substances, including cannabis, by adults and students. State policies also prohibited any possession or use (i.e., medicinally, or recreationally) of cannabis prior to and during the time period in which the data were collected (October 2019 and July 2021). Despite health and safety Covid-19 protocols for the 2020 academic year instituted by the university, students were still allowed to reside and take part in on-campus events, places where policy violations occur most often.

After receiving a referral from an authority figure (e.g., campus police, residence hall directors) for violating the campus drug use policy, students were required to enroll in the face-to-face group adjudicated drug course offered by the university's department of campus recreation and wellness (DCRW). Students were included for this study if they were registered in a mandated course due to solely getting caught using cannabis and no other drugs (e.g., alcohol) on campus. The course curriculum focused on the education of the consequences of cannabis use (e.g., personal, academic), risk factors for cannabis use (e.g., peer norms), and risks of polysubstance use. Courses were taught on a rolling basis once a month. A total of 111 students were adjudicated to programming for cannabis use exclusively during this time and of those, 99 students volunteered to participate in this study, a response rate of 89%.

Per DCRW requirements, all students were asked to complete a baseline assessment designed to ascertain their current beliefs and behaviors surrounding cannabis use (i.e., frequency, quantity, norms, risks) prior to attending their mandated course. In conjunction with the baseline assessment, students were provided with a cover letter describing information about this current study. The cover letter provided to all potential participants provided important study details, served as their notice of the nature of the study, assured their anonymity, and asked the participants if they were willing to share their data with the researcher. All procedures were vetted and approved by the university's Institutional Review Board (IRB).

Measures

Past-Month Cannabis Use Frequency and Quantity Per Day

Students reported on their past-month cannabis frequency and quantity of cannabis use per day using two items from the Daily Sessions, Frequency, Age of Onset, and Quantity of Cannabis Use Inventory (DFAQ-CU) (α = .95; Cuttler & Spradlin, 2017). Participants reported the frequency of their past-month cannabis use (an independent variable) by answering the following question, "Approximately how many days of the past month did you use cannabis?" Response options ranged from 0-31 days. Although all students included in this study were enrolled in the course due to their cannabis use, they may have completed the course over one month later and therefore did not use cannabis in the past 31 days prior to survey completion. Students' quantity of cannabis use per day, the outcome variable, was measured on a scale ranging from 0 = 0 grams to 11 = More than 1 ounce.

Reasons for Cannabis Use

Students were asked to report their reasons for using cannabis by answering the following question that was adapted from prior research (Cooper et al., 2016), "Thinking back to occasions in which you have ever used cannabis, what has been the most important reasons for your cannabis use?...(Click yes OR no for each item)." Reasons included: "to relax or relieve tension; to feel good or get high; to have a good time with friends; as a sleeping aid; to experiment; because of boredom or nothing else to do; to seek deeper insights or understanding about a subject; to escape from problems; due to anger or frustration; to make it through the day; to fit in with a group; because they feel "hooked" or dependent on cannabis; other." Due to the multicollinearity associated with reasons for cannabis use, these variables were only assessed descriptively among participants.

Other Risk Factors for Cannabis Use

Students were asked to report about several risk factors for cannabis use, which were all independent variables of interest. Students descriptive peer norms was assessed utilizing the following question, "Within the last 30 days what percent of the <u>TYPICAL STUDENT at your university</u> do you think used cannabis," with response options ranging from 0-100%. Additionally, injunctive norms of their friends and family were measured with two semantic differential scales (e.g., "My [friends, family] thinks it [-3=would not/+3=would] be a good idea to decrease my cannabis use"). The two items were added together, and an average score was computed for subjective norms, a methodology used in previous studies (α = .72; Buckner et al., 2018; Cooke et al., 2016; Norman et al., 2011).

Another risk factor assessed was students' perceived risk of regular cannabis use, which was assessed via the following item from the Substance Abuse and Mental Health Services Administration National Survey on Drug Use and Health (Substance Abuse and Mental Health Services Adminstration, 2020), "How much do you think people risk harming themselves (physically or in other ways) if they use cannabis regularly (once or twice a week)?" Response options included (1) no risk, (2) slight risk, (3) moderate risk, and (4) great risk.

Another risk factor assessed was past-month alcohol use. In order to determine potential concurrent use with cannabis, students were asked to respond to the following question adapted from the American College Health Association National College Health Assessment (American College Health Association, 2013), "Within the last 30 days, how often did you use alcohol?" Five-point Likert scale response options ranged from never to always. For the purpose of this study, responses were dichotomized as no past-month alcohol use ("never") and past-month alcohol use ("rarely", "sometimes", "often", and "always").

Another risk factor assessed was age of first regular cannabis use (age of onset; Gruber et al., 2012), and students reported at which age they first started to regularly use cannabis by answering the following item, "How old were you the first time you started to regularly use cannabis, beyond just a one-time puff or experimentation," with participants asking to choose a year between a range <14 years old to ≥21 years.

Demographic Characteristics

The survey asked respondents to voluntarily provide demographic characteristic information including: biological sex (male, female); race/ethnicity (non-Hispanic White, non-Hispanic Black, non-Hispanic Asian/Pacific Islander, non-Hispanic Other, Hispanic); age in years; year in school; and fraternity/sorority membership (no, yes). Demographic variables were utilized as indicator variables to act as controls when assessing the relationship between the cannabis use risk-factors and quantity of cannabis use per day. Data has previously identified certain demographic populations as being at high-risk of cannabis use among the college student population. Accordingly, the following indicator variables were utilized: Male sex (Cotto et al., 2010), racial and/or ethnic minoritized descent (Wu et al., 2016), fraternity/sorority membership (Welsh et al., 2019), and 1st year in school (Suerken et al., 2014). Based on the small group sizes outlined in Table 1, race/ethnicity was assessed as non-Hispanic White versus racial and/or ethnic minoritized identity in the analysis. Similarly, year in school was assessed as 1st year versus ≥2nd year.

Table 1. *Demographic Characteristics and Quantity of Cannabis Use per Day Among College Students Enrolled in Their University's Adjudicated Drug Course for Cannabis Use on Campus (N = 99)*

Variable	n	%[a]
Sex		
Male	66	66.7
Female	33	33.3
Race/Ethnicity		
Non-Hispanic White	65	65.6
Non-Hispanic Black	20	20.2
Non-Hispanic Asian/Pacific Islander	3	3.0
Non-Hispanic Other	6	6.1
Hispanic	5	5.1
Age in Years, M (SD)	-	19.2 (1.5)
Year in School		
1st	54	54.5
2nd	34	34.3
3rd	8	8.1
≥4th	3	3.1
Fraternity/Sorority Membership		
No	66	66.7
Yes	33	33.3
Grams of Cannabis Used per Day, M (SD)		0.25 (0.25)

Note. [a]Percentage, unless noted otherwise. [b]Based on a scale ranging from 0 = *0 grams* to 11 = *More than 1 ounce.*

Analysis

Data analyses were conducted using SPSS (Version 28.0). Descriptive statistics were calculated for all variables of interest. Distributions of outcome variable (quantity per day) was assessed for nonnormality issues. Outliers that fell above or below three standard deviations from the mean were re-coded into the highest nonoutlying value plus one to account for any nonnormality concerns (Tabachnick & Fidell, 2001). First, the relationship between the two past-month cannabis use behaviors (i.e., cannabis frequency and cannabis quantity per day) was analyzed utilizing a Pearson product-moment correlation. Then, an ordinary least squares (OLS) regression model was fitted to assess whether risk factors for cannabis use (i.e., cannabis frequency, descriptive peer norms, injunctive norms, perceived risk of regular cannabis use, alcohol use, age-of-onset) predicted quantity of cannabis use per day among students

enrolled in the university's adjudicated drug use course for cannabis use, controlling for important demographics (i.e., sex, race/ethnicity, age, year in school, fraternity/sorority membership).

RESULTS

Results

Table 1 displays demographic characteristics and quantity of cannabis use per day over the past month among students enrolled in the university's adjudicated drug course for cannabis use. The majority of the students in the sample were male (M = 66.7%) and non-Hispanic White (M = 65.6%); the average age of students was 19.2 (SD = 1.5) years with an age range between 17 – 24. Over half (54.5%) were enrolled in their first year of school and 33.3% were fraternity/sorority members. The average quantity of cannabis use per day was 0.25 (SD = 0.25) grams per day.

Reasons for Cannabis Use

The three top reasons for cannabis use reported by students were to: relax or relieve tension (75.8%), feel good or get high (62.6%), and have a good time with friends (60.6%; Table 2). The least common reason for use reported by students was because they feel "hooked" or dependent on cannabis (5.1%).

Table 2. *Reasons for Cannabis Use among College Students Enrolled in the University's Adjudicated Drug Course for Cannabis Use on Campus (N=99)*

Variable	*n*	%
To relax or relieve tension	75	75.8
To feel good or get high	62	62.6
To have a good time with friends	60	60.6
As a sleeping aid	49	49.5
To experiment	45	45.5
Because of boredom or nothing else to do	38	38.4
To seek deeper insights or understanding about a subject	32	32.3
To escape from problems	29	29.3
Due to anger or frustration	19	19.2
To make it through the day	19	19.2
To fit in with a group	10	10.1
Other (common reasons listed: anxiety; celebration; depressed; parties; recreation; sports)	10	10.1
Because they feel "hooked" or dependent on cannabis	5	5.1

Risk Factors for Cannabis Use

Concerning descriptive peer norms of cannabis use, students perceived that an average of 47.4% (SD = 29.3%) of their fellow students engaged in past-month cannabis use. Students also perceived their friends and family would mostly approve (M = 1.7) of a reduction in their cannabis use (injunctive norms). Students reported an average perceived risk of regular cannabis use of 1.8 (SD = 1.0), indicative of slight risk; interestingly 53.5% of students reported there was no risk associated with regular cannabis use. Over 6-in-10 (63.6%) were past-month alcohol users. The average age of first regular cannabis use was 16.8 (SD = 1.8) years old, and about two-thirds (64%) reported regular use before the age of 18. Participants reported using cannabis an average of 7.4 (SD = 10.2) days in the past month, with 8% of participants reporting daily cannabis use (Table 3).

Table 3. *Risk Factors for Cannabis Use among College Students Enrolled in the University's Adjudicated Drug Course for Cannabis Use on Campus (N=99)*

Variable	M (SD)[a]
Perceived Descriptive Norms of Cannabis Use	47.4 (29.3)
Perceived Injunctive Norms[b]	1.27 (1.4)
Perceived Risk of Regular Cannabis Use[c]	1.8 (1.0)
Past-Month Cannabis Use in Days	7.4 (10.2)
Past-month Alcohol User, n (%)	63 (63.6)
Age of First Regular Cannabis Use	16.8 (1.8)

Note. [a]Mean (standard deviation), unless noted otherwise. [b] Based on a 7-point semantic scale ranging from -3 to +3 [c]Perceived risk ranged from 1-4 with higher scores indicative of greater risk.

Risk Factors Predicting Quantity of Cannabis Use per Day

The average quantity of cannabis used per day was a little over 0.25 grams, however, 40% of those who reported past-month cannabis use reported consuming ≥ one gram of cannabis per day on days they used. The coefficient between frequency and quantity of cannabis use per day indicated there was a moderate-positive relationship between the variables, $r(99) = .49$, $p < .001$.

The OLS regression results indicated significant model fit, and explained 32% of the variance in quantity of cannabis per day ($R^2 = .32$, $F(11,87) = 3.72$, $p < .001$) (Table 4). Concerning significant predictor variables, past-month cannabis frequency ($\beta = .33$, $p = .002$) and being of racial/ethnic minority descent ($\beta = .19$, $p = .05$) were positively associated with quantity of cannabis use per day among students, while perceived risk of regular cannabis use ($\beta = -.21$, $p = .04$) was negatively associated with the outcome variable.

Multicollinearity diagnostics revealed no variables had tolerance levels lower than .30, which is above the threshold minimum level of .20 that would indicate an issue with tolerance (Tabachnick & Fidell, 2001). Additionally, all variance inflation factors (VIF) values were between one and five, which are the suggested lower and upper threshold VIF values, indicating that multicollinearity was not an issue (Hair et al., 1998). A normal P-P plot revealed the data followed the normality line. Finally, a scatterplot of the residuals versus predicted values was used to test for heteroskedasticity (Glejser, 1969). The scatterplot depicted that a majority of the values below E = zero were clustered together on lower predicted values of X as well as for higher predicted values of X, indicating that heteroscedasticity was not an issue.

Table 4. *Ordinary Least Squares Regression Model Results of Risk Factors for Cannabis Use Predicting Quantity of Cannabis Use per Day among College Students Enrolled in the University's Adjudicated Drug Course for Cannabis Use on Campus (N=99)*

Variable	B	SE	β	t	p-value[a]
Perceived Descriptive Norms	0.01	0.01	0.1	0.95	0.34
Perceived Injunctive Norms	0.11	0.15	0.1	0.7	0.49
Perceived Risk of Regular Cannabis Use	-0.47	0.22	-0.21	-2.12	**0.04**
Past-Month Cannabis Frequency	0.07	0.02	0.33	3.27	**0.00***
Past-Month Alcohol User	0.44	0.42	0.1	1.03	0.31
Age of First Regular Cannabis Use	-0.16	0.12	-0.13	-1.34	0.18
Male Sex (versus Female)	0.29	0.42	0.06	0.68	0.5

Racial and/or ethnic minoritized identity (versus non-Hispanic White)	0.89	0.45	0.19	2	**0.05**
Age in Years	-0.23	0.17	-0.15	-1.32	0.19
1st Year in School (versus ≥2nd year)	-0.37	0.49	-0.08	-0.75	0.45
Fraternity/Sorority Member	-0.15	0.45	-0.03	-0.34	0.73

Note. [a]Bold font indicates statistical significance.
*$p < .01$

DISCUSSION

Substance use-related behaviors pose unique challenges among college students, and is often associated with adverse academic (e.g., poorer performances) and personal (e.g., SUD) outcomes (Welsh et al., 2019). Among college students, a particular high-risk subpopulation known to engage in substance use more often are students who violate their university's drug use policy (Terlecki et al., 2015). This study found that among students who violated their university's zero-tolerance drug use campus policy by using cannabis, there was an association between quantity of cannabis use per day and those who (a) had a higher frequency of cannabis use, (b) had a lower perceived risk of regular cannabis use, and (c) who were of racial/ethnic descent. To our knowledge, this is the first study to evaluate reasons for, and risk factors of, cannabis use among students who violated their university's drug policy. The exploration of risk factors of cannabis use in this population is timely due to the rising prevalence of cannabis use among college students (Patrick et al., 2023), the ongoing decriminalization and legalization of cannabis throughout the U.S. (Hall & Lynskey, 2020; Zellers et al., 2022), and the increased susceptibility of this at-risk group to substance use consequences (Terlecki et al., 2015).

We hypothesized past-month cannabis frequency would be associated with quantity of cannabis use per day. The study found that on average the students used cannabis 7 days out of the past 30 days. Although this is half as often as college student policy violators in Buckner et al.'s. (2002) study, 8% of the students in our study reported using cannabis daily, double the prevalence reported in the most recent Monitoring the Future national report for college students (Patrick et al., 2023). Additionally, despite a relatively low average quantity of cannabis use

per day (0.25 grams), 40% of the students reported consuming ≥ one gram of cannabis per day on days they used. The correlation between cannabis frequency and quantity per day revealed a moderate-positive, $r(99) = .49$, association, such that the greater number of days reported engaging in cannabis use was associated with more cannabis use per day. After accounting for important covariates, an OLS regression revealed that the frequency at which students engage in cannabis use was positively associated with the quantity of cannabis used per day ($\beta = .33$).

The findings from this study suggest that individuals who engage in cannabis more frequently are also using more per day. Common explanations for increases in cannabis use among active users could be due to a development of tolerance to cannabis use (i.e., diminished effect of drug use of the same dose), more cravings to use cannabis (i.e., a strong desire or urge to use cannabis), and a feeling of withdrawal, all conditions consistent with the Diagnostic and Statistical Manual of Mental Disorders (DSM)-5 criteria for a CUD (American Psychiatric Association, 2013). Although not assessed in the current study, a previous study characterized symptoms of CUD among a sample of college students who violated their university drug policy by using cannabis and found as much as 43% met the DSM-5 criteria for moderate or severe CUD (Buckner et al., 2018). Among the study's sample, tolerance to cannabis and engaging in larger amounts of cannabis use over a longer period of time were among the top symptoms endorsed by participants (Buckner et al., 2018). Efforts at the university level should be made to effectively intervene with policy violators to reduce or halt the negative outcomes associated with high cannabis use, including the development of a CUD.

We also hypothesized quantity of cannabis use per day would be associated with perceived risk

related to cannabis use. This study observed an average "slight risk" perceived risk level of engaging in regular cannabis use. Descriptive analysis revealed over half (53.5%) of the students reported they believed there was no risk associated with regular cannabis use. Findings from this study revealed perceived risk of regular cannabis use was negatively associated with the quantity of use per day (β = -.21), further substantiating previous research which links a decrease in perceived risk with an increase in cannabis use (Okaneku et al., 2015). However, this study is the first to our knowledge to explore quantity of daily cannabis use and perceptions of risk of cannabis use among students who violated their university's drug use policy and were adjudicated to educational programming. This finding carries practical implications for tailoring cannabis education programming to effectively address this significant risk-factor for this high-risk population.

Finally, although not a tested hypothesis, an indicator demographic variable (racial/ethnic minority) was significantly associated with the outcome variable. Despite accounting for only one-third of the population, students who identified as a racial/ethnic minority (β = .19, p = .05) were positively associated with an increase in quantity of cannabis use per day. Studies have demonstrated this previously across racial and ethnic groups. For example, higher likelihood of cannabis frequency and CUD was discovered among young adults who identified as Black, Native-American, and mixed-race (Wu et al., 2016), and among Hispanic college students in their first year of college (Suerken et al., 2014). Additionally, among a group of students who violated their university's alcohol policy, belonging to racial/ethnic minority population significantly predicted past-month alcohol frequency (Montemayor et al., 2022a). The finding in the current study substantiates the need to tailor interventions to target racial, ethnic, and cultural factors associated with cannabis use during the design and implementation phase of interventions for this high-risk population.

Although a non-significant finding, we also found that nearly two-thirds (63.6%) of students reported past-month alcohol use, which is disproportionately higher when compared to prior studies that report approximately one-third of alcohol users concurrently used cannabis (Haas et al., 2015; Subbaraman & Kerr, 2015). Literature suggests the combination of using alcohol and cannabis is associated with additive impairment effects and could increase the likelihood of experiencing comorbid mental health disorders and SUDs (Yurasek, et al., 2017). Additionally, age of onset of cannabis use was not statistically significant in our study. It is important to note though that the average age of first regular cannabis use was 17 years old. This is concerning, since early use increases the likelihood of future use and experiencing delays in developing self-regulation skills and susceptibility of being diagnosed with a future CUD (Gruber et al., 2012; Wetherill et al., 2016).

Descriptive norm was also not significantly associated with cannabis use. However, students in our study perceived 47% of other students at their university used cannabis in the last 30 days, nearly double the prevalence of actual past 30-day cannabis use in college students (Patrick et al., 2023). Research has shown the association between inflated rates of descriptive norms and an increase in the likelihood of engaging in cannabis use (Napper et al., 2015). Finally, despite injunctive norms failing to reach statistical significance, the students perceived their friends and family would mostly approve of a reduction in their cannabis use. The theoretical basis of injunctive norms and substance use behavior is based on a perception that those close to the individual would approve or disprove of a reduction in cannabis use and have been proven to positively influence reductions in substance use (Ajzen, 1991; Buckner et al., 2018; Ecker et al., 2017).

Understanding key reasons for cannabis use can aid in the development of prevention intervention programming. In this sample, the top reported reasons for cannabis use were to relax or relieve tension, to feel good or get high, and to have a good time with friends. Other studies report similar reasons for cannabis use among general college students (i.e., enhancement, relaxing; Buckner, 2013; Dennhardt & Murphy, 2013). A noteworthy finding is that the least common reason for use was because they felt "hooked" or dependent on cannabis use. This is concerning since a longitudinal study indicated that nearly half of general college students met the criteria for a SUD within the first three years of college (Caldeira et al., 2009). Additionally, other studies have reported as much as 70% of college students who actively use cannabis met the DSM-5 criteria for a CUD (Pellegrino et al., 2020), as well as 43% of policy violators (Buckner et

al., 2018). Future program curricula should focus on providing alternative stress management and recreational strategies and consider implementing education on recognizing signs of a CUD by implementing standardized screening tools related to cannabis use, such as the Cannabis Abuse Screening Test (CAST) or the Cannabis Use Disorder Identification Test (CUDIT; Adamson & Sellman. 2003; Buckner et al., 2018). Students who violate their university's policy and are at risk for a CUD should be referred to campus counseling services for individualized treatment, a setting which has been shown to reduce problematic substance use among college students (Denering & Spear, 2012).

Researchers have noted the dearth of evidence available that evaluates the effectiveness of interventions in reducing cannabis use among students who violated their university's drug use policy (Buckner et al., 2018; Montemayor et al., 2022b). Given our findings, colleges should seek to establish evidence-based cannabis prevention and intervention programs leveraging key cannabis use risk factors and correcting misperceived social norms and risk perceptions. Health and wellness programmers and university administrators could focus their attention on developing programs tailored to the behaviors, beliefs, and needs of their students and addressing the complex nature of cannabis in our society. Policies regarding cannabis use in the U.S. are constantly changing, and yet despite sweeping changes at the national level, cannabis is still illegal on public college campuses per the Drug-Free Schools and Communities Act (1989). For students who attend public universities in a state with legal cannabis medicinal or recreational policies, these policies might allow students to generate permissive norms that cannabis use is allowed and accepted, despite any use being a violation of university and federal policy. The long-term evaluation on the impact of these strategies on cannabis use could provide important insight for ongoing cannabis prevention and intervention efforts within universities.

Limitations

Researchers should consider the results within the context of the following limitations. First, the sample was predominantly White Non-Hispanic, and the study was conducted at one university. While reflective of overall demographics of the university, the results are not generalizable to all U.S. students, including those from various racial and ethnic backgrounds. Second, data were self-reported in a state where cannabis use was illegal at the time of data collection, so some reported answers could be over- or underreported. It is important to note, however, self-report data can accurately reflect behaviors when reporting conditions are designed to maximize response accuracy (e.g., anonymity), such as those used in this study (Del Boca & Darkes, 2003). Third, the quantity of cannabis use was limited to assessing cannabis utilized in the flower form, thus concentrates (i.e., edibles, wax, vapes, etc.) were not directly measured. Though, the items used to assess cannabis quantity in this study have helped facilitate research on quantity of cannabis use in the past and is a psychometrically sound assessment (Cuttler & Spradlin, 2017). Finally, the data analyzed were cross-sectional and we were unable to draw any casual inferences.

Conclusion

The current study highlights reasons for cannabis use and associated risk factors among a sample of college students enrolled in an adjudicated drug course for violating the university's policy for using cannabis on campus. The most prevalent reasons for cannabis use cited by students were for relaxation, to feel good, and have a good time. Higher frequency of cannabis use, lower perceived risk of regular cannabis use, and identifying as a racial/ethnic minority were associated with students' engaging in higher quantities of cannabis use per day. University-based cannabis prevention interventions for students who violate their university's drug use policies are critically needed to reduce and mitigate use and its associated negative consequences. These programs should consider educating students about actual risks associated with regular cannabis use, including CUD, investigating key reasons associated with cannabis use, and collaborating with other university programs to ensure tailored and comprehensive care for students in this population.

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