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Perceived Risks and Therapeutic Benefits of Cannabis Among College Students Amidst the COVID-19 Pandemic

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ABSTRACT

More than half of the United States has legalized medicinal and/or recreational cannabis. The purpose of the study is to understand cannabis use and perceptions among college students with cannabis experience – 21 years and older – in a legalized cannabis state. Participants included 170 college students, the majority identified as female (72.9%, n = 124) and Latinx/Hispanic (55.9%, n = 95). The online survey included demographic questions and questionnaires measuring cannabis consumption, cannabis use disorder, and quality of life. Participants answered open-ended questions about the negative, positive, and spiritual impact/s of cannabis on their life and health, and how the COVID-19 pandemic impacted their cannabis use. A paired-sample t-test indicated participants significantly found more relief using cannabis compared to non-cannabis treatments or medications. There was no significant correlation between quality of life and cannabis use disorder symptoms. Inductive content analysis of 112 written responses revealed perceived negative effects (e.g., anxiety/mental health issues) and positive effects (e.g., relaxation/stress reduction) from using cannabis. Most participants reported no spiritual benefits; however, some participants discussed cannabis use improving connection to self and self-awareness. Regarding the impact of the COVID-19 pandemic on use, most participants (27.8%) reported increased cannabis use, while some reported decreased cannabis use. These findings reflect the importance of understanding the wide-range of benefits and risks perceived by college students who consume cannabis and how these results can inform the development of university prevention and wellness strategies within states that have legalized recreational and medical cannabis.

Key words: = Cannabis use, spirituality, quality of life, college students, COVID-19 pandemic

Cannabis is the third most commonly used drug in the United States (U.S.) after alcohol and nicotine (Substance Abuse and Mental Health Services Administration, 2019). Through medicinal and recreational legalization, cannabis has become increasingly accepted and consumed by the public (Hall & Lynskey, 2016). College students are more likely to engage in exclusive use of cannabis (i.e., without smoking tobacco) compared to non-college young adults (Odani et al., 2019), and those who reside in states with recreational cannabis legalization are more likely to engage in cannabis use (e.g., Barker & Moreno, 2021; Jones et al., 2018; Koval et al., 2019). The present study used quantitative and qualitative methodology to explore college student perceptions of negative, therapeutic, and spiritual impacts of cannabis use during COVID-19.

Negative Health Risks Associated with Cannabis Use

Several emotional and cognitive risks are associated with frequent cannabis use. Keith et al.

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(2015) found that 8.5% of undergraduates used cannabis at least ten days within the past month, and frequent use was associated with increased negative outcomes (e.g., substance use, anxiety, and depression). De Faria et al. (2021) determined early exposure, greater use, high potencies, pre-existing issues, and genetic predispositions were associated with increased risk for developing mental illness and negative academic outcomes among college students. The most common diagnoses associated with cannabis use were psychosis, anxiety, depression, attention-deficit hyperactivity disorder, sleep disorder, and cannabis use disorder (CUD).

CUD is defined as an excessive use of cannabis despite clinically relevant impairment (DSM-5; American Psychiatric Association, 2013). Caldeira et al. (2008) conducted a study examining CUD and cannabis-related problems in 1,253 college students and found almost one in four cannabis users met diagnostic criteria for CUD. Brezing et al. (2018) found abstinence and/or reduced frequency of cannabis use improved the quality of life of individuals seeking treatment for CUD. Quality of life reflects the 'goodness' of life across multiple domains (e.g., emotional health, life fulfillment, relationship satisfaction; Felce & Perry, 1995). Since there is limited research on quality of life and CUD among college students, we explored this in the present study.

Therapeutic and Spiritual Benefits of Cannabis

Therapeutic refers to the beneficial or curative effects of a treatment (American Psychological Association [APA], n.d.). Medicinal cannabis has demonstrated to be therapeutic for some, including undergraduate students with Generalized Social Anxiety Disorder (e.g., Bergamaschi et al., 2011; Webb & Webb, 2014), Canadian male military personnel with post-traumatic stress disorder (PTSD; e.g., Jetly et al., 2015), and individuals who use cannabis to treat chronic pain (e.g., Webb & Webb, 2014). There are some studies indicating similar areas of therapeutic improvement reported by non-clinical, college student samples. Macdougall and Maston (2021) used interviews to explore cannabis perceptions among Canadian college students and how they were impacted by recreational cannabis legalization. General thematic analysis of 112 respondents revealed perceived positive health effects (e.g., relief from physical ailments), negative health effects (e.g., lung health), academic outcomes (e.g., increased creativity), and social effects (e.g., facilitation of social engagement) from using cannabis. Additionally, Kilwein et al. (2022) facilitated focus group discussions and used thematic analysis to understand perceptions of cannabis among college students attending a border state university (i.e., a state that has not yet legalized but borders a state that has). One of the three main themes included 'relative benefits and harms of cannabis,' with cannabis being largely discussed in relatively positive terms (e.g., mental and physical health, relaxation and anxiety management, creativity and productivity). Researchers have also shed light on the complexity and nuances surrounding the effects of cannabis. For example, Abizaid et al. (2019) noted that despite potential short-term positive effects, there were also potential adverse effects of chronic cannabis use, including cognitive disturbances, damage to neuronal plasticity and development in the adolescent brain, long lasting changes in brain functioning, potential abuse, and exacerbation of the course of schizophrenia for highly vulnerable populations. A systematic review conducted by Stanciu et al. (2021) yielded limited evidence and mixed results on the effectiveness of Delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD) to treat affective disorders, anxiety disorders, and PTSD. Likewise, the relationship between cannabis and anxiety has been documented to be contradictory. Some participants find alleviation while others experience increased anxiety and panic (Crippa et al., 2009).

In addition to the therapeutic uses for mental and physical ailments, some people use cannabis for spiritual benefits. Spirituality is a broad concept that can involve religious traditions but ultimately refers to an individual's relationship with transcendence (Reinert & Koenig, 2013). Heide et al. (2021) recruited 1,087 adults to assess the spiritual benefits of cannabis and found that 66.1% reported spiritual benefits of cannabis, with 13.4% of participants indicating that cannabis is very compatible with their spiritual values. Using ethnographic methods in rural Catalonia, Kohek et al. (2021) found that rituals associated with ancient psychoactive plants, like cannabis, are perceived as spiritual or religious practices that serve as self-care and heighten community connectedness. Currently, there is a gap

in the literature regarding how spiritual benefits are perceived by college students who consume cannabis.

Perceptions of Cannabis Among College Students and COVID-19

Perception is the process of using one's senses to learn about the world and then organize and interpret this information to inform behavior (APA, n.d.). Perceptions of cannabis use are impacted by contextual and historical factors, with a recent example being the Sars-CoV-2 (COVID-19) pandemic. The COVID-19 pandemic has been associated with reported increase in stressors among medicinal cannabis users nationwide. Vidot et al. (2020) surveyed 1,202 U.S. medicinal cannabis users (18+ years) from March to April 2020 and results indicated that after COVID-19 was declared a pandemic, over 40% of participants reported an increase in cannabis consumption. Additionally, 47.5% of respondents reported having less access to their necessary doses of cannabis causing an increase in stress. Furthermore, participants who consumed combustible cannabis products reported an increase in fear that if they were to contract the virus, they would experience more severe COVID-19 symptoms. As such, it is critical to further investigate perceptions of cannabis use and how users are being impacted by the COVID-19 pandemic (Borgonhi et al., 2021).

The Present Study

With the rise of cannabis legalization and consumption among college students, it is essential to understand perceptions, quality of life, and use among this vulnerable subgroup during the COVID-19 pandemic. To address gaps in the literature, the present study utilized a self-report survey with open-ended and scaled questions about college students' use and perceptions of cannabis in a state where recreational and medicinal cannabis is legalized. This study differs from other relevant qualitative work devoted to understanding the externalities of cannabis. For example, Kilwein et al. (2022) investigated the recent shifts toward cannabis use among college students and related harms, while MacDougall and Maston (2021) explored the perceptions of post-secondary students' cannabis use on health, academics, and social lives with the legalization of cannabis. In contrast, the present study seeks to understand student's perceptions of the negative, therapeutic, and spiritual impacts of cannabis use, specifically during the COVID-19 pandemic.

Research Questions and Hypotheses

1. What negative health consequences do students report from cannabis use?
    a. Are symptoms of Cannabis Use Disorder (CUD) associated with negative quality of life? *Hypothesis* : College students who report higher levels of CUD will also experience lower levels of quality of life.
    b. Exploratory qualitative open-ended question about negative health outcomes.
2. What therapeutic and spiritual benefits do students report from cannabis use?
    a. Do college students experience symptom relief when using cannabis versus non-cannabis treatments or medications? *Hypothesis* : College students will experience symptom relief from using cannabis compared to non-cannabis treatments or medications.
    b. Exploratory qualitative open-ended questions about positive outcomes and spiritual benefits of cannabis use.
3. What was the impact of COVID-19 on students' cannabis use and quality of life?
    a. Exploratory qualitative open-ended question about impact of the pandemic on cannabis use.

METHODS

Participants

A total of 203 college students from a university in central California began our online survey between May 1 and December 12, 2020. Participants who did not consent ($n = 4$, 2.0%) and reported never consuming cannabis ($n = 29$, 14.3%) were directed to the end of the survey, thus did not complete the survey and were not included in the analyses. Thus, the sample included 170 college students with cannabis experience. Participants answered demographic questions including age, gender, religion, race/ethnicity, class standing, major, and

identification as a first-generation student. The majority of participants identified as seniors (n = 99, 58.2%) or juniors (n = 63, 37.1%), female (n = 124, 72.9%), and Latinx/Hispanic (n = 95, 55.9%) or European/White (n = 45, 26.5%). When asked about their spiritual/religious identity, most identified as Catholic (n = 55, 32.4%) or agnostic/atheist (n = 38, 22.4%). See Table 1 for detailed sample characteristics. When asked about the importance of their spirituality/religion, 28.8% reported very important (n = 49), 38.8% reported somewhat important (n = 66), and 24.1% reported not too/not at all important (n = 41).

Procedure

The project was approved by the University Institutional Review Board. Undergraduate students were offered the opportunity to participate in an anonymous online survey to earn extra credit in courses. Students were considered eligible if they were at least 21 years old and had experience using cannabis. Students who agreed to participate were directed to a Qualtrics survey including informed consent, demographic questions, open-ended questions, measures of cannabis use, CUD, and quality of life.

Measures

Cannabis Use

The Daily Sessions, Frequency, Age of Onset, and Quantity of Cannabis Use Inventory (DFAQ) is a 39-item measure of cannabis dimensions such as frequency, age of onset, and quantity of cannabis use (Cuttler & Spradlin, 2017). The current study utilized 16 items from the DFAQ inventory which included factors such as screening/characterization (5 items), frequency (4 items), edible quantity (1 item), and age of onset (1 item). The measure demonstrated adequate to good internal reliability for subscales (Cuttler & Spradlin, 2017); however, we chose to only use specific items to gather descriptive information (see Table 2) rather than the full scale and therefore could not run reliability analyses.

Symptom Relief with Cannabis

Three questions assessed the percentage of symptom relief from cannabis treatments and/or medications compared to non-cannabis treatments and/or medications. The questions were based on the formatting of questions included in the modified Brief Pain Inventory short form (BPI-sf; Cleeland, 1989) from the National Palliative Care Research Center. The first question asked participants if they used cannabis to help relieve symptoms for mental or physical troubles (answer options: yes or no). The second question asked, "How much relief do cannabis treatments or medications provide you?" The third question asked, "How much relief do non-cannabis treatments or medications provide you?" The second and third questions were rated on a percentage scale from 0% (no relief) to 100% (complete relief).

Table 1. *Sample Characteristics (N = 170)*

Demographic Variable	*n*	(%)
Class Standing		
Seniors	99	58.2
Juniors	63	37.1
Sophomores	1	0.6
Graduate Level	1	0.6
Major		
Arts, Humanities, and Social Sciences	126	74.1
Health Sciences and Human Services	18	10.6
Science	10	5.9
Other	10	5.9
First-Generation Status		
Yes	110	64.7
No	93	54.7
Gender Identity		
Female	124	72.9

Male	39	22.9
Gender Fluid or Nonconforming	2	1.2
Race/Ethnic Identity		
Latinx/o/a, Hispanic, or Chicanx/o/a	95	55.9
European, Caucasian, or White	45	26.5
Multiethnic or biracial	18	10.6
African, Caribbean, or Black	6	3.5
Other	8	4.7
Spiritual/Religious Identity		
Catholic	55	32.4
Agnostic/Atheist	38	22.4
Christian	32	18.8
Spiritual But Not Religious	24	14.1
Other (e.g., Muslim, Jewish, Buddhist)	9	5.3

Cannabis Use Disorder

The Cannabis Use Disorders Identification Test-Revised (CUDIT-R; Adamson et al., 2010) identifies individuals who have used cannabis in a harmful or problematic way in the past six months (Saunders et al., 1993). The CUDIT-R includes eight items, the first seven items are measured on a five-point Likert scale 0 (never) to 4 (daily or almost daily), and the last item includes three answer options (0 = never; 2 = yes, but not in the past six months; 3 = yes, during the past six months). An example question includes, "How often during the past 6 months did you fail to do what was normally expected from you because of using cannabis?" CUDIT-R responses are summed into a single score with possible scores ranging from 0 to 32. Adamson et al. (2010) identified a cut-off score of 13 or above for current cannabis use disorder in a clinical sample, but Schultz et al. (2019) recommended using a lower cut-off score of six or above to adequately identify college students at potential risk of CUD (non-clinical sample). Previous studies have found good internal consistency for the CUDIT-R among clinical (0.914; Adamson et al., 2010) and non-clinical, college student samples (0.83; Schultz et al., 2019). Cronbach's alpha for the current study was acceptable (α = .76).

Quality of Life

The Multicultural Quality of Life Index (MQLI) is a 10-item self-report scale measuring cultural dimensions of an individual's quality of health and life (Mezzich et al., 2010). Example dimensions include physical well-being, psychological emotional well-being, occupational functioning, and spiritual fulfillment. Each dimension is defined and rated on a 10-point scale from poor (1) to excellent (10). The MQLI final score is an average of the scores from all items. Mezzich et al. (2010) found the internal consistency to be fairly high among the combined sample (α = 0.92), a professional sample (α = 0.91), and a patient sample (α = 0.90). The Cronbach's alpha in the current sample was .92, suggesting good internal consistency.

Qualitative Questions

Participants were invited to answer the following open-ended questions: "How has cannabis positively impacted your life and health (ex., physically, socially, emotionally, academically, occupationally, financially, cognitively)?" "In what ways have you spiritually benefited from cannabis?" "How has cannabis negatively impacted your life and health (ex., physically, socially, emotionally, academically, occupationally, financially, cognitively)?" and "In what ways has the COVID-19 pandemic impacted your use of cannabis?"

Qualitative Data Analysis and Positionality

Our study utilized a modified version of Consensual Qualitative Research (CQR-M; Spangler et al., 2012) to analyze qualitative responses. CQR-M has been adapted to accommodate large samples, ranging from 62 to 132 qualitative responses (Hill et al., 2007; Spangler et al., 2014), and is based on an agreement or consensus, with coding categories to reduce researcher biases (Spangler et al., 2012). In the present study, CQR-M was most fitting due

to a large sample (n = 112, 65.9%) for each qualitative question.

Four researchers took the lead when creating categories based on the phases of CQR-M, and the fifth researcher served as an auditor. Before beginning group analysis, researchers reflected on their experiences with cannabis and how their experience may impact interpretation. A group of five researchers worked on this project, and all identified as cisgender females. Three of the researchers identified as Latina/x and two identified as White. All researchers had experience trying/using cannabis at varying levels, most with predominantly positive experiences and one with a negative experience. Qualitative analysis was completed while four of the five researchers were undergraduates, and all students continued onto graduate school in psychology. The fourth author mentored the first three authors in the research design, analysis, and manuscript writing.

During the first phase of CQR-M, researchers analyzed responses several times to understand the depth of participant answers. Four researchers engaged in open-coding independently to identify an initial list of potential themes. The four lead researchers then discussed discrepancies in the emergent themes and created a table of code names and definitions to use. Following this process, two researchers coded each set of questions separately and then compared coding. When discrepancies were identified, the two researchers consulted with the other team members to discuss, share perspectives, and ask questions. Theme definitions were revised, discarded, and merged as needed when sharing ideas on how to best interpret participant responses. The researchers' mentor provided guidance and served as an additional coder when there were remaining discrepancies. Researchers came to a consensus on the categories created and application of categories to the responses.

RESULTS

Cannabis Use

Based on responses to the DFAQ (Cuttler & Spradlin, 2017), 170 participants reported having used cannabis. The two most common ages reported for first use of cannabis included 16 (14.8%, n = 30) and 18 (11.8%, n = 24). Most participants reported not being high while taking the survey (75.9%, n = 154). See Table 2 for additional information about cannabis use and frequency.

Negative Health Consequences

Our first research question, explored quantitatively and qualitatively, asked about the negative health consequences students experienced from cannabis use. Participants who answered "yes" to using cannabis within the last six months (70.5%, n = 117) were given the cannabis use disorder screener (CUDIT-R). We calculated sum scores and used a cutoff of six to determine college students with potential problematic use (Schultz et al., 2019). Of the participants who completed the CUDIT-R, 62.1% (n = 72) reported potential problematic cannabis use.

Table 2. *The Daily Sessions, Frequency, Age of Onset, and Quantity of Cannabis Use Inventory (DFAQ; N = 203)*

Item	*n*	(%)
Have you ever used cannabis?		
Yes	170	83.7
No (these individuals did not complete further items)	29	14.3
Which of the following captures when you last used cannabis?		
I am currently high	6	3.0
Today	12	5.9
Yesterday	22	10.8
The past three weeks	44	21.7
One to six months ago	27	13.3
Seven to twelve months ago	21	10.3
Over a year ago	37	18.2

How high are you right now?		
I am moderately high	2	1.0
I am a little bit high	12	5.9
I am not at all high	154	75.9
Which of the following best captures your pattern of cannabis use throughout the week?		
I use cannabis on the weekends and weekdays	65	32.0
I only use cannabis on weekdays	3	1.5
I only use cannabis on weekends	41	20.2
I do not use cannabis at all	59	29.1
How many hours after waking up do you typically first use cannabis?		
Within one hour of waking up	8	3.9
Within two to six hours after waking up	25	12.3
Within seven to twelve hours after waking up	54	26.6
Within thirteen to eighteen hours after waking up	24	11.8
I do not use cannabis at all	56	27.6
Which of the following best captures the average frequency you currently use cannabis flower (ex. Taken in the form of joints, blunts, spliffs, bong, pipe, etc.)?		
More than once a day	15	7.4
Once a day	7	3.4
Three to six times a week	15	7.3
Once to twice a week	14	6.9
Once to three times a month	19	9.4
Once every two to six months	29	14.3
Once a year	8	3.9
Less than once a year	14	6.9
I do not use cannabis flower	47	23.2
How old were you when you FIRST tried cannabis?		
10-15 years old	38	18.7
16-20 years old	95	46.8
21-24 years old	29	14.3

We conducted a bivariate correlation to test our hypothesis that college students with greater symptoms of CUD would experience lower levels of quality of life (as measured by the MQLI). Contrary to our hypothesis, there was no significant relationship between symptoms of CUD and quality of life, $r(110) = -0.02$ $p = 0.836$.

Second, we explored negative health consequences qualitatively. Of the 145 participants who wrote a response regarding the negative impact of cannabis on the respondents' life and health, *anxiety and mental health* ($n = 36$, 24.8%) was the most prominent theme, showing an increase in psychological stressors when consuming cannabis. The second most frequent themes included *expensive* ($n = 23$, 15.7%) and *physical health* ($n = 23$, 15.9%). One respondent shared the following:

"It has negatively affected me in the way that over the years my tolerance has increased which has caused me to spend more money and I also don't know the overall long term health effects it will have on me. Sometimes I feel it has made my anxiety overall worse rather than helping it the way it used to."

Other themes included *impaired cognition* ($n = 21$, 14.5%) and *laziness or grogginess* ($n = 18$, 12.4%). One respondent's quote incorporated multiple themes (*mental health, physical health, impaired cognition, school work, laziness or grogginess):*

"I abused cannabis for many years to escape issues I didn't want to deal with, so it stunted me emotionally. It kept me from being physically active, because I usually wanted to sit and eat, or sleep after I got high. It kept me

socially isolated, because I didn't want to get high with other people, I liked getting high by myself. I didn't want to go to school or do homework, because I wanted to get high, so I would skip school when I was in high school, then I dropped out of college because I was unmotivated. When I was high I couldn't do homework, because I couldn't focus on the material, so it impaired me cognitively."

Therapeutic and Spiritual Benefits

Our second research question asked about the therapeutic and spiritual benefits of cannabis use, both quantitatively and qualitatively. Among the total sample, 83 (49.4%) participants reported that they consume cannabis to relieve symptoms for mental or physical troubles, and 85 (50.6%) reported they do not consume cannabis to relieve symptoms. Participants were then asked the percentage of relief they normally experience when using cannabis and non-cannabis treatments or medications. We hypothesized that college students would report greater symptom relief from consuming cannabis compared to non-cannabis treatments or medications. We conducted a paired-sample t-test to test this hypothesis. Results indicated that college students significantly found greater relief using cannabis as a treatment or medication (M = 5.23, SD = 3.30) than non-cannabis treatments or medications (M = 3.53 , SD = 2.94), $t(104) = 4.36$, $p = .001$, $d = .42$.

Of the 152 participants who wrote a response regarding the positive impact of cannabis on their lives, 35.5% (n = 54) reported *relaxation and stress reduction* as the primary benefit. One participant stated, "It helps me to relax. It helps with stress and to unwind, especially on tough days." Another participant stated: "Cognitively/Emotionally - helps my chronic stress by making me forget about my stressors for a bit." Additionally, *improved social connections* (28.2%, n = 43), showed to be a prominent theme and is illustrated with the following quote: "As I only use cannabis socially, I've found that it has helped me connect more with my partner and reconnect with my sister." Similarly, a respondent stated "Socially, I am able to feel like I connect with my friends at a deeper level and have great conversations." The third most prominent theme was *anxiety* (n = 41, 26.9%). One participant stated: "Cannabis calms my anxiety and lessens the frequency of my anxiety attacks throughout the week." Further, the theme *uplifts mood and self concept* (n = 27, 17.8%) emerged from respondents who shared how cannabis improved happiness. Some participants indicated gaining positive qualities (e.g., gratitude, vulnerability) and better self-esteem from using cannabis.

When asked about students' perceptions of spiritual benefits from cannabis, a total of 132 participants responded. A majority experienced *no spiritual benefits* (n = 83, 62.9%) while 14.4% (n = 19) endorsed *connection to self,* defined by the researchers as individuals experiencing a novel and profound connection to themselves, an increase in self acceptance and self love, and the ability to understand themselves. Within this theme, respondents wrote about feeling "connected" and "more in tune" with their bodies and minds. For example: "Spiritually, I feel at peace with the state of my body now." Also, "It has helped me come in touch with my body and mind..." A third theme, *awareness* (n = 16, 12.1%), captured the ways in which cannabis led to introspection, open-mindedness, and the development of positive qualities (e.g., humbleness). Since studies regarding the spiritual benefits of cannabis are limited, we included the full theme list, definitions, and additional quotes in *Table 3*.

In a follow-up analysis, we explored the association between a participant's reported religious/spiritual identity and their qualitative response to the aforementioned open-ended question about "spiritual benefits" of cannabis. First, we dichotomized the qualitative responses into those who wrote about benefits (n = 44) and those who wrote that cannabis had no perceived spiritual benefits (n = 83), five respondents were not included in this comparison because they wrote responses that were unable to be categorized/coded. We ran a Chi-Square Test for Independence and found a significant association between perceived spiritual benefits and religious/spiritual identity, $\chi 2(4, n = 123) = 11.6$, $p = .02$, $phi = .31$. Participants who identified as agnostic, atheist or non-religious were significantly less likely (18.5%, n = 5) to report perceived spiritual benefits of cannabis whereas participants who identified as "other" religious identities were significantly more likely (75.0%, n = 6) to write about spiritual benefits of cannabis. Although not significant, there was an interesting trend toward

Catholic respondents being less likely to identify spiritual benefits (29.0%, *n* = 11) compared to respondents who identified as Christian (40.0%, *n* = 12) or Spiritual but Not Religious (50.0%, *n* = 10).

Impact of COVID-19 Pandemic

Our third research question inquired about the influence of COVID-19 on students' cannabis use and quality of life. We evaluated this question qualitatively, and a total of 151 participants responded. Approximately more than a quarter of the participants reported that COVID-19 led to *more cannabis use* (*n* = 42, 27.8%), and this was the most frequent theme. Participants wrote about using cannabis to relieve stressors associated with

Table 3. *Qualitative Themes: Spiritual Benefits of Cannabis (N =132)*

Theme	Definition	Example Quote	Frequency, n (%)
Not Helpful/Neutral	Participants state that cannabis does not help them spiritually.	"I have not spiritually benefited from it."	83 (62.87%)
Connection To Self/Self Love & Acceptance	Participants feel more connected and accepting of themselves. Participants say they feel they can love themselves more fully and discover themselves and their purpose	"...Spiritually I am able to feel like I am whole. One thing I lacked before cannabis was the ability to love and connect with myself. I felt as if so many pieces in my life had gaping holes. I needed to find a solution or I was sure I would die. Cannabis has allowed me to tap into a better version of myself and meditate. I am able to connect internally and listen to what my body is telling me."	19 (14.39%)
Awareness	Cannabis facilitates introspection, opens the mind to see different perspectives, promotes the capacity to question more and see more, gives the ability to remember what has been forgotten, and cultivates mindfulness. This also includes development of positive qualities (e.g., humbleness).	"Cannabis has opened my mind to new things and offered different perspectives on things in the world."	16 (12.12%)
Connection to Earth	Participants go outdoors more, are appreciative of Earth's natural resources, and feel connected to nature.	"It has made me a bit more spiritual with the earth and the universe."	7 (5.30%)
Increase Religion/Spirituality	Participants feel more religious (read the Bible more often), have spiritual revelations, increase their spiritual understanding and spend time thinking of spirituality.	"Cannabis allowed me to come to the confirmation that there is an afterlife in heaven, and it has helped me to not fear death."	6 (4.54%)
Creativity	Cannabis improves the ability to make something new or think of something in a novel way.	"During use, I feel a little more creative and determined to do things."	5 (3.78%)
Mood Improvement	Cannabis promotes feelings of joy and peacefulness.	"I have been a calmer person. Dont think as negative."	5 (3.78%)
More Care For Others/Better Bonding	Cannabis gives feelings of empathy for others and facilitates social connections to others.	"In the sense of finding bonding and unity with others over cannabis."	4 (3.03%)
Relaxing	Participants feel that cannabis is relaxing and gives a sense of calmness.	"Just by being able to let loose and relax is very beneficial to me."	3 (2.27%)

Discipline	Participants possess more control and discipline over their actions to reach their goals.	"Spiritually cannabis has made me disciplined and allowed me to stick to my fasting diet."	3 (2.27%)
Sleep	Cannabis enhances sleep for a better night's rest.	"I'm able to sleep and stay asleep through the night."	1 (0.75%)

the pandemic (e.g., finances, academics, personal stress). Increased social isolation appeared to be an additional factor associated with heightened cannabis use. For example: "COVID-19 has actually caused my use to increase recently since my stress levels have been higher than normal and I have been indoors all day." The following response provides support for the association between increased stress and cannabis use:

> "... Isolation, constant negative news, little distraction, a bungled govt response, and too much school work...I am happy and extremely grateful that I am able to have access to legal cannabis during such a stressful time. I am not a big drinker and would advocate against using alcohol to manage stress, but fear that this amount of stress without cannabis may have resulted in me relying on alcohol to manage it."

Additionally, some participants reported that COVID-19 led to *less use of cannabis* (*n = 20,* 13.25%). A few participants who reported a decrease in cannabis use shared it was because of increased difficulty in accessing cannabis. Further, respondents who consumed cannabis by smoking expressed a decrease in usage due to concerns about being more at risk to the virus if contracted. Example responses include: "Because smoking/vaping of any kind can put you more at risk for complications I have stopped" and "I started to use [cannabis] less for fear of contracting COVID-19." Additionally, a few participants indicated that they have lessened their cannabis consumption due to having to relocate from their college campus to their family's homes in which some members did not approve of cannabis. For example: "Considering I am living back at home with my parents, I have not been able to use cannabis for the reason that my parents are against it…" Other themes included *Social Impact* (*n* = 4, 2.7%), in which participants described social barriers to using cannabis such as not being able to use it with friends and/or living with parents who do not approve of it. A response that exemplifies this category reads, "My parents are super religious so I never get high while I am living under their roof." *Dispensary Delivery Services* (*n* = 4, 2.7%), was defined as an increase in cannabis prices and more difficulty accessing cannabis (i.e., as scheduling appointments to pick it up), such as one participant expressed, "It is difficult to get access to. You now have to make an appointment just to be able to go to the dispensary to pick it up." *Relaxation* (*n* = 3, 2%) is the theme where participants expressed they used cannabis as a tool to help them relax, such as " I use cannabis about once a week, typically Sunday's. COVID-19 has impacted my use though because I've been under a lot of stress financially and academically. Using cannabis is kind of a 'relaxing time' for me."

DISCUSSION

The current study used a self-report, online survey to understand cannabis-related perceptions and behaviors among college students in California during the COVID-19 pandemic (May-December 2020). The triangulation of quantitative and qualitative survey data allowed for a deeper exploration of the research questions and participants' experiences with cannabis. The present study provided further support for both adverse health consequences and therapeutic benefits from the use of cannabis. Scores from the CUDIT-R scale showed that nearly half of respondents who used cannabis within the last six months were categorized as having potential risk for CUD. Results are consistent with Schultz et al. (2019) who discovered most college students in their sample were distinguished as having harmful or problematic cannabis use. Our qualitative findings revealed mental health themes (e.g., anxiety) associated with cannabis consumption among approximately 25% of our sample. Again, these findings are similar to

previous research studies in which significant positive relationships between anxiety and substance use disorder have been reported (Crippa et al., 2009; Kedzior & Laeber, 2014; Lai et al., 2015).

Contrary to our hypothesis, there was no significant relationship between CUD symptoms and quality of life in the current study. Goldenberg and colleagues (2017) conducted a systematic review and found heavy cannabis use and CUD were associated with reduced quality of life. However, they reported 6 of the 14 studies failed to find an association between cannabis use and quality of life. Two possible explanations for our lack of a significant finding could be (a) a mild effect of cannabis use on quality of life within college students or (b) lack of research design sensitivity to uncover the effects. Cannabis use and quality of life is likely mediated by characteristics of cannabis users, and more research is needed to delineate these characteristics.

In contrast to the negative health consequences associated with the use of cannabis, the majority of respondents revealed an increase in symptom relief when using cannabis compared to non-cannabis treatments and medications. Findings are similar to those of Stith et al. (2019) who used a mobile app to observe cannabis impacts in real time and discovered that on average, patients experienced significant improvements among the 27 health symptom categories measured (e.g., anxiety, inflammation). Our qualitative analysis revealed a third of participants experienced relaxation and stress reduction as a primary benefit of cannabis use. Our results are supported by Nelson et al. (2020) who found 24.7% of college students in British Columbia used cannabis to treat anxiety, 18.8% for physical pain, 30% to enhance their social life, and 29.4% to treat sleeplessness. Research has consistently shown that cannabis can provide temporary relief from various health symptoms. However, a growing body of evidence suggests that prolonged cannabis use may also worsen these symptoms (Koenders et al., 2016). Therefore, it is important to note that our study's findings regarding the relationship between cannabis use and anxiety are likely bidirectional. Furthermore, it is important to recognize that the effects of cannabis on an individual's health may vary depending on factors such as their consumption habits, length of use, and the health symptoms they are attempting to alleviate.

Our study is the first to assess the spiritual benefits of cannabis among college students, an understudied area in cannabis research. Our qualitative analysis indicated that most of the participants did not report spiritual benefits from using cannabis. Thus, spiritual benefits do not seem to be a driving factor for consuming cannabis among college students. Although most participants did not report direct spiritual benefits, 14% of the participants described a greater connection with themselves. Additionally, it is noteworthy that respondents reported benefits of cannabis within other qualitative questions that could be related to spirituality, such as gratitude and community connectedness. The researchers left the term "spiritual" to be open and defined by the participant, but this may also have limited responses based on their personal connection with this term. Nonetheless, our results are consistent with the demographics of our sample as nearly half of our participants indicated that spirituality was only somewhat important or not too/not at all important to them. Our findings correspond with the limited research that exists on spiritual benefits of cannabis in which most students are not drawn to cannabis for spiritual benefits, but for some it is associated with a greater sense of connectedness to self (Kohek et al., 2021).

Finally, our study contributes to the call for current literature regarding the impact of the COVID-19 pandemic on college students' cannabis use and quality of life. Roughly a quarter of the total participants who answered the question (27.8%) reported an increase in cannabis consumption, and numerous participants credited this to staying at home, anxiety, and stress due to the pandemic. Other studies have also found increases in cannabis use throughout the COVID-19 pandemic (Boehnke et al., 2021; Cousijn et al., 2021; van Hoojidonk et al., 2022). Specifically, Bartel et al. (2020) conducted a study indicating that people who chose to self-isolate during the pandemic used larger amounts of cannabis than those who did not. A proportion of students (13%, n = 20)

reported decreased cannabis consumption and almost half of these (n = 8) credited this to moving back home where parents disapproved of cannabis use and not being at college where cannabis is accessible. Previous research explaining decreased cannabis consumption is limited; however, van Hooijdonk et al. (2022) also found a small portion of their participants who reported decreased cannabis use due to COVID-19.

Implications

The findings from the current study contribute to essential implications for the development of university prevention and wellness strategies. The results of the present study indicate college students perceived a significant amount of symptom relief using cannabis compared to traditional non-cannabis treatments or medications. However, there were also a substantial number of students who reported potential problematic cannabis use. Educational institutions within states with and without legalized cannabis should provide supportive resources such as cannabis education workshops (e.g., cannabis consequences, local and national cannabis policies, safe and therapeutic use of cannabis). Campus counseling services and/or health educators could provide focus groups for students to share experiences with their use of cannabis and evidence-based cannabis programs (Montemayor et al., 2022).

Limitations and Future Directions

Limitations of this study include a relatively small sample size of college students (n = 170), the majority of participants identified as female, and a lack of a diverse religious/spiritual identities as the sample primarily identified as Catholic, Agnostic/Atheist, and Christian. Furthermore, the sample is composed of psychology students which is not representative of the general population. Since the current study utilized a self-report survey, desirability bias could have been present. Additionally, the project was cross-sectional and did not measure perceptions or the impact of perceptions on observable behavior or symptoms longitudinally. Lastly, important cannabis use variables were not controlled for (e.g., dosage used, method of administration, cannabis strain) in order to accurately compare results and quantify the impact (Goldenberg et al., 2017).

Our study adds to the limited literature exploring perceived spiritual benefits of cannabis among college students. We left the term spiritual open for interpretation by participants, and it would be interesting to compare our findings to future research in which researchers either define spirituality or qualitatively explore how participants define spirituality as it relates to cannabis use.

Future research should continue studying cannabis use experiences among vulnerable subgroups (e.g., college students and other ethnic minority groups) in states where cannabis is recreationally and/or medicinally legalized due to their increased cannabis use during and after the COVID-19 pandemic (Riehm et al., 2022; Lee et al., 2023; Schepis et al., 2021). Given that more than half of the current sample reported potential problematic cannabis use, it is essential to understand the reasons for consuming cannabis and the associated health-related outcomes. Moreover, it is important to replicate research across diverse samples of adults longitudinally and control for important cannabis variables in order to accurately compare results and quantify impact. Moving forward, it will be essential to continue studying cannabis-related behaviors during and after historical moments in time which can impact health such as the COVID-19 pandemic among at-risk groups.

CONCLUSION

The present study used an exploratory approach to understand the ways, both beneficial and detrimental, in which college students use and perceive cannabis. The quantitative and qualitative findings provide a basis of understanding in regards to the impact of recreational and medicinal legalization and the COVID-19 pandemic on cannabis-related behaviors among college students. Proceeding forward, it is important for future research to examine various aspects of cannabis use and perceptions among vulnerable subpopulations in order to acquire more information in which it influences one's mental, physical, and spiritual health. This will result in updating cannabis

prevention and wellness strategies that are culturally relevant to the rapidly evolving legal cannabis landscape across the U.S.A., especially among university institutions.

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