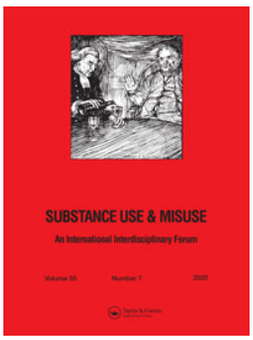

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ORIGINAL ARTICLE

CBD (Cannabidiol) Product Attitudes, Knowledge, and Use Among Young Adults

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ABSTRACT

Background: Cannabidiol (CBD), a non-psychoactive component of cannabis is marketed as a potential treatment for many conditions and widely available to purchase as a dietary supplement. In 2017, sales of CBD exceeded 820 million dollars despite many unconfirmed health claims, murky legality, and limited product efficacy and safety testing.

Purpose/Objectives: This study aims to explore cannabidiol (CBD) knowledge, attitudes, and use among young adults.

Methods: The anonymous 36-item survey developed using Qualtrics was distributed *via* social media from November 2018 to January 2019 with 340 respondents.

Results: Of the 340 respondents, 242 reported they had heard of CBD, and 135 reported using CBD products. CBD users were primarily white, female, without children, made less than $25,000 per year, and unmarried. Most commonly used CBD products were edibles (56.30%), tinctures (54.07%), and vape (38.52%). Top reasons for use included stress relief (65.39%), relaxation (54.81%), and sleep improvement (42.22%). Many respondents reported using guesswork to determine dosage, and over half of respondents reported at least one unanticipated side effect.

Conclusions/Importance: This study revealed that many users are not responsibly using CBD products, many believe CBD products provide health benefits that are not yet scientifically proven, and they are not knowledgeable about legal and regulatory issues. Until CBD use is more thoroughly researched and has more comprehensive regulation, public health professionals should address alternative stress and anxiety treatment methods.

KEYWORDS

Cannabidiol; young adults; dietary supplements; patient education; CBD

Introduction

The use of cannabis for medicinal and therapeutic purposes has become commonplace in recent years. The source of the purported therapeutic effects of cannabis are believed to be cannabinoids, which are secondary metabolites produced by the cannabis plant (Zuk-Golaszewska & Golaszewski, 2018). Since the discovery of the first cannabinoid, cannabinol, in 1899 (Pain, 2015), researchers have found that cannabis contains at least 113 types of cannabinoids; the two most widely known cannabinoids are tetrahydrocannabinol (THC) and cannabidiol (CBD) (Aizpurua-Olaizola et al., 2016). THC and CBD produce dramatically different effects; THC is the only known psychoactive component of cannabis, while CBD is the most popularized non-psychoactive component of cannabis (Hložek et al., 2017).

Recently, CBD has been widely promoted as a natural remedy for many health issues including anxiety, depression, pain management, inflammation and sleep disorders (Campos, Fogaça, Sonego, & Guimarães, 2016). Although the purported medical and therapeutic effects of CBD are promising, currently there is only significant clinical evidence to support the use of CBD as an effective treatment method for epilepsy (Campos et al., 2016; Pavlovic et al., 2018; Schoedel et al., 2018). There are other preliminary studies that show potential for CBD to be an effective treatment method for a multitude of mental and physical health issues such as pain management, anxiety, insomnia, depression, schizophrenia, and opioid abuse (Abrams et al., 2007; Bergamaschi et al., 2011; Devinsky et al., 2017; Hurd et al., 2019; McGuire et al., 2018; Shannon, Lewis, Lee, & Hughes, 2019; Silote et al., 2019; World Health Organization, 2018; Zhomitsky & Potvin, 2012; Zuardi, Cosme, Graeff, & Guimaraes, 1993; Zuardi et al., 2017). Still, much of the current research analyzing the therapeutic potential of CBD has not advanced to the point of clinical significance (Hurd et al., 2019; Shannon et al., 2019). However, this is subject to change given there are nearly 200 active randomized control trials (RCTs) exploring the medicinal and therapeutic potential of CBD for conditions including bipolar disorder, Parkinson's disease, alcohol abuse, Crohn's disease, and drug dependence (World Health Organization, 2017; ClinicalTrials,gov, 2019).

While research evidence is mounting, there are public health concerns surrounding the CBD products that are currently available to consumers. First, the legality of hemp-derived CBD in the US is delicate given its close relationship with marijuana. Currently, CBD is still classified as a Schedule I substance under the Controlled Substances Act

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(CSA) if CBD is isolated from marijuana, and CBD is only legal if it is extracted from hemp (Corroon & Kight, 2018; Mead, 2017). The difference between marijuana and hemp as defined by the CSA is solely dependent on the amount of cannabinoids found in the plant; cannabis plants with less than 0.3% THC are considered to be hemp, and those over 0.3% THC are considered to be marijuana (Mead, 2017). Nevertheless, it is important to understand that once CBD has been isolated from the plant it is impossible to know the origins of the chemical. This classification is poised to change within the next few years, and the FDA has begun to hold hearings to discuss the potential federal legality of cannabis and its constituents, including CBD (*New York Times*, 2019). In the meantime, CBD products currently on the market are loosely regulated because they are categorized as dietary supplements (Corroon & Kight, 2018). Dietary supplements are currently regulated under the Food and Drug Administration (FDA), specifically under the Dietary Supplement Health and Education Act (DSHEA).Yet they are not held to any pre-market regulation, and vendors are only required to notify the FDA if a new ingredient is used in the manufacturing of their product (Starr, 2015). The FDA did attempt to rectify this issue with the issuance of the cGMP guidelines in 2007, which established standards for quality assurance such as routine product testing, label accuracy, and manufacturing standards. However, in the case of CBD and other plant-based supplements, there are multiple environmental influences such as plant environment, genetic variability, and variations in farming technique. These differences can affect the quality and strength of plant extracts in supplements due to multiple phytochemicals being present in a single extract, making it difficult for the cGMP guidelines to be enforced (Starr, 2015). These loose regulation standards have contributed to a general belief that CBD products currently on the market are safe for consumers, although that may not always be the case. Another public health concern surrounding CBD is the common discrepancy between a product label's projected contents and actual product content. Multiple studies have evaluated CBD products for quality and content and have found significant inaccurate labels among many brands. Common label discrepancies included CBD content being incorrectly labeled, products containing THC even though the label stated the product had no THC, and the inclusion of ethanol that was not noted on the product label (Bonn-Miller et al., 2017; Pavlovic et al., 2018; Peace, Butler, Wolf, Poklis, & Poklis, 2016). The FDA has taken action on some of these vendors, and in the past several years the FDA has issued several warning letters to CBD vendors that addressed the medical claims made and the inaccurate labels of the products (Bonn-Miller et al., 2017; Mead, 2017; U.S. Food & Drug Administration, 2019). However, with hundreds (potentially thousands) of CBD products available to consumers all over the world, it is unlikely that the FDA has uncovered and addressed all vendors with content discrepancies. Furthermore, analysis has shown that warning letters do little to deter dietary supplement vendors. For instance, one study found that 66.7% of dietary supplements that were recalled by the FDA were still available for consumer purchase 6 months afterwards, with no changes made to the product (Cohen, Maller, DeSouza, & Neal-Kababick, 2014).

Despite the problems revolving around legality and product quality, the CBD market continues to grow, and sales of hemp-derived CBD are expected to reach $1.9 billion by 2020 (Corroon & Kight, 2018). This projection would make CBD products roughly 5% of the total dietary supplement sales, higher than any other supplement (Axon, Vanova, Edel, & Slack, 2017; Homer & Mukherjee, 2018; Knapik et al., 2016; Massad, Hamdan, Agha, & Amr, 2017). Although CBD has blossomed into one of the highest grossing dietary supplements on the market, there is limited research focusing on how CBD is used, purchased, and understood among users. Corroon and Phillips (2018) conducted the first comprehensive cross-sectional survey examining CBD among US adults; specifically medical conditions treated, methods of administration, stated use, use patterns, side effects, and treatment efficacy. The current study is aimed to further the data of the Corroon and Phillips study and thus analyzed a young adult population. We chose to examine participant's drug interactions, CBD product dosage, knowledge of CBD legality, drug classification, and regulations to provide healthcare and public health professionals more extensive information to better understand patients who use CBD products.

Materials & methods

Survey instrument

The instrument was developed using similar health risk surveys examining attitudes, knowledge and behaviors, piloted tested, and underwent cognitive interviewing prior to dissemination through Qualtrics, an online survey platform. After participants provided consent, the anonymous 36-item survey had an initial screening question asking if the person had ever heard of CBD, if they responded "No" they were excluded from the behavioral and knowledge questions and routed directly to the demographics questionnaire (control group). The second question asked if they had ever used CBD, if they responded "No" they were excluded from the behavioral questions and routed to the knowledge and demographics block of questions (group 1- non-users). If they responded "Yes", they completed all sections of the survey (group 2 -users). The survey link was distributed online *via* social media. A total of 417 participants started the survey and 340 completed the survey. A total of 242 participants reported they had heard of CBD, and 135 reported using CBD products.

Analysis

Descriptive summaries were used to analyze the findings from the survey instrument. Frequencies and percentages were used for all categorical data. Bivariate comparisons among two groups were done using the Pearson's Chi-square test. Factors found to be significant at 0.2 level of

Table 1. Characteristics of participants.

	Have *not* heard of cannabidiol (CBD) Sample	%	Have heard of cannabidiol (CBD) Sample	%	P-value	Have used a product containing Cannabidiol (CBD) Sample	%	P-Value
Age					0.006			0.427
18-24 years old	74	75.50	137	56.60		72	53.30	
25-34 years old	13	13.30	50	20.70		28	20.70	
35-44 years old	3	3.10	21	8.70		14	10.40	
45-54 years old	3	3.10	21	8.70		11	8.10	
55-64 years old	2	2.00	8	3.30		7	5.20	
65-74 years old	1	1.00	5	2.10		3	2.20	
75 years or older	2	2.00	0	0.00		0	0.00	
Gender					0.067			0.113
Female	83	84.70	177	73.10		94	69.60	
Male	14	14.30	61	25.20		40	29.60	
Prefer not to answer	1	1.00	4	1.70		1	0.70	
Ethnicity					0.027			0.008
White	55	56.10	171	70.70		107	79.30	
Hispanic or Latino	11	11.20	21	8.70		10	7.40	
Black or African American	18	18.40	20	8.30		7	5.20	
Other	14	14.30	30	12.40		11	8.10	
Marital Status					0.081			0.403
Single, never married	81	82.70	168	69.40		88	65.20	
Married or domestic partnership	14	14.30	56	23.10		36	26.70	
Widowed, divorced, or separated	3	3.10	14	5.80		9	6.70	
Prefer not to answer	0	0.00	4	1.70		2	1.50	

significance in the unadjusted analyses were eligible for inclusion in the multivariable analyses. The two groups were participants that reported they had heard of CBD, and participants that reported using CBD products. The Wilcoxon rank sum non-parametric test was used to compare the knowledge and attitudes of participants that reported they had heard of CBD, and participants that reported using CBD products. Non-parametric test was used because the data was not normally distributed.

To examine participants knowledge of CBD legality, drug classification, and regulation, multiple multivariable logistic regression was used. Variance inflation factors (VIFs) were assessed to gauge the presence of multicollinearity and model fit was examined using the goodness of fit using Residual Chi-square score statistic. The magnitude of the associations were described using odds ratios (OR), along with their 95% confidence intervals (CI). The level of significance was set at 5%. All analyses were done in STATA 14/SE.

Results

The majority of participants were between the ages of 18 to 24, white, female, college students, making less than $25,000 per year, without children, and unmarried. See Table 1 for complete demographic information. Of the 340 respondents, 135 (55.79%) reported use of CBD products. Approximately 64.18% of participants used two or more types of CBD products; most commonly used products were edibles (56.30%), tinctures (54.07%), vape (38.52%), and topicals (30.37%). CBD products were primarily bought on the Internet (31.11%) or in smoke shops (23.70%), and nearly half (49.60%) of users learned about CBD from a friend or family member. Only 9.6% of users indicated they discussed CBD usage with their healthcare provider. The top reasons for use were stress relief (65.93%), relaxation (54.81%), sleep improvement (42.22%) and pain relief (41.48%). Thirty-seven percent of the respondents used the product label dose recommendation, however 21.20% took the product until they felt something, 15.20% estimated their dose, and 15.20% were not sure of their dose. Of the 135 respondents who reported use of CBD products, 54.81% had at least one unexpected side effect including dry mouth (29.63%), feeling high (22.22%), appetite change (20.00%), or fatigue (19.26%). Over 80% reported marijuana use in the past month, with 29.60% claiming to use CBD products instead of marijuana. In the past month, respondents reported use of alcohol (63.70%), prescription drugs (31.85%), antidepressant/anxiety medication (17.04%), and sleep aides (16.30%). Further, 10.50% of CBD users did not believe they could quit using CBD products and 36.60% reported being very likely to continue using CBD products. See Table 2 for description of behaviors of participants ($n = 135$) that reported using CBD products.

When examining knowledge and beliefs among both CBD non-users and users, 92.60% of non-users and 96.90% of users believed that CBD products are becoming more popular. More than three-quarters of both non-users and users reported a belief that CBD products are legal to use. More than half of users (60%) and non-users (59.80%) were unsure if CBD use would result in a failed drug test. A total of 77.60% of users and 44.90% reported that friends or family members use CBD products. Furthermore, when both non-users and users were asked about if CBD products are regulated by the Food and Drug Administration and if they are classified as a drug an average of 4.70% stated that they neither agree nor disagree.

The results of the Wilcoxon rank sum non-parametric test shows that there were statistically significant differences between users and non-users. Users reported statistically higher agreement with the statement that "CBD products are legal to use" and "The US Drug Enforcement Agency

Table 2. Participants knowledge and attitudes regarding CBD.

	Have heard but have *not* used a product containing Cannabidiol (CBD) Sample	%	Have used a product containing Cannabidiol (CBD) Sample	%	P-value
Do any of your friends or family members use CBD products?					0.000
No	59	55.1	30	22.4	
Yes	48	44.9	104	77.6	
CBD product use would show up on a drug test					0.035
No	18	16.8	40	31	
Yes	25	23.4	29	22.5	
I'm unsure	64	59.8	60	46.5	
CBD products are legal to use					0.000
Strongly disagree	0	0	0	0	
Somewhat disagree	3	2.8	2	1.5	
Neither agree nor disagree	27	25.5	19	14.3	
Somewhat agree	39	36.8	28	21.1	
Strongly agree	37	34.9	84	63.2	
CBD products are healthier than using marijuana					0.033
Strongly disagree	1	0.9	5	3.7	
Somewhat disagree	2	1.9	10	7.5	
Neither agree nor disagree	58	54.2	67	50	
Somewhat agree	30	28	23	17.2	
Strongly agree	16	15	29	21.6	
The US Drug Enforcement Agency classifies CBD as a drug with no currently accepted medical use and a high potential for abuse					0.011
Strongly disagree	8	7.5	32	24.4	
Somewhat disagree	20	18.7	21	16	
Neither agree nor disagree	52	48.6	50	38.2	
Somewhat agree	19	17.8	18	13.7	
Strongly agree	8	7.5	10	7.6	

classifies CBD as a drug with no currently accepted medical use and a high potential for abuse" with a reported P-value of <0.001 and 0.021, respectively. See Table 3. Using a logistic regression and adjusting for participant demographic characteristics (see Table 4), we found that users were 4.49 times more likely to have friends or family members that use CBD products and less likely (OR: 0.46, 95% CI = 0.22,0.93) to be unsure of if CBD products would show up on a drug test. In addition, we found that users are less likely to somewhat disagree (OR = 0.24), neither agree nor disagree (OR = 0.26), somewhat agree (OR = 0.23) and strongly agree (OR = 0.22) than strongly disagree with the statement "The US Drug Enforcement Agency classifies CBD as a drug with no currently accepted medical use and a high potential for abuse". Lastly, we found that ethnicity was a statistically significant predictor of CBD use whereby Blacks or African Americans and other ethnicities were less likely to use CBD products that their White counterparts. In model 2, we found that Black or African Americans and other ethnicities were less likely (OR: 0.30 and 0.38) to use CBD products. In model 7, we found that only other ethnicities were less likely (OR: 0.34) to use CBD products.

Discussion

This study explored CBD product use, attitudes and knowledge among a young adult population. Additionally, this study further examined the beliefs that CBD users have about the legality and regulation of the product and if they are using other substances such as alcohol and other drugs with CBD. We found that over half of respondents have used CBD at least once, with a majority citing stress relief, relaxation, pain relief, and sleep improvement as their reason for using CBD. In addition, we found that over half of the respondents who used CBD experienced at least one unexpected side effect. These findings were consistent with the Corroon and Phillips study (2018) examining CBD product use. With the fairly sudden rise in popularity of CBD products, it's important for healthcare providers and public health professionals to fully understand the knowledge and behaviors of CBD users so they can effectively promote more thoroughly researched alternatives to CBD. This study revealed that many users are using drugs and alcohol in addition to CBD products, they are experimenting with dosage, they are not discussing CBD use with their healthcare providers, and are not knowledgeable about some of the legality and regulation issues.

There was a large number of respondents who reported using alcohol and drugs in addition to CBD products. This is concerning because little is known about CBD's potential to interact with alcohol and drugs. With one-third of CBD users reporting using CBD more than 10 times within the past month, even if CBD and alcohol or drugs are not taken concurrently, there is still the potential for CBD interactions. There is some evidence to indicate that CBD can interfere with some medications such as warfarin, which can pose a risk to those who take prescribed medications along with CBD (Iffland & Grotenhermen, 2017). There is also evidence to support that CBD can damage liver function through interference with cytochrome P450 enzymes that are largely responsible for drug metabolism (Bornheim, Everhart, Li, & Correia, 1994; Bornheim & Correia, 1990; Ewing et al.,

Table 3. Description of behaviors of participants ($n = 135$) who use CBD products.

Common forms of CBD products used		
Edibles	76	56.30%
Tincture (oil dropper)	73	54.07%
Vape	52	38.52%
Topicals	41	30.37%
Obtain CBD Products from		
Other	45	33.33%
Internet	42	31.11%
Smoke shop	32	23.70%
Medical dispensary	26	19.26%
Gift	17	12.59%
Brick and Mortar Store	16	11.85%
Common reasons for use of CBD products		
Stress relief	89	65.93%
To relax	74	54.81%
To sleep	57	42.22%
Pain relief	56	41.48%
Experienced side effects		
No	61	45.19%
Yes	74	54.81%
Common side effects		
Dry mouth	40	29.63%
Feeling high	30	22.22%
Change in appetite	27	20.00%
Fatigue	26	19.26%
Common other drugs used along with CBD products in the past 30 days		
Alcohol	86	63.70%
Prescription for a medical condition	43	31.85%
Prescribed anti-depression medication	23	17.04%
Sleep aides	22	16.30%
Sources used to learn about CBD products		
A friend or family member	67	49.6
The internet	32	23.7
Social media	8	5.9
A healthcare provider	13	9.6
Other	15	11.1
Usage of CBD products instead of Marijuana		
No	55	40.7
Yes	40	29.6
Use both	40	29.6
Usage per day		
Once per day	87	65.4
More than once per day	16	12
Not used daily	30	22.6
Common time of day		
Morning	19	14.3
Afternoon	4	3
Evening	61	45.9
No particular time	49	36.8
Usage per month		
0 times	45	33.8
1-2 times	24	18
3-10 times	20	15
11-20 times	16	12
21 or more times	28	21.1
Dosage Calculation Method		
Internet	10	7.6
Product label recommendation	50	37.9
Estimate	20	15.2
Until I felt something	28	21.2
Healthcare provider recommendation	4	3
Unsure	20	15.2
Marijuana usage in the past month		
0 times	55	41.7
1-2 times	22	16.7
3-10 times	20	15.2
11-20 times	7	5.3
21 or more times	28	21.2

2019; Narimatsu et al., 1990; Yamaori, Ebisawa, Okushima, Yamamoto, & Watanabe, 2011). Beyond the limited human subject research, the lack of pre-market testing makes the product susceptible to quality control issues that could adversely interact with drugs and alcohol.

The large number of CBD users who reported no framework for determining their dosage is another area of concern. The dosage of CBD plays a large role in the benefits perceived by users. One study analyzing the dose-response curve of CBD for the treatment of anxiety resulted in a bell-

Table 4. Multivariable logistic regression.

	OR	95% CI
Do any of your friends or family members use CBD products? (Reference: No)		
Yes	4.49***	[2.47,8.16]
CBD product use would show up on a drug test (Reference: No)		
Yes	0.55	[0.25,1.24]
I'm unsure	0.46*	[0.22,0.93]
Indicate your agreement with the following statements		
CBD products are becoming more popular (Reference: Neither agree nor disagree)		
Somewhat agree	2.53	[0.63,10.13]
Strongly agree	2.72	[0.73,10.15]
CBD products are legal to use (Reference: Somewhat disagree)		
Neither agree nor disagree	1.28	[0.18,9.00]
Somewhat agree	1.23	[0.18,8.33]
Strongly agree	3.81	[0.57,25.29]
CBD products are healthier than using marijuana (Reference: Strongly disagree)		
Somewhat disagree	1.15	[0.07,19.46]
Neither agree nor disagree	0.2	[0.02,2.05]
Somewhat agree	0.11	[0.01,1.13]
Strongly agree	0.31	[0.03,3.28]
CBD products are regulated by the Food and Drug Administration (Reference: Strongly disagree)		
Somewhat disagree	0.62	[0.21,1.81]
Neither agree nor disagree	0.69	[0.31,1.55]
Somewhat agree	0.72	[0.29,1.79]
Strongly agree	1.64	[0.48,5.55]
The US Drug Enforcement Agency classifies CBD as a drug with no currently accepted medical use and a high potential for abuse (Reference: Strongly disagree)		
Somewhat disagree	0.24**	[0.08,0.68]
Neither agree nor disagree	0.26**	[0.10,0.65]
Somewhat agree	0.23**	[0.08,0.66]
Strongly agree	0.22*	[0.06,0.83]
Controlled for: Gender, Ethnicity, A student, Children		

shaped dose-response curve. This means that very high and very low doses of CBD had no effect on users, and only intermediate doses helped lower participants perceived anxiety (Linares et al., 2019). Additionally, the optimal dose of CBD depends on the specific condition that it is being used to treat, and scientists have yet to fully explore the ideal dosage for the wide array of conditions CBD is speculated to treat (Linares et al., 2019). Currently, the only condition in which the optimal dosage of CBD has been sufficiently investigated and scientifically proven is epilepsy (Epidiolex Highlights of Prescribing Information, 2018). Understanding optimal doses for particular conditions requires a mechanistic knowledge of how CBD influences the disorder. This information remains unknown for most disorders that CBD has been reported to help. As with all products used to treat physical and mental issues, understanding and adhering to the proper dosage is key to obtaining the desired effects. Since the optimal dosage of CBD for all conditions that CBD is speculated to treat remains unknown, many vendors can only recommend dosage, which may not be supported by any scientific testing. Given the limited amount of research on CBD in general, especially proper dosage levels, this is unsurprising (Iffland & Grotenhermen, 2017; Pisanti et al., 2017; Rong et al., 2017; Shannon et al., 2019). Further, our results found that many people do not follow these label recommendations, which may be attributed to the suggested "more is better" approach many consumers use when taking dietary supplements (Homer & Mukherjee, 2018; Maughan, King, & Lea, 2004).

This study also found that there is confusion among CBD users regarding the legality and regulation of CBD. Given the constantly evolving state of CBD legality and the current regulation and manufacturing standards, this is unsurprising. More importantly, health educators and healthcare providers may also be confused about the current state of CBD regulation and legality. With so many people using CBD, it's important for healthcare providers and health educators to understand the current state of CBD legality and regulation so they can better educate those who use CBD. By informing CBD users about the regulation and legality issues the CBD industry is currently embroiled in, healthcare providers and health educators can help them make more informed decisions regarding their personal use of CBD.

Implications

The use of CBD as a dietary supplement, and in some cases a replacement for prescription medications, gives healthcare providers and health educators an important opportunity to educate their patients who use CBD products. Healthcare providers and health educators can help explain to patients the risk associated with using CBD as a replacement for prescription medications and the risk associated with using CBD with drugs or alcohol. Another topic that healthcare providers and health educators can discuss with patients who use CBD is legality and regulation. As revealed in this study, many users are unaware or confused by the legality and regulation of CBD products. While it is unrealistic to expect healthcare providers and health educators to be completely informed of the constantly evolving state of CBD legality and regulation, they can assist patients who use CBD by informing patients of ways they can investigate the products they use to help make more informed decisions (Koenig, Ho, Yadegar, & Tarn, 2012; Tarn et al., 2013). Finally, given that most of the reasons for using CBD

centered around mental health, healthcare providers and public health campaigns should address alternate stress and anxiety management strategies such as meditation, reduced screen time, and cognitive behavioral therapy until CBD becomes better regulated and thoroughly understood within the scientific community and stricter regulations can be put in place.

Conclusion

In conclusion, this cross-sectional study revealed moderate use of CBD products and highlights the need for healthcare providers and public health professionals to proactively discuss CBD product use with their patients. Some CBD users are concurrently using drugs and alcohol, some are using guesswork to calculate their dosage, very few users have discussed the product with their healthcare provider, and they are not knowledgeable about the legality and regulation of CBD. Healthcare providers and health educators can help point their patients who use CBD in the right direction to help them make more informed decisions and prevent any potential health risks.

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Ethics approval

This study was approved by the UNF IRB Office.

Disclosure of interest

No potential conflict of interest was reported by the author(s).

Author contributions

All authors have accepted responsibility for the entire content of this submitted manuscript and approved submission.

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