Medical Cannabis and Cannabinoids

Brief Report

Med Cannabis Cannabinoids 2024;7:119–124
DOI: 10.1159/000539956

Received: January 10, 2024
Accepted: June 17, 2024
Published online: July 17, 2024

Cannabinoid Awareness, Reporting Use to Health Care Providers, and Perceptions Regarding Safety – Pennsylvania, March 2023–April 2023

Paul T. Kocis[a] Daniel J. Mallinson[b] Timothy J. Servinsky Jr.[c]

[a]Department of Pharmacology, Penn State College of Medicine, Hershey, PA, USA; [b]School of Public Affairs, Penn State University, Harrisburg, PA, USA; [c]Center for Survey Research, Penn State University, Harrisburg, PA, USA

Keywords
Cannabinoids · Cannabis · Cannabidiol · Survey · Pennsylvania · Tetrahydrocannabinol

Abstract
Introduction: With the continued societal and policy interest in cannabinoids, the Penn State Harrisburg Center for Survey Research (CSR) conducted a web survey (Cannabinoid Lion Poll) for adult-aged Pennsylvanians between March 6 and April 2, 2023. ***Methods:*** The Lion Poll omnibus survey asked questions of adult-aged Pennsylvanians to assess awareness of cannabidiol (CBD) and products containing tetrahydrocannabinol (THC), including marijuana, the likelihood of reporting cannabinoid use to health care providers (HCPs), and perceptions regarding safety. ***Results:*** Of these 1,045 respondents, 51.2% were female; 83.0% were white, non-Hispanic; and 48.6% and 27.5% were within the 35–64-year and 18–34-year age ranges, respectively. Of the respondents, 52.1% and 53.9% told their HCPs they took CBD or products containing THC, respectively. Alcohol was perceived by the large proportion of respondents as unsafe (47.3%), followed by products containing THC (25.2%), anxiety/depression medications (21.7%), CBD (16.1%), and over-the-counter (OTC) pain medications (8.1%). Most combinations were perceived to be unsafe when asked to consider the safety of taking them with other prescription medications. Again, alcohol was perceived to be unsafe by the largest proportion (77.4%), followed by anxiety/depression medications (43.2%), products containing THC (42.6%), CBD (33.4%), and then OTC pain medications (24.8%). ***Conclusions:*** Adult-aged Pennsylvanians perceive CBD and THC containing products as safer than alcohol. There is considerable underreporting of cannabinoid use to HCPs, and therefore significant implications for patient safety. It remains vital that HCPs have open communications with their patients about cannabinoid use.

Introduction

While cannabinoids have known therapeutic benefits and have largely been perceived safer than opioids [1], there is also a lack of awareness of potential drug interactions when co-prescribed with other medications [2, 3]. Due to the lingering stigma, federal prohibition, and unaware of the ever-changing state laws, patients may not always be forthcoming with their health care providers (HCPs) about their cannabinoid use (e.g., over the counter [OTC], recreational, prescription, medical). Even in states that have legalized medical or adult use, there are contrasting beliefs and viewpoints among HCPs that cannabis is a social drug

karger@karger.com
www.karger.com/mca

Correspondence to:
Paul T. Kocis, puk4@psu.edu

or a therapeutic medication [4]. Lastly, there are gaps in knowledge regarding the therapeutic use, proper use and administration, potential adverse events of cannabis, and potential drug-drug interactions with other medications [5].

On January 26, 2023, the US Food and Drug Administration (FDA) announced that the existing regulatory framework for foods and supplements is not appropriate for cannabidiol (CBD) and that the FDA will work with Congress to develop a new regulatory pathway to benefit consumers [6]. Additionally, Pennsylvania has a comprehensive medical marijuana program in place and is currently considering adult-use marijuana legalization. The Lion Poll survey was conducted to better understand patients' views on cannabinoid awareness, reporting of use to HCPs, and perceptions of cannabinoid safety when compared to other substances.

Methods

Data Collection

The Lion Poll asked adult-aged Pennsylvanians several questions to better understand cannabinoid awareness, reporting of such use to HCPs, and perceptions regarding safety. In order to minimize potential biases, key demographic responses were monitored and compared to census data to ensure that the final sample was reflective of characteristics that are known to potentially bias responses.

The Lion Poll is considered to be a non-probability-based sampling method. The quotas utilized resulted in a final dataset that is representative of Pennsylvania's population by region, age, and gender. It should also be noted that respondents were not selected from the general population at random; rather, only adults who opted to participate in a paid web survey panel were included in the sampling frame. In addition, as with all public opinion surveys, the results are representative only of those who chose to participate. Although respondents who do not have access to the internet at home are less likely to sign up for web survey panels, they are not excluded from participating and may do so using public internet access, mobile phones, or internet at their place of employment.

Survey Design

This survey began by asking respondents if they were aware of, and/or had used, CBD and marijuana, and then asked additional questions to determine if patients and/or their caregivers would disclose their use to their HCP (either proactively or when asked) that they have tried a cannabinoid (CBD or tetrahydrocannabinol [THC]). This question was of particular importance to the authors since cannabinoids may have potential drug-drug interactions with other medications [2, 7].

The survey also asked two different questions pertaining to the perceived safety of cannabinoids when compared to other substances. First, it asked about the perceived safety of taking or consuming alcohol, CBD, products containing THC, OTC pain medications, and anxiety/depression medications. Second, it then asked how safe each respondent perceived alcohol, CBD, products containing THC, OTC pain medications, and anxiety/depression medications when also taken with prescription medications. The average length of a completed survey was approximately 18.5 min. The survey questions and standard demographics used in the data collection are located in the online supplementary file (for all online suppl. material, see https://doi.org/10.1159/000539956) section of this manuscript.

Data Processing and Participation Rate

Rigorous efforts were employed to ensure that the characteristics of the respondents in the final dataset are representative of Pennsylvania's diverse population, despite the non-probability-based sampling method employed. A total of 60,760 different panelists were invited to participate in the survey during the data collection period. The survey's participation rate of 2.5% was calculated using the American Association of Public Opinion Research's (AAPOR) Response Rate 3 (RR3) formula [8].

An initial sample size of 1,045 was chosen to allow for sufficient power to identify differences between regions, with the smallest region having 72 respondents. Blank and duplicate records were removed, and data were verified for accuracy of variable coding by running frequency distributions to check for out-of-range values. The sample size may be less than 1,045 due to the exclusion of "Don't know" and "Prefer not to answer" responses and/or the inclusion of skipping logic. Percentages may not total to 100% due to the exclusion of "Don't know" responses.

Data were extracted from the Qualtrics Online Survey Platform into Statistical Package for the Social Sciences software (version 28.0; IBM SPSS Statistics) to process and create the final survey dataset. The margin of error for this survey is (+/−) 3.0 percentage points with the conventional 95% degree of desired confidence. Proportion tests (Z tests) were reported with a p value <0.05 at a 95% confidence level for all individual substance comparisons. (see Tables 1 and 2).

Results

Demographic Profile of Survey Respondents

Survey responses were collected through Penn State Harrisburg Center for Survey Research's (CSR) Qualtrics Online Survey Platform account between March 6 and April 2, 2023. Waves of survey invitations were sent to potential survey respondents, age ≥18 residing within the Commonwealth of Pennsylvania. A quota-based invitation system was used to ensure that the results of the Lion Poll were not biased toward any particular location, age, or gender. The quota-based invitation also guaranteed that the final dataset would be representative of the Commonwealth of Pennsylvania's known population by region (based on county) and, separately, by age and gender combined categories. State population estimates from the US Census Bureau (updated July 1, 2021) were used to establish quotas [9]. The final dataset includes responses from 1,045 adult Pennsylvania residents from which 51.2% were female, 83.0% were white, non-Hispanic, and 48.6% and 27.5% were within the 35–64-year and 18–34-year age ranges, respectively.

Table 1. How safe do you think it is to take each of the following: alcohol, CBD, products containing THC, OTC pain medications, and anxiety/depression medications?

	CBD	THC	OTC pain	Anxiety/depression
Alcohol				
z-score	14.7943	10.1753	19.8374	12.0453
p value	<0.00001	<0.00001	<0.00001	<0.00001
CBD				
z-score		−4.9233	5.4336	−3.1799
p value		<0.00001	<0.00001	0.00148
THC				
z-score			10.2829	1.8129
p value			<0.00001	0.07030
OTC pain				
z-score				−8.6103
p value				<0.00001

CBD, cannabidiol; THC, delta-9-tetrahydrocannabinol; OTC, over the counter (non-prescription medication).

Table 2. How safe do you think it is to take alcohol, CBD, products containing THC, OTC pain medications, and anxiety/depression medications with other prescription medications?

	CBD	THC	OTC pain	Anxiety/depression
Alcohol				
z-score	19.4362	15.6489	23.5678	15.5264
p value	<0.00001	<0.00001	<0.00001	<0.00001
CBD				
z-score		−4.1042	4.1077	−4.3368
p value		<0.00001	<0.00001	<0.00001
THC				
z-score			8.2901	−0.2125
p value			<0.00001	0.83366
OTC pain				
z-score				−8.5456
p value				<0.00001

CBD, cannabidiol; THC, delta-9-tetrahydrocannabinol; OTC, over the counter (non-prescription medication).

Survey Results

Cannabinoid Awareness

It was assumed that survey participants had already heard of marijuana so this question was not specifically asked; however, with CBD oil being newer to the market, the CSR asked if they ever heard of CBD. Of the respondents (n = 1,045), 94.2% had "heard of CBD" and 5.8% had responded "No/Not sure." The respondents who indicated they heard of CBD (n = 983) were then asked if they had "Ever tried or taken a product containing CBD?" Of these respondents, 49.8% responded "No, never"; 31.0% responded "Yes, within the past year"; 17.8% responded "Yes, but longer than a year ago"; and 1.3% responded "Don't know/Not sure." Of the respondents (n = 1,041) who elected to answer "*Have You Ever Tried or Taken Marijuana or Hashish, whether Medically or for Recreational Purposes?*", 40.2% said that they had "No, never" tried, 59.7% indicated that they had tried it at some point (30.1% "within the past year" and 29.6% "longer than a year ago"), and one respondent (0.1%) responded "Don't know/Not sure."

Reporting Use to HCPs

Of the 436 respondents who had tried or taken CBD, 52.1% responded "Yes" and 47.9% responded "No, not sure" to informing their HCP. Of the 586 respondents who had tried or taken marijuana, 53.9% responded "Yes" and 46.1% responded "No, not sure" to informing their HCP.

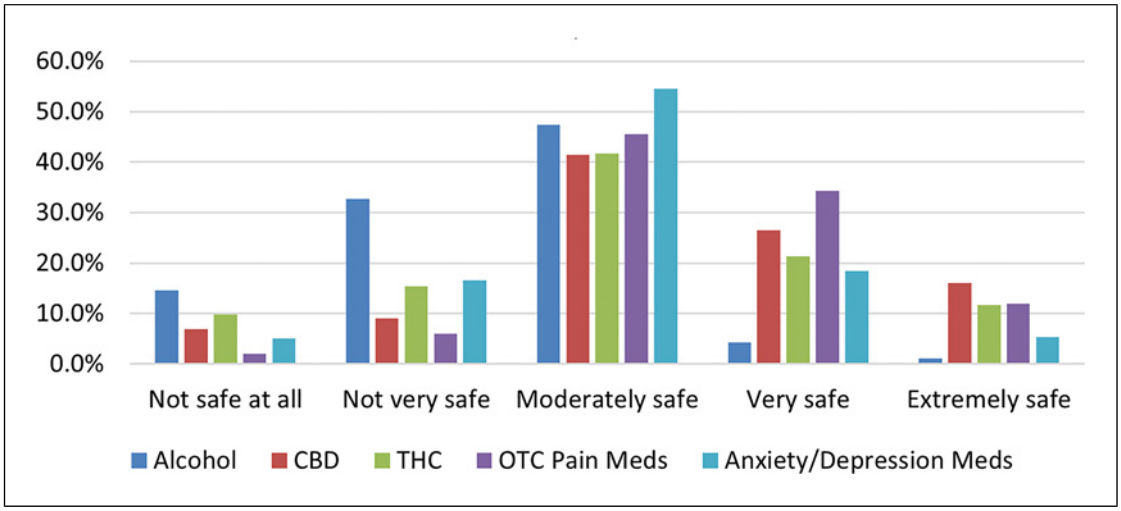

Fig. 1. How safe do you think it is to take each of the following: alcohol, CBD, products containing THC, OTC pain medications, and anxiety/depression medications? The sample size may be less than 1,045 due to the exclusion of "Don't know" and "Prefer not to answer" responses and/or the inclusion of skipping logic.

Perceptions Regarding Safety

When respondents were asked *"How safe do you think it is to take each of the following: alcohol, CBD, products containing THC, OTC pain medications, and anxiety/depression medications?"*, alcohol was perceived by the largest proportion of respondents as unsafe (47.3%), followed by THC (25.2%), anxiety/depression medications (21.7%), CBD (16.1%), and then OTC pain medications (8.1%) (see Fig. 1).

When further analyzing those who responded *"Not safe at all or not very safe"* versus *"Extremely, very, or moderately safe,"* all substance comparisons were significantly different except for the comparison of "THC" and "anxiety/depression medications" (p value = 0.07030). (see Table 1).

When respondents were then asked, *"How safe do you think it is to take alcohol, CBD, products containing THC, OTC pain medications, and anxiety/depression medications with other prescription medications?"*, most combinations were perceived to be unsafe by more respondents when considering being taken along with a prescription medication. Again, alcohol was perceived as unsafe by the largest proportion of respondents (77.4%), followed by anxiety/depression medications (43.2%), THC (42.6%), CBD (33.4%), and then OTC pain medications (24.8%). (see Fig. 2).

When further analyzing those who responded *"Not safe at all or not very safe"* versus *"Extremely, very, or moderately safe,"* all substance comparisons were significantly different except for the comparison of "THC" and "anxiety/depression medications" (p value = 0.83366). (see Table 2).

Discussion

The 2019 US National Survey on Drug Use and Health reports that the use of cannabis increased from 11% (2002) to 17.5% (2019) and represents 48.2 million Americans aged 12 years or older [10]. For the first time, there are now more documented cannabis users than tobacco users [11]. As products containing THC, CBD, OTC products, and prescription cannabinoid medications are becoming increasingly available (e.g., pharmacy, dispensary, illicit means), there is an increased likelihood of an unintended drug-drug interaction when co-administered with another herbal, OTC, or prescription medication [2].

Although medical marijuana policy liberalization is increasing among the States, patients may remain hesitant to share or may still be unaware of the necessity of discussing their use of cannabinoid products with their HCPs. Despite this increase in cannabis use, there is also a continued reluctance for the patient to disclose their cannabinoid use with their HCP [12]. Therefore, there can be missed patient safety opportunities (e.g., drug-drug interactions, perioperative management) when the patient does not fully disclose their cannabinoid use [13].

Reasons for not disclosing cannabinoid use vary, but the most common reasons are the stigma and bias associated with cannabinoid use along with the fear of adverse consequences [14]. Due to the often vague public health guidance, HCPs are at times hesitant, uncertain, or even unable to discuss with their patient effectively about their cannabinoid use [15]. At times, the HCP is not prepared to discuss cannabinoid topics

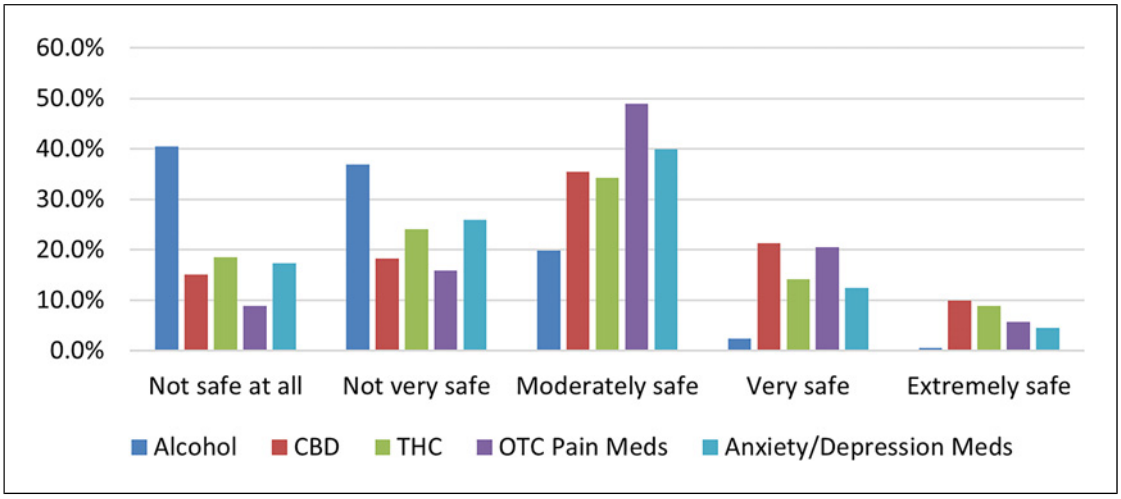

Fig. 2. How safe do you think it is to take alcohol, CBD, products containing THC, OTC pain medications, and anxiety/depression medications with other prescription medications? The sample size may be less than 1,045 due to the exclusion of "Don't know" and "Prefer not to answer" responses and/or the inclusion of skipping logic.

due to a lack of general cannabinoid knowledge [16], or their perspective may differ with that of their patients [13]. In the absence of evidence-based guidelines, the HCP may tend to generally categorize cannabinoid use as either "harmful or helpful" [15] or as a "risk versus benefit" [17].

Since cannabinoids are often compared to and perceived safer than opioids [1], this survey also asked two different questions pertaining to the perceived safety of cannabinoids when compared to other substances. First, the survey asked the respondent about the perceived safety of taking or consuming alcohol, CBD, products containing THC, OTC pain medications, and anxiety/depression medications. Second, the survey then asked how safe each respondent perceived alcohol, CBD, products containing THC, OTC pain medications, and anxiety/depression medications when taken with other prescription medications.

This Lion Poll cannabinoid survey provides information on the prevalence of cannabinoid use among adult-aged Pennsylvanians, underreporting of that use to their HCPs, and perceptions on safety. This survey also illustrates that there is poor communication between patients and HCPs regarding cannabinoid use, and these findings are consistent with other studies [18, 19]. Therefore, it remains vital that HCPs have open communications with their patients about cannabinoid use.

Statement of Ethics

The need for written informed consent was waived by the Penn State University's Office for Research Protections. This study protocol was reviewed and approved as exempt research by Penn State University's Office for Research Protections, study number 00021756. Written informed consent was not required. In lieu of a written signature, web survey respondents were asked whether they were willing to participate after reading the informed consent language.

Conflict of Interest Statement

Paul T. Kocis, PharmD, MPH, participated in a Janssen Cannabinoid Education Advisory Work Group (November 29, 2022). No conflicts of interest were reported by Daniel J. Mallinson, PhD, and Mr. Timothy J. Servinsky Jr.

Funding Sources

This study was not supported by any sponsor or funder.

Author Contributions

Paul T. Kocis, PharmD, MPH; Daniel J. Mallinson, PhD; and Mr. Timothy J. Servinsky Jr. contributed equally to the conceptualization, data curation, formal analysis, investigation, methodology, validation, and writing, review, and editing of the original draft.

Data Availability Statement

Study data are not publicly available due to ethical reasons; however, further inquiries can be directed to the corresponding author.

References

1 Lake S, Socías ME, Milloy MJ. Evidence shows that cannabis has fewer relative harms than opioids. Can Med Assoc J. 2020;192(7):E166–7. https://doi.org/10.1503/cmaj.74120

2 Kocis PT, Vrana KE. Delta-9-tetrahydrocannabinol and cannabidiol drug-drug interactions. Med Cannabis Cannabinoids. 2020;3(1):61–73. https://doi.org/10.1159/000507998

3 E. National Academies of Sciences and Medicine. The health effects of cannabis and cannabinoids: the current state of evidence and recommendations for research. National Academies Press; 2017.

4 Rønne ST, Rosenbæk F, Pedersen LB, Waldorff FB, Nielsen JB, Riisgaard H, et al. Physicians' experiences, attitudes, and beliefs towards medical cannabis: a systematic literature review. BMC Fam Pract. 2021;22(1):212. https://doi.org/10.1186/s12875-021-01559-w

5 Kruger DJ, Mokbel MA, Clauw DJ, Boehnke KF. Assessing health care providers' knowledge of medical cannabis. Cannabis Cannabinoid Res. 2022;7(4):501–7. https://doi.org/10.1089/can.2021.0032

6 FDA concludes that existing regulatory frameworks for foods and supplements are not appropriate for cannabidiol, will work with congress on a new way forward. U.S. Food & Drug Administration (FDA). Available from: https://www.fda.gov/news-events/press-announcements/fda-concludes-existing-regulatory-frameworks-foods-and-supplements-are-not-appropriate-cannabidiol#:~:text=Today%20we%20are%20announcing%20that,with%20Congress%20on%20this%20matter (accessed November 29, 2023).

7 Lindsey WT, Stewart D, Childress D. Drug interactions between common illicit drugs and prescription therapies. Am J Drug Alcohol Abuse. 2012;38(4):334–43. https://doi.org/10.3109/00952990.2011.643997

8 American association for public opinion research. Available from: https://aapor.org/standards-and-ethics/standard-definitions/ (accessed October 01, 2023).

9 United States census Bureau (QuickFacts-Pennsylvania). Available from: https://www.census.gov/quickfacts/PA (accessed October 01, 2023).

10 Substance Abuse and Mental Health Services Administration. Key substance use and mental health indicators in the United States: results from the 2019 national survey on drug use and health, HHS Publication No. PEP20-07-01-001, NSDUH Series H-55), 2020. Available from: https://www.samhsa.gov/data/sites/default/files/reports/rpt29393/2019NSDUHFFRPDFWHTML/2019NSDUHFFR1PDFW090120.pdf

11 Newport F. Americans and the future of cigarettes, marijuana, alcohol. Gallup. Available from: https://news.gallup.com/opinion/polling-matters/398138/americans-future-cigarettes-marijuana-alcohol.aspx (accessed November 04, 2024).

12 King DD, Stewart SA, Collins-Yoder A, Fleckner T, Price LL. Anesthesia for patients who self-report cannabis (marijuana) use before esophagogastroduodenoscopy: a retrospective review. AANA J. 2021;89(3):205–12.

13 Boehnke KF, Litinas E, Worthing B, Conine L, Kruger DJ. Communication between healthcare providers and medical cannabis patients regarding referral and medication substitution. J Cannabis Res. 2021;3(1):2. https://doi.org/10.1186/s42238-021-00058-0

14 Hathaway AD, Comeau NC, Erickson PG. Cannabis normalization and stigma: contemporary practices of moral regulation. Criminology & Criminal Justice. 2011;11(5):451–69. https://doi.org/10.1177/1748895811415345

15 Bosley HG, Peña JM, Penn AD, Sorensen JL, Tierney M, Flentje A. A pragmatic, person-centered view of cannabis in the United States: pursuing care that transcends beliefs. Subst Abus. 2023;44(4):337–47. https://doi.org/10.1177/08897077231202836

16 Philpot LM, Ebbert JO, Hurt RT. A survey of the attitudes, beliefs and knowledge about medical cannabis among primary care providers. BMC Fam Pract. 2019;20:17–7. https://doi.org/10.1186/s12875-019-0906-y

17 Zolotov Y, Vulfsons S, Zarhin D, Sznitman S. Medical cannabis: an oxymoron? Physicians' perceptions of medical cannabis. Int J Drug Pol. 2018;57:4–10. https://doi.org/10.1016/j.drugpo.2018.03.025

18 Kondrad EC, Reed AJ, Simpson MJ, Nease JDE. Lack of communication about medical marijuana use between doctors and their patients. J Am Board Fam Med. 2018;31(5):805–8. https://doi.org/10.3122/jabfm.2018.05.170462

19 Azcarate PM, Zhang AJ, Keyhani S, Steigerwald S, Ishida JH, Cohen BE. Medical reasons for marijuana use, forms of use, and patient perception of physician attitudes among the US population. J Gen Intern Med. 2020;35(7):1979–86. https://doi.org/10.1007/s11606-020-05800-7