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Cannabis Use and Sharing Practices Among Sexual Minority and Heterosexual Individuals During the COVID-19 Pandemic

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Abstract

Purpose: Cannabis behaviors during the COVID-19 pandemic among sexual minority (SM) individuals in the United States remain understudied. This study assessed the prevalence and correlates of cannabis use and cannabis sharing, a potential risk for COVID-19 transmission, among SM and heterosexual-identified individuals in the United States during the COVID-19 pandemic.

Methods: This cross-sectional study used data from an anonymous, US-based web survey on cannabis-related behaviors from August to September 2020. Included participants reported past-year nonmedical cannabis use. Associations between frequency of cannabis use and sharing behaviors by sexual orientation were evaluated using logistic regression analysis.

Results: Overall, 1112 respondents reported past-year cannabis use; mean age 33 years (standard deviation = 9.4), 66% male identified ($n = 723$), and 31% SM identified adults ($n = 340$). Increased cannabis use during the pandemic was similar among SM (24.7%; $n = 84$) and heterosexual (24.9%; $n = 187$) respondents. Any sharing during the pandemic was 81% for SM adults ($n = 237$) and 73% for heterosexual adults ($n = 486$). In the fully adjusted models, the odds of daily/weekly cannabis use and the odds of any cannabis sharing among SM respondents were 0.56 (95% confidence interval [CI] = 0.42–0.74) and 1.60 (95% CI = 1.13–2.26), respectively, compared with heterosexual respondents.

Conclusions: SM respondents were less likely to use cannabis with high frequency during the pandemic but more likely to share cannabis compared with heterosexual respondents. Sharing cannabis was high overall, which may increase COVID-19 risk. Public health messaging around sharing may be important during COVID-19 surges and respiratory pandemics especially as cannabis becomes more widely available in the United States.

Keywords: cannabis, COVID-19, sexual minority, sharing, substance use

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Introduction

THE COVID-19 PANDEMIC highlighted and exacerbated challenges for the lesbian, gay, bisexual, transgender, and queer/questioning plus (LGBTQ+) community including sexual minority (SM) populations, such as economic fallout, disruptions in health care, social isolation, and discrimination/stigma.^{1–9} Due to differences in social factors, systemic factors, and discrimination, SM cisgender populations are at higher risk for substance use, particularly cannabis use and cannabis use disorder compared with their heterosexual cisgender counterparts.^{10–19}

There are various estimates of cannabis use among SM adults with findings from the 2016 National Survey on Drug Use and Health noting that 37.6% of SM adults 18 years of age or older reported past-year cannabis use compared with 16.2% of the overall adult population.^{18,19} A national study in Australia reported that past-year cannabis use for SM cisgender men was 22.4% compared with 12.4% for heterosexual cisgender men; for cisgender women, past-year cannabis use for SM individuals was 24.6% compared with 7.1% for heterosexual women. However, differences in weekly and more frequent cannabis use in the past year were more similar between SM cisgender women and heterosexual cisgender women (33.6% compared with 26.1%, respectively).¹⁴ Nevertheless, differences in cannabis use during the COVID-19 pandemic among SM individuals remain understudied.

A serial cross-sectional study in Canada reported that the prevalence of cannabis use among SM individuals was higher than among heterosexual individuals at two time points (May 2020 and September 2020) during the pandemic (17.4% compared with 5.4% for time 1; 21.1% compared with 6.4% for time 2). The odds of increased cannabis use in this study population for SM adults compared with heterosexual adults between these time points were 1.28 (95% confidence interval [CI]=0.66–2.48).⁵ Another cross-sectional study in Canada noted that cannabis use increased by 18.5% among LGBTQ+ adults during the pandemic but this study was restricted to LGBTQ+ adults only.²⁰ Moreover, both studies were conducted in Canada, where cannabis is nationally legalized, and may not generalize to the United States given varying cannabis regulations across states.

Finally, it is of interest to understand other cannabis behaviors such as sharing (having more than one person put the same device or products in their mouth to inhale) of prepared cannabis (joints/blunts) and cannabis-related paraphernalia (bongs, rigs, pieces, vapes, bubblers) during the COVID-19 pandemic. Cannabis use social practices before the pandemic involved sharing prepared cannabis with others, a behavior that declined among some during the pandemic.^{21–26} However, SARS-CoV-2, the virus that causes COVID-19, leads to upper and lower respiratory infections and is spread through droplets and airborne transmission.^{27–29} Thus, sharing of prepared cannabis and cannabis-related paraphernalia may increase the risk of COVID-19 given the mode of transmission and direct contact with oral fluids.^{30–33} Moreover, there may be differences in cannabis sharing between SM and heterosexual individuals given disparities in economic and social disruption during the pandemic.

This study aims to assess the prevalence and correlates of cannabis use and sharing of cannabis among SM and heterosexual individuals in the United States during the COVID-19

pandemic. We define sharing (having more than one person put the same device or products in their mouth to inhale) of cannabis as sharing of prepared cannabis (joints/blunts) and cannabis-related paraphernalia (bongs, rigs, pieces, vapes, bubblers).^{34,35} We hypothesized that (1) a higher proportion of SM identified adults would report daily/weekly cannabis use during the pandemic compared with heterosexual identified adults; and (2) a higher proportion of SM identified adults would report sharing cannabis during the COVID-19 pandemic compared with heterosexual-identified adults.

Methods

Study design

This cross-sectional study used data collected as part of an anonymous, US-based web survey on cannabis-related behaviors from August to September 2020. Detailed methods of the survey have been specified elsewhere but will be briefly mentioned herein.³⁶ Respondents were eligible to complete the survey if they were (1) 18 years of age or older, (2) reported any cannabis or cannabidiol (CBD) use in the last 12 months, and (3) lived in the United States.

In this specific substudy, participants were included if they reported nonmedical (recreational) cannabis use. Recruitment was based on a convenience sample of users on internet-based platforms including Reddit, Bluelight (forum for illicit drug use), Craigslist, and Twitter. The study advertisement stated the following: “Have you used cannabis (marijuana) or CBD (cannabidiol) in the past year? Participate in a UCLA survey (\$5 gift card).” Duplicate responses or “ballot stuffing” were restricted by limiting one response for each unique internet protocol (IP) address. The survey took ~20–30 minutes to complete, and participants were remunerated \$5 for completing the survey.

Data collection

Survey questions on nonmedical cannabis use behaviors included recall for two 3-month time periods based on the World Health Organization Alcohol, Smoking, and Substance Involvement Screening Test (WHO-ASSIST): before the COVID-19 pandemic (January to mid-March 2020) and during the COVID-19 pandemic (past 3 months at the time of survey—June to August 2020).³⁷ Questions for each time period were asked separately in this single survey. Cannabis use behavior questions comprised frequency of use, mode of use, and sharing of prepared nonmedical cannabis and cannabis-related paraphernalia. Data on other substance use was collected for tobacco, alcohol, methamphetamine, opioids, and other drug use for both time periods. We also collected demographic information including age, sex, race/ethnicity, education, sexual orientation, and state of residence.

Ethics

This study received institutional review board approval from the University of California, Los Angeles (IRB No. 20-001164). All participants indicated their consent before starting the survey.

Variable definitions

The primary outcomes were frequency of nonmedical cannabis use and sharing of cannabis during the COVID-19

pandemic. Frequency of nonmedical cannabis use was asked similar to the WHO-ASSIST with answer choices as never, once or twice, monthly, weekly, daily or almost daily.³⁷ We categorized change in frequency of use between the two time periods as increased (increased cannabis use during the pandemic), stayed the same (no change in use between the two time periods), and decreased (decreased during the pandemic). Moreover, we dichotomized nonmedical cannabis use during the pandemic as “ \geq weekly” (daily/weekly) and “ \leq monthly” (monthly/once or twice) use.

Sharing of nonmedical cannabis was asked as a Likert scale of agreement with the following question, “I shared joints, blunts, bongs, pipes, vaporizers, or vape-pens used for cannabis (marijuana)” with answer choices: never; sometimes; about half the time; most of the time; and always. We coded change in sharing between the two time periods as “increased,” “stayed the same,” and “decreased.” Finally, we dichotomized sharing of cannabis during the pandemic as “any sharing” and “no sharing.”

The primary predictor of interest was self-identified sexual orientation. Respondents were asked “My sexual orientation is,” with answer choices gay, lesbian, bisexual, pansexual/queer/questioning, straight/heterosexual, other, not sure, and decline to answer. We dichotomized sexual orientation as SM (gay, lesbian, bisexual, pansexual/queer/questioning, or other) and heterosexual (straight/heterosexual). Given heterogeneity in sexual orientation, we further categorized sexual orientation as SM women, SM men, heterosexual women, and heterosexual men using the respondent’s self-identified sex. However, the question in the survey was asked as “What is your sex?” with response options: male, female, other, and decline to answer. Thus, we do not know respondents assigned sex at birth nor do we know their gender identity. Therefore, we are unable to look at cisgender and transgender individuals.

Additional variables included in this analysis were age, race/ethnicity, education, US Census region, state’s cannabis regulation status, tobacco/nicotine product use during the pandemic, alcohol use during the pandemic, and other drug use during the pandemic. Age was recentered at the sample mean and rescaled to 10-year change. Education was categorized as high school or less, some college but no degree, and associates’ degree or higher. State’s cannabis regulation status was categorized as regulated (adult use), medical only, and unregulated (CBD or fully illegal).³⁸ Frequency of tobacco/nicotine products, alcohol use, and other drug use (methamphetamine, opioid, cocaine, and other) were asked similar to the WHO-ASSIST and dichotomized as any tobacco use, any alcohol use, any methamphetamine use, and any other drug use during the pandemic.³⁷

Statistical analyses

We calculated frequency distributions and mean/standard deviation (SD) for demographics, cannabis use, and substance use behaviors among the overall study population and by sexual orientation. Furthermore, we conducted chi-squared tests to assess the proportional changes in frequency and sharing of cannabis before and during the COVID-19 pandemic by sexual orientation. We then conducted unadjusted and adjusted logistic regressions for frequency of use and sharing of cannabis during the pandemic.

We assessed the association of sexual orientation on frequency of use in three models. Model 1 was an unadjusted model. Model 2 adjusted for age, tobacco use, alcohol use, and other drug use. Model 3 was built on model 2 and controlled for education. Earlier literature has demonstrated the relationship and/or differences in cannabis use by age, sex, education, tobacco, alcohol, and other drug use.^{39–41} Moreover, we assessed the association of sexual orientation on sharing of cannabis during the pandemic in three models. Model 1 was an unadjusted model. Model 2 adjusted for age and tobacco use. Model 3 was built on model 2 and controlled for education. Cannabis use in social settings, inclusive of sharing cannabis, is associated with age, sex, and having peers who use cannabis.^{23–25,42} Education attainment may offer differences in social settings (particularly in college) that may be related to sharing cannabis. In addition, we are controlling for tobacco use because of a similar mechanism of inhalation.

Models for frequency and sharing were conducted separately. Because of a small sample size for women, we were only able to conduct subanalyses of nonmedical cannabis frequency of use and sharing for SM and heterosexual men. Chi-squared tests and logistic regressions were assessed with an alpha of 0.05.

Missing data on sex, sexual orientation, frequency of cannabis use before/during the pandemic, and sharing of cannabis before/during the pandemic were minimal to none in our dataset. In our overall sample ($n=1883$), 29 respondents were missing sex (1.5%) and 38 were missing sexual orientation (2.0%). No respondents had missing data on frequency of nonmedical cannabis use among those who reported past year nonmedical cannabis use ($n=1112$). Finally, 16 respondents (1.6%) had missing information on sharing of cannabis before the pandemic and 27 respondents (2.7%) had missing information on sharing of cannabis during the pandemic. Thus, we conducted complete case analyses. All analyses were performed using SAS software Version 9.4 (SAS Institute Inc., Cary, NC, USA).

Results

Overall, 1883 participants completed the survey and 1112 (59.0%) reported past-year nonmedical cannabis use. Among those 1112 respondents, mean age was 33 (SD=9.4), 66% identified as male ($n=723$), non-Hispanic White was the single largest race/ethnicity group (55%; $n=592$), and 31% identified as SM individuals ($n=340$). Age and sex were similar when comparing SM with heterosexual participants. However, a greater proportion of SM participants identified as Hispanic/Latinx (41%, $n=137$) compared with 26% among heterosexual participants ($n=192$). There was also a larger percentage of SM respondents reporting less than high school education, 17% ($n=58$) compared with 6% among heterosexual participants ($n=48$) (Table 1).

During the pandemic, \geq weekly cannabis use was reported by 44% of SM participants ($n=149$) as compared with 62% of heterosexual participants ($n=467$). Before the pandemic, 42% of SM participants ($n=144$) reported \geq weekly cannabis use, whereas 57% of heterosexual participants ($n=429$) reported \geq weekly cannabis use. However, more SM individuals reported sharing cannabis (81%; $n=237$) during the pandemic compared with heterosexual individuals (73%;

TABLE 1. FREQUENCY DISTRIBUTION OF DEMOGRAPHICS OVERALL AND BY SEXUAL ORIENTATION AMONG A NATIONAL NONMEDICAL CANNABIS USING SAMPLE, AUGUST 2020–SEPTEMBER 2020

	Overall, N (%) ^a	SM adults, n (%) ^a	Heterosexual adults, n (%) ^a
Total	1112 (100.0)	340 (30.57)	752 (67.63)
Demographics			
Age, years			
Mean (SD)	33.41 (9.35)	32.48 (8.27)	33.83 (9.74)
Sex			
Female	374 (34.09)	111 (32.84)	256 (34.09)
Male	723 (65.91)	227 (67.16)	495 (65.91)
Race/ethnicity			
Hispanic/Latino	330 (30.47)	137 (40.53)	192 (25.98)
Non-Hispanic Asian	24 (2.22)	8 (2.37)	16 (2.17)
Non-Hispanic Black	94 (8.68)	24 (7.10)	70 (9.47)
Non-Hispanic American Indian or Alaska Native	18 (1.66)	6 (1.78)	12 (1.62)
Non-Hispanic Native Hawaiian or Pacific Islander	7 (0.65)	2 (0.59)	5 (0.68)
Non-Hispanic White	592 (54.66)	156 (46.15)	431 (58.32)
Non-Hispanic other ^b	18 (1.66)	5 (1.48)	13 (1.76)
Education			
Less than high school	107 (9.76)	58 (17.06)	48 (6.42)
High school	144 (13.14)	53 (15.59)	90 (12.03)
Some college credit, no degree	218 (19.89)	71 (20.88)	144 (19.25)
Associates degree	272 (24.82)	75 (22.06)	197 (26.34)
College graduate or higher	355 (32.39)	83 (24.41)	269 (35.96)
United States Census region			
West	417 (37.50)	118 (34.71)	291 (38.70)
Midwest	137 (12.32)	54 (15.88)	83 (11.04)
Northeast	215 (19.33)	90 (26.47)	120 (15.96)
South	343 (30.85)	78 (22.94)	258 (34.31)
State's cannabis regulation status			
Fully regulated	535 (48.11)	168 (49.41)	358 (47.61)
Medical only	326 (29.32)	101 (29.71)	216 (28.72)
CBD only	238 (21.40)	66 (19.41)	170 (22.61)
Unregulated	13 (1.17)	5 (1.47)	8 (1.06)

^aThe sample *n* for some variables may not add up to the total column *N* because of missing data. Percentages are based on complete/nonmissing data.

^bNon-Hispanic other=those who reported other race or two or more races.

CBD, cannabidiol; SD, standard deviation; SM, sexual minority.

n=486). Before the pandemic, 94% of SM participants reported sharing cannabis (*n*=273) compared with 85% of heterosexual participants (*n*=586) (Table 2).

Tobacco and alcohol use were common and reported by 60% (*n*=204) and 48% (*n*=162) of SM respondents, respectively, compared with 57% (*n*=429) and 52% (*n*=392) among heterosexual respondents, respectively. Moreover, methamphetamine and other drug use were reported by 12% (*n*=39) and 37% (*n*=124) of SM respondents, compared with 7% (*n*=49) and 27% (*n*=206) of heterosexual respondents, respectively (Table 2).

Changes in nonmedical cannabis frequency of use were similar for SM and heterosexual respondents (*p*=0.90), as 24.7% of SM individuals (*n*=84) and 24.9% of heterosexual individuals (*n*=187) reported increased use between the two time periods. Changes in cannabis frequency of use were similar among SM and heterosexual women (*p*=0.58) and SM and heterosexual men (*p*=0.38). However, there was a difference in changes of sharing among SM compared with heterosexual respondents (*p*=0.01) where 27% of SM respondents (*n*=74) reported decreased sharing during the pandemic compared with 35% of heterosexual respondents (*n*=222). This difference was greater among men (*p*<0.01) where 20% of

SM men (*n*=35) decreased sharing compared with 36% of heterosexual men (*n*=156) (Table 3).

The odds of ≥weekly cannabis use among SM respondents were 0.49 (95% CI=0.37–0.63) times that of heterosexual respondents in the unadjusted model. After adjusting for age, education, tobacco use, alcohol use, and other drug use, the odds of ≥weekly cannabis use among SM respondents were 0.56 (95% CI=0.42–0.74) times that of heterosexual respondents (Table 4). Among men, the odds of ≥weekly cannabis use during the pandemic were 0.39 (95% CI=0.27–0.56) times that for SM respondents compared with heterosexual men after adjusting for age, education, tobacco use, alcohol use, and other drug use (Table 5).

On the contrary, the odds of any cannabis sharing during the pandemic among SM respondents were 1.56 (95% CI=1.11–2.18) times that for heterosexual respondents in the unadjusted model. After adjusting for age, education, and tobacco use, the odds of any sharing during the pandemic among SM respondents were 1.60 (95% CI=1.13–2.26) times that for heterosexual respondents (Table 4). Among men, the odds of any sharing were 2.19 times higher for SM men compared with heterosexual men after adjusting for age, education, and tobacco use (95% CI=1.37–3.50) (Table 5).

TABLE 2. NONMEDICAL CANNABIS USE BEHAVIORS AND OTHER SUBSTANCE USE BY SEXUAL ORIENTATION AMONG A NATIONAL NONMEDICAL CANNABIS USING SAMPLE, AUGUST 2020–SEPTEMBER 2020

	<i>SM adults</i> (N = 340), n (%) ^a	<i>Heterosexual adults</i> (N = 752), n (%) ^a
Frequency of nonmedical cannabis use		
Frequency before COVID-19 pandemic		
No use	17 (5.00)	16 (2.13)
Once or twice	90 (26.47)	135 (17.95)
Monthly	89 (26.18)	172 (22.87)
Weekly	75 (22.06)	274 (36.44)
Daily or almost daily	69 (20.29)	155 (20.61)
Frequency during COVID-19 pandemic		
No use	13 (3.82)	16 (2.13)
Once or twice	73 (21.47)	102 (13.56)
Monthly	105 (30.88)	167 (22.21)
Weekly	75 (22.06)	285 (37.90)
Daily or almost daily	74 (21.76)	182 (24.20)
Sharing of cannabis ^b		
Sharing before COVID-19 pandemic		
No sharing	18 (6.19)	101 (14.70)
Sometimes	153 (52.58)	275 (40.03)
About half the time	66 (22.68)	124 (18.05)
Most of the time	42 (14.43)	149 (21.69)
Always	12 (4.12)	38 (5.53)
Sharing during COVID-19 pandemic		
No sharing	57 (19.39)	182 (27.25)
Sometimes	115 (39.12)	262 (39.22)
About half the time	85 (28.91)	125 (18.71)
Most of the time	30 (10.20)	76 (11.38)
Always	7 (2.38)	23 (3.44)
Mode of nonmedical cannabis use		
Most reported mode of use before COVID-19 pandemic		
Smoking (joint/blunt/bong/pipe)	194 (60.06)	485 (65.90)
Vaporizing plant	33 (10.22)	89 (12.09)
Vaping oil/concentrates	31 (9.60)	60 (8.15)
Wax/dab	9 (2.79)	21 (2.85)
Edibles	20 (6.19)	32 (4.35)
Other oral products (example: pill, tincture, beverage)	14 (4.33)	11 (1.49)
Other	22 (6.81)	38 (5.16)
Most reported mode of use during COVID-19 pandemic		
Smoking (joint/blunt/bong/pipe)	188 (57.49)	478 (64.95)
Vaporizing plant	35 (10.70)	82 (11.14)
Vaping oil/concentrates	30 (9.17)	51 (6.93)
Wax/dab	13 (3.98)	21 (2.85)
Edibles	29 (8.87)	44 (5.98)
Other oral products (example: pill, tincture, beverage)	9 (2.75)	15 (2.04)
Other	23 (7.03)	45 (6.11)
Other substance use		
Tobacco use		
Yes	204 (60.00)	429 (57.05)
Alcohol use		
Yes	162 (47.65)	392 (52.13)
Methamphetamine use		
Yes	39 (11.47)	49 (6.52)
Other substance use (Opioid/cocaine/methamphetamine/other)		
Yes	124 (36.47)	206 (27.39)

^aThe sample *n* for some variables may not add up to the total column *N* because of missing data. Percentages are based on complete/nonmissing data.

^bSharing of cannabis may not add up to the total column *N* because of the survey skip logic. Only individuals who reported a mode of inhalation for cannabis (smoking, vaporizing plant, vaping oil/concentrates, wax/dab) received this question.

TABLE 3. CHANGES IN NONMEDICAL CANNABIS BEHAVIORS BEFORE/DURING THE COVID-19 PANDEMIC BY SEXUAL ORIENTATION AMONG A NATIONAL NONMEDICAL CANNABIS USING SAMPLE, AUGUST 2020–SEPTEMBER 2020

	SM adults, n (%)	Heterosexual adults, n (%)	p ^a	SM women, n (%)	Heterosexual women, n (%)	p ^a	SM men, n (%)	Heterosexual men, n (%)	p ^a
Total	340 (100.0)	752 (100.0)	0.90	111 (100.0)	256 (100.0)	0.58	227 (100.0)	495 (100.0)	0.38
Frequency of nonmedical cannabis use									
Increase	84 (24.71)	187 (24.87)		30 (27.03)	69 (26.95)		54 (23.79)	118 (23.84)	
Stay the same	198 (58.24)	445 (59.18)		65 (58.56)	139 (54.30)		131 (57.71)	305 (61.62)	
Decrease	58 (17.06)	120 (15.96)		16 (14.41)	48 (18.75)		42 (18.50)	72 (14.55)	
Sharing prepared cannabis and cannabis-related paraphernalia ^b			0.01			0.16			<0.01
Increase	54 (19.64)	82 (12.85)		15 (15.79)	25 (12.20)		39 (21.91)	57 (13.19)	
Stay the same	147 (53.45)	334 (52.35)		42 (44.21)	115 (56.10)		104 (58.43)	219 (50.69)	
Decrease	74 (26.91)	222 (34.80)		38 (40.00)	65 (31.71)		35 (19.66)	156 (36.11)	

^aChi-squared test.

^bSharing of prepared cannabis and cannabis-related paraphernalia may not add up to the total column N because of the survey skip logic. Only individuals who reported a mode of inhalation for cannabis (smoking, vaporizing plant, vaping oil/concentrates, wax/dab) received this question.

Discussion

This study presents findings on frequency of nonmedical cannabis use and sharing of prepared cannabis and cannabis-related paraphernalia during the COVID-19 pandemic among SM and heterosexual-identified individuals. In this study sample, SM and heterosexual individuals reported similar increases in frequency of cannabis use during the pandemic (24.7% and 24.9%, respectively), a finding comparable with Slemon et al.⁵ Nevertheless, SM respondents were less likely (odds ratio [OR]=0.56, 95% CI=0.42–0.74) to report ≥weekly cannabis use during the pandemic compared with heterosexual individuals. The point estimate was even larger (OR=0.39, 95% CI=0.27–0.56) for SM men compared with heterosexual men.

Previous literature has highlighted that SM individuals are more likely to use cannabis and to have cannabis use disorder compared with their heterosexual counterparts and may be at higher risk during the pandemic.^{10–19} However, studies reporting this have primarily looked at any cannabis use (past year or past month, yes/no) with minimal literature examining the characteristics of cannabis use behaviors, particularly among those who report some level of cannabis use. For instance, a national study in Australia reported large differences in past-year cannabis use (yes/no) between SM men and women compared with their cisgender heterosexual counterparts (22.4% for SM men compared with 12.4% for heterosexual cisgender men; 24.6% for SM women compared with 7.1% for heterosexual women). However, when looking at frequency of cannabis use, differences in weekly and more frequent use were more similar between SM cisgender women (33.6%) and heterosexual cisgender women (26.1%).¹⁴

The findings from our study extend the context in the literature of more specific use behaviors by looking at frequency of use among those who use cannabis. This study suggests that among those who use cannabis, heterosexual respondents may use it at higher frequencies (≥weekly) than SM respondents. This finding was seen in our study for cannabis use before and during the COVID-19 pandemic. The difference noted during the COVID-19 pandemic may highlight potential economic disparities and social isolation that SM individuals experienced that differ from their heterosexual counterparts.^{1–9} On the contrary, tobacco, methamphetamine, and other drug use were higher among SM respondents in our study population, which may substitute frequency of cannabis use. Moreover, this study may underestimate cannabis use among SM respondents given the sampling strategy and generalizability: nonrepresented, convenience sample from internet-based platforms with a high prevalence of substance use.

In addition, SM respondents were more likely (OR = 1.60, 95% CI = 1.13–2.26) to report sharing of cannabis during the pandemic compared with heterosexual respondents with higher odds (OR = 2.19, 95% CI = 1.37–3.50) for SM men compared with heterosexual men. Sharing of cannabis may increase the risk of COVID-19 given the mode of transmission and direct contact with oral fluids.^{30–33} This observed difference may have several explanations.

First, the COVID-19 pandemic exacerbated economic and social challenges among SM populations, which has increased mental and physical health issues and decreased

TABLE 4. UNADJUSTED AND ADJUSTED LOGISTIC REGRESSION FOR NONMEDICAL CANNABIS USE BEHAVIORS DURING THE COVID-19 PANDEMIC AMONG A NATIONAL NONMEDICAL CANNABIS USING SAMPLE, AUGUST 2020–SEPTEMBER 2020

	Daily/weekly reported use during COVID-19			Any reported sharing during COVID-19				
	n (%)	Model 1: OR (95% CI)	Model 2: OR (95% CI)	Model 3: OR (95% CI)	n (%)	Model 1: OR (95% CI)	Model 2: OR (95% CI)	Model 3: OR (95% CI)
Sexual orientation								
Sexual minority adults	147 (45.94)	0.49 (0.37–0.63)	0.51 (0.39–0.67)	0.56 (0.42–0.74)	237 (80.61)	1.56 (1.11–2.18)	1.48 (1.05–2.08)	1.60 (1.13–2.26)
Heterosexual adults (ref)	462 (63.64)	—	—	—	486 (72.75)	—	—	—
Age ^a								
Mean (SD)	34.18 (10.59)	1.31 (1.14–1.51)	1.25 (1.07–1.45)	1.24 (1.06–1.44)	32.52 (7.89)	0.72 (0.63–0.84)	0.76 (0.66–0.89)	0.75 (0.64–0.87)
Min/max	18/77	—	—	—	18/77	—	—	—
Sample	615	—	—	—	726	—	—	—
Education								
High school or less	100 (43.29)	0.40 (0.29–0.54)	—	0.45 (0.33–0.63)	156 (70.91)	0.66 (0.47–0.95)	—	0.55 (0.38–0.80)
Some college credit	113 (53.55)	0.60 (0.43–0.82)	—	0.59 (0.42–0.82)	137 (70.62)	0.65 (0.45–0.95)	—	0.62 (0.43–0.91)
Associates or higher (ref)	400 (65.90)	—	—	—	434 (78.62)	—	—	—
Other substance use								
Tobacco use								
Yes	330 (53.14)	0.59 (0.46–0.76)	0.62 (0.48–0.82)	0.63 (0.48–0.82)	467 (80.24)	1.96 (1.46–2.63)	1.85 (1.37–2.50)	1.90 (1.40–2.58)
No (ref)	292 (65.77)	—	—	—	265 (67.43)	—	—	—
Alcohol use								
Yes	355 (65.62)	1.84 (1.44–2.35)	1.66 (1.28–2.14)	1.62 (1.25–2.11)	—	—	—	—
No (ref)	267 (50.95)	—	—	—	—	—	—	—
Other drug use								
Yes	174 (54.21)	0.78 (0.60–1.02)	0.88 (0.67–1.17)	0.82 (0.62–1.09)	—	—	—	—
No (ref)	448 (60.22)	—	—	—	—	—	—	—

Logistic regression modeling odds of daily/weekly cannabis use compared with monthly/once or twice cannabis use in the past 3 months—model 1: unadjusted logistic regression; model 2: adjusted model for age, tobacco use, alcohol use, and other drug use; model 3: Adjusted model for age, education, tobacco use, alcohol use, and other drug use.

Logistic regression modeling the odds of any sharing of prepared cannabis and cannabis-related paraphernalia compared with no sharing in the past 3 months—model 1: unadjusted logistic regression; model 2: adjusted model for age and tobacco use; model 3: adjusted model for age, education, and tobacco use.

^aAge recentered at 33 years and rescaled per 10-year increase.

CI, confidence interval; OR, odds ratio.

TABLE 5. UNADJUSTED AND ADJUSTED LOGISTIC REGRESSION FOR NONMEDICAL CANNABIS USE BEHAVIORS DURING THE COVID-19 PANDEMIC AMONG MEN WHO REPORT USING CANNABIS, AUGUST 2020–SEPTEMBER 2020

		Men (N = 722)						
		Daily/weekly reported use during COVID-19			Any reported sharing during COVID-19			
	n (%)	Model 1: OR (95% CI)	Model 2: OR (95% CI)	Model 3: OR (95% CI)	n (%)	Model 1: OR (95% CI)	Model 2: OR (95% CI)	Model 3: OR (95% CI)
Sexual orientation								
Sexual minority men	81 (37.85)	0.34 (0.24–0.47)	0.34 (0.24–0.48)	0.39 (0.27–0.56)	161 (84.29)	1.95 (1.25–3.03)	1.90 (1.21–2.98)	2.19 (1.37–3.50)
Heterosexual men (ref)	311 (64.52)	—	—	—	328 (73.38)	—	—	—
Age ^a								
Mean (SD)	34.08 (10.59)	1.38 (1.15–1.66)	1.31 (1.07–1.60)	1.32 (1.08–1.61)	32.06 (7.56)	0.64 (0.53–0.78)	0.69 (0.57–0.85)	0.69 (0.57–0.85)
Min/max	19/77	—	—	—	19/77	—	—	—
Sample	392	—	—	—	488	—	—	—
Education								
High school or less	58 (36.02)	0.29 (0.20–0.43)	—	0.35 (0.23–0.53)	114 (74.03)	0.66 (0.42–1.03)	—	0.50 (0.31–0.81)
Some college credit	72 (52.55)	0.58 (0.39–0.85)	—	0.53 (0.35–0.81)	84 (67.20)	0.48 (0.30–0.75)	—	0.48 (0.30–0.78)
Associates or higher (ref)	260 (65.82)	—	—	—	289 (81.18)	—	—	—
Other substance use								
Tobacco use								
Yes	206 (48.24)	0.42 (0.30–0.57)	0.43 (0.31–0.61)	0.43 (0.30–0.61)	332 (82.18)	2.26 (1.56–3.29)	2.01 (1.36–2.96)	1.99 (1.34–2.95)
No (ref)	186 (69.14)	—	—	—	157 (67.09)	—	—	—
Alcohol use								
Yes	220 (63.22)	1.76 (1.30–2.38)	1.53 (1.11–2.12)	1.56 (1.11–2.15)	—	—	—	—
No (ref)	172 (49.43)	—	—	—	—	—	—	—
Other drug use								
Yes	79 (36.92)	0.89 (0.64–1.23)	1.02 (0.71–1.45)	0.91 (0.63–1.32)	—	—	—	—
No (ref)	122 (25.31)	—	—	—	—	—	—	—

Logistic regression modeling odds of daily/weekly cannabis use compared with monthly/once or twice cannabis use in the past 3 months—model 1; unadjusted logistic regression; model 2: adjusted model for age, tobacco use, alcohol use, and other drug use; model 3: adjusted model for age, education, tobacco use, alcohol use, and other drug use.

Logistic regression modeling the odds of any sharing of prepared cannabis and cannabis-related paraphernalia compared with no sharing in the past 3 months—model 1; unadjusted logistic regression; model 2: adjusted model for age and tobacco use; model 3: adjusted model for age, education, and tobacco use.

^aAge recentered at 33 years and rescaled per 10-year increase.

general wellbeing.^{1–4,6–9,43–45} Economic opportunity may partially explain lower proportions of cannabis use, but higher proportions of sharing seen in this study among SM individuals. On the contrary, social connectedness and social support among SM groups has been shown to reduce anxiety, depression, and other mental health challenges before and during the COVID-19 pandemic.^{43,44,46–49} Specifically, gay, bisexual, and other men who have sex with men have reported substance use as a way of community connection.⁵⁰ Thus, sharing of cannabis may provide an avenue for SM individuals to connect with one another especially during the pandemic.

Second, in this study sample, methamphetamine use during the pandemic was greater for SM respondents (12%) compared with heterosexual respondents (7%) (Table 2) with larger differences among SM men (12%) compared with heterosexual men (5%) (data not shown). Methamphetamine use has been shown to be higher among SM men compared with the general population with use reported in various settings including public (nightclubs) and private parties, work environments, and sexual interactions.^{51–54} Moreover, cannabis co-use with methamphetamine has been reported to help with coming off methamphetamine highs.⁵⁵ Thus, the social use of methamphetamine with others and the co-use of cannabis and methamphetamine may partially explain the differences in sharing of cannabis between SM and heterosexual individuals, especially among men.

Finally, sexual experiences with causal or new partners among SM men may have also increased opportunities for sharing cannabis during the pandemic. Multiple studies have shown that the number of sexual partners and new sex partners among SM individuals had decreased especially during the first COVID-19 wave (March–May 2020).^{56–61} Yet, the prevalence of >1 partner during this timeframe was still high (19%–42%).^{59–61} In addition, these studies highlighted that decreases in number of partners and sex with new partners started to level off in the latter half of the first pandemic wave (May–September 2020), which is the timeframe of “during the pandemic period” for this study.^{56–58} However, we are unable to conclude with whom the sharing was occurring and are unable to make any conclusions about COVID-19 risk.

Limitations

There are other limitations to consider while interpreting the results. First, this study used a convenience sample comprising primarily non-Hispanic White individuals, who were highly educated, with a high prevalence of substance use. Findings from this study may have limited generalizability to those who use cannabis in the United States at large. Second, our study examined one period during the pandemic (~June–August 2020) and cannot make any conclusions about lasting differences in frequency or sharing of cannabis. Third, there may have been potential misclassification of outcome measures (cannabis use and sharing of cannabis behaviors) and with reporting of sexual identity, but we expect it to have nondifferential impacts on this study. Moreover, our survey was anonymous and likely minimized social desirability bias. Finally, we were unable to conduct subanalyses for frequency and sharing of cannabis during the pandemic for women because of small sample size.

Conclusion

This study highlights frequency of using nonmedical cannabis and sharing of cannabis during the pandemic among SM and heterosexual individuals who report cannabis use. Overall, cannabis use was high in our study population, with similar increases in frequency of use during the pandemic across SM and heterosexual respondents. However, SM respondents were less likely to use cannabis \geq weekly during the pandemic compared with heterosexual respondents, expanding the context of previous literature. On the contrary, SM respondents were more likely to share cannabis during the pandemic compared with their heterosexual counterparts.

Future studies should further investigate cannabis frequency of use between SM and heterosexual individuals who report cannabis use. Moreover, this study demonstrated that sharing of cannabis was high for both SM and heterosexual respondents. Such behaviors may increase the risk of COVID-19 and other respiratory infections. Thus, it may be important to provide education around sharing behaviors through public health messaging during future COVID-19, flu, and other respiratory pandemics especially as cannabis becomes more widely available in the United States.

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Authors' Contributions

R.D.A. conceptualized and designed the study, assisted in developing the survey, led data curation, executed statistical analyses and interpretation of data, and drafted and revised the article. M.J. supported in statistical analyses, contributed to interpretation of the data, and provided major revisions to the article. P.M.G. contributed to interpretation of the data and provided major revisions to the article. Z.D.C. led the development and distribution of the survey, contributed to interpretations of the data, supervised the work, and provided major revisions to the article. All authors read and approved the final version of the article.

Disclaimer

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