

Associations of Disability and Social Support with Cannabis Use Among Adults with Anxiety and Depressive Symptoms

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ABSTRACT

Objective: People with (versus without) disabilities may be more likely to use cannabis medicinally, especially if they lack social support to cope with symptoms. However, associations of social support and disability with cannabis use remain largely unexplored. **Method:** Adults with clinically significant anxiety and/or depressive symptoms participating in a clinical trial completed a baseline survey assessing past-month medical and recreational cannabis use, self-perceived disability (yes/no), perceived social support, and sociodemographics. Regression models examined the association between disability and social support, and the main and interactive effects of disability and social support on past-month medical and recreational cannabis use, adjusting for race and ethnicity, gender, age, and income. **Results:** The sample ($N = 822$) was 25.3% American Indian, 25.1% Black, 25.1% White, and 24.6% Latinx (64.6% female; $M_{age} = 38.3$ [$SD = 12.8$]). Half (51.1%) self-reported a health condition that limited activities (i.e., disability); 24.9% reported past-month medical cannabis use, and 25.4% reported past-month recreational cannabis use. Participants with a self-reported disability reported lower average social support than those without ($p = .031$). A significant ($p = .045$) disability X social support interaction indicated that social support was associated with lower odds of medical cannabis use among those without ($p = .038$), but not with ($p = .525$), disability. Disability and social support were not significantly associated with recreational cannabis use (p -values $> .05$). **Conclusions:** Individuals with disabilities had elevated odds of using medical cannabis, regardless of social support. Social support is imperative for well-being, and cannabis use may alleviate some symptoms; however, more accessible, comprehensive healthcare may be needed to support individuals with disabilities.

Key words: = disability; social support; cannabis; anxiety; depression

As of 2024, medical cannabis use is legal in 37 United States (US) states, 24 of which have also legalized recreational use (Breen & Johnston,

2024). Rising availability and use prevalence of cannabis for medical and recreational purposes may have both positive and negative effects on

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public health. Legalization has coincided with increased potency of cannabis products and increased prevalence of cannabis use disorder (Chiu et al., 2021). However, cannabis may have health benefits for certain health conditions and symptoms, including multiple sclerosis, treatment-resistant epilepsy, chemotherapy-induced nausea, and chronic pain (Fischer et al., 2022; Stetten et al., 2020). Importantly, cannabis use can also exacerbate health conditions, including mood and anxiety disorders (Muheriwa-Matamba et al., 2024; Sorkhou et al., 2024; Stetten et al., 2020). Cannabis use prevalence is disproportionately high among individuals with (versus without) elevated anxiety and depressive symptoms (Rup et al., 2021). People with disabilities (i.e., limitations resulting from the interaction between an individual's impairments and the barriers in their physical and social environments) may be more likely to use cannabis than their peers without disabilities (Gimm et al., 2023; Goulet-Stock et al., 2017; Hasin et al., 2019; Yang et al., 2023). Understanding drivers of associations between disability and cannabis use among those with anxiety and depressive symptoms is crucial to informing interventions to meet the specific healthcare needs of this population (e.g., accessible mental and physical health support, psychoeducation on the effects of cannabis on mental health symptoms).

Adults with (versus without) disabilities are more likely to report a lack of social support (Centers for Disease Control and Prevention, 2023). Social support may include both emotional support (e.g., affirmation and processing of emotions) and instrumental support (e.g., assistance with completing tasks or paying for medical care; O'Brien, 1993; Scott & Haverkamp, 2014). Social support may promote positive health outcomes among individuals with disabilities, as receiving social support is associated with higher life satisfaction, better quality of life, lower pain severity, and better mental and behavioral health (Haegele et al., 2024; Saravanan et al., 2021; Scott & Haverkamp, 2014; Wei et al., 2023; Wu et al., 2024).

However, associations of social support with cannabis use among individuals with disabilities remain largely unexplored. In the absence of social support, individuals with disabilities may use cannabis to cope with the inaccessibility of social and physical environments. Indeed, low

social support is associated with greater odds of cannabis use and cannabis use disorder symptoms (Gliksberg et al., 2022; Gulliver & Fowler, 2022; Li & Rhubart, 2024; Studer et al., 2017). This issue is concerning because coping motives for cannabis use are associated with anxiety symptoms, depressive symptoms, and cannabis use disorder symptoms (Scarfe et al., 2022). If found to be associated with disability and cannabis use, social support is an actionable intervention target to reduce hazardous cannabis use patterns among individuals with elevated anxiety and depressive symptoms.

Differences in cannabis use by disability status may be driven by medical, rather than recreational, cannabis use (Goulet-Stock et al., 2017; Lin et al., 2016). People with (versus without) disabilities have greater healthcare needs on average (Kennedy et al., 2017) and may use medical cannabis to try to ameliorate symptoms, especially if their healthcare needs are not otherwise met (Goulet-Stock et al., 2017; Vogel et al., 2024). The distinction between medical and recreational cannabis use may be particularly blurred among individuals with depressive and anxiety symptoms. For example, using cannabis to elevate one's mood and relieve stress could be considered medical (i.e., to alleviate depressive and anxiety symptoms), recreational (i.e., to feel happy and relaxed), or both. Indeed, research suggests that depressive and anxiety symptoms are more severe among individuals reporting medical than recreational cannabis use (Turna et al., 2020), despite the highly prevalent perception that cannabis use relieves their mental health symptoms (Turna et al., 2019). Combining medical and recreational cannabis use may mask differences in medical cannabis use prevalence by disability status. Understanding associations among social support and self-perceived types of cannabis use among individuals with disabilities may help refine researchers' understanding of the needs that cannabis fills for individuals with disabilities who have anxiety and depressive symptoms (e.g., relief from loneliness, relief from symptoms). Therefore, it is important to measure medical cannabis use and recreational cannabis use separately.

The present study, a secondary analysis of a large study (Garey et al., 2022), examined associations of disability status and perceived social support with current medical cannabis use

and current recreational cannabis use in a sample of US adults with clinically significant anxiety and/or depressive symptoms. Consistent with nationally representative data (Centers for Disease Control and Prevention, 2023), we hypothesized that individuals with (versus without) disabilities would have, on average, lower perceived social support. We predicted that individuals with disabilities and individuals with lower social support would have greater odds of medical cannabis use. Lastly, we explored the disability X social support interaction on medical cannabis use, explored associations of disability and perceived social support with recreational cannabis use, and conducted sensitivity analyses examining associations of disability and social support with cannabis use days among participants reporting current use.

METHODS

Participants and Procedures

Data were derived from the baseline survey of the Easing Anxiety Sensitivity for Everyone (EASE) Study, a two-arm randomized controlled trial of a novel smartphone app for adults experiencing clinically significant anxiety and/or depressive symptoms (Garey et al., 2022). Purposive, quota-based sampling was used to recruit approximately equal distributions of participants from four racial and ethnic groups: American Indian, Black/African American, Hispanic/Latinx, and Non-Hispanic (NH) White. Eligibility criteria were clinically significant anxiety and/or depressive symptoms, defined as scoring 8+ on the Overall Anxiety Severity and Impairment Scale (Campbell-Sills et al., 2009) and/or the Overall Depression Severity and Impairment Scale (Bentley et al., 2014); aged 18+ years; self-identification as Black, Hispanic, American Indian, or NH White; English literacy; and willingness to complete all study assessments.

Participants were recruited from community organizations and online advertisements for a 6-month intervention during which participants engaged with their assigned smartphone app (EASE or a mindfulness/relaxation-based comparator; Garey et al., 2022). Participants also completed a baseline survey, two brief daily surveys during the 6-month intervention, and follow-up surveys and interviews

at 3- and 6-months post-randomization. Further details have been published previously (Garey et al., 2022). Baseline data were used in the present analysis. Study procedures were approved by the University of Oklahoma Health Campus Institutional Review Board (# STUDY00002802) and adhered to ethical guidelines. All participants provided informed consent.

Measures

Outcomes. Current medical cannabis use and current recreational cannabis use were measured with two items: “In the past 30 days, on how many days did you use marijuana/cannabis *for medical reasons* (e.g., to treat or decrease symptoms of a health condition) / *for non-medical reasons* (e.g., for pleasure or satisfaction, to have fun)?” (0-30; dichotomized for primary analyses as no [0 days] versus any [1-30 days] use).

Primary Predictors. Disability was measured with: “Are you limited in any way in activities because of physical, mental, or emotional problems?” (yes/no; Centers for Disease Control and Prevention, 2017). Perceived social support was measured with the Perceived Social Support Questionnaire (Kliem et al., 2015), a 6-item measure of perceived availability of social support (score range: 6-24; $\alpha = .86$). Sample items include, “There is someone very close to me whose help I can always count on” and “If I’m very depressed, I know who I can turn to” (1 = definitely false, 4 = definitely true).

Secondary Predictor. Disability severity from anxiety and depressive symptoms was captured with 4 items measuring past-month impairment from anxiety and depression symptoms in: 1) work performance, 2) household maintenance, 3) social interactions, and 4) relationships (1 = strongly disagree, 5 = strongly agree; score range: 0-5; $\alpha = .77$).

Sociodemographic *Covariates.*
Sociodemographic characteristics measured included race and ethnicity (American Indian, Black, Hispanic/Latinx, NH White), sex assigned at birth (male, female), age, marital status (married or cohabitating versus single, divorced, widowed, or separated), household income (0 = less than \$9,999; 8 = \$80,000 or greater; measured in increments of \$9,999 and dichotomized at “less than \$50,000” versus “\$50,000 or more” because approximately half reported income below

\$50,000), and urban/rural residence, determined by ZIP code and classified using the Rural-Urban Commuting Area (RUCA) codes (U.S. Department of Agriculture Economic Research Service, 2023).

Statistical Analysis

Bivariate analyses (i.e., chi-square tests, one-way ANOVAs, independent-samples t-tests, Pearson's correlations) examined associations of sociodemographic characteristics with outcome variables. Sociodemographic characteristics associated with one or more outcome variables were included as covariates in all models. Missing data were minimal. A subset of participants ($n = 29$) selected "refuse to answer" on the income item. They were retained in the models using a missing indicator approach (i.e., assigning a numeric code to the "refuse to answer" response category).

Primary analyses consisted of adjusted, multivariable linear and logistic regression models examining: 1) the association of disability with perceived social support (linear), and 2) main and interactive effects of disability and perceived social support on past-month medical cannabis use (logistic) and past-month recreational cannabis use (logistic). SPSS PROCESS Macro Model 1 was used to probe significant interactions. Secondary analyses were parallel to the primary analyses, but substituted disability severity from anxiety and depressive symptoms (mean-centered) for the binary disability item.

Among those who use cannabis, frequency of use may differ by disability status and social support. As such, two sensitivity analyses were conducted among participants reporting any past-month: 1) medical, and 2) recreational, cannabis use. Adjusted, multivariable negative binomial regression models examined main and interactive effects of disability status (yes/no) and perceived social support on past-month cannabis use days (1-30 days).

RESULTS

Participant Characteristics

The sample ($N = 822$) was 25.3% American Indian, 25.1% Black, 25.1% NH White, and 24.6% Latinx (64.6% female; $M_{age} = 38.3$ [$SD = 12.8$]). Most (85.9%) lived in urban areas; 37.7% were married or cohabitating; 53.5% had an annual household income of less than \$50,000. Half (51.1%) had a self-reported disability. Perceived social support averaged 16.7 ($SD = 4.6$) on a scale of 6 (low) to 24 (high). Approximately one-fourth of the sample reported past-month medical (24.9%) and recreational (25.4%) cannabis use. In the full sample, most participants (67.5%) reported no cannabis use, 7.5% used recreationally but not medically, 7.1% used medically but not recreationally, and 17.9% used both medically and recreationally ($\phi = 0.61$, $p < .001$).

Bivariate Associations

In bivariate analyses (Table 1), sociodemographic correlates of disability included American Indian race ($p = .017$), older age ($p < .001$), and household income less than \$50,000 ($p = .002$). Higher social support was associated with White race ($p = .002$), younger age ($p = .006$), being married/cohabitating ($p < .001$), and household income less than \$50,000 ($p < .001$). Past-month medical cannabis use was associated with American Indian race ($p < .001$), male sex ($p = .036$), and household income less than \$50,000 ($p = .001$). Past-month recreational cannabis use had the same correlates as medical cannabis use (p -values $< .031$), plus younger age ($p < .001$).

Table 1. *Participant Characteristics and Bivariate Associations of Sociodemographic Characteristics with Disability and Alcohol And Cannabis Use (N = 822).*

	Full Sample	Disability			Perceived social support		Past-month medical cannabis use			Past-month recreational cannabis use		
		Yes (n = 420)	No (n = 402)	p	Test stat	p	Yes (n = 205)	No (n = 617)	p	Yes (n = 209)	No (n = 613)	p
Race and ethnicity				.017	4.81	.002	-	-	<.001	-	-	.005
Black	25.1% (206)	23.1% (97) ^a	27.1% (109) ^a				17.6% (36) ^a	27.6% (170) ^b		19.1% (40) ^a	27.1% (166) ^b	
American Indian	25.3% (208)	30.0% (126) ^a	20.4% (82) ^b				36.1% (74) ^a	21.7% (134) ^b		33.5% (70) ^a	22.5% (138) ^b	
Latinx	24.6% (202)	22.9% (96) ^a	26.4% (106) ^a				20.0% (41) ^a	26.1% (161) ^a		25.8% (54) ^a	24.1% (148) ^a	
Non-Hispanic White	25.1% (206)	24.0% (101) ^a	26.1% (105) ^a				26.3% (54) ^a	24.6% (152) ^a		21.5% (45) ^a	26.3% (161) ^a	
Sex assigned at birth (%/n female)	64.6% (531)	67.6% (284)	61.4% (247)	.064	1.17	.243	58.5% (120)	66.6% (411)	.036	55.5% (116)	67.7% (415)	.001
Age	38.3 (12.8)	39.8 (13.2)	36.8 (12.1)	<.001	-.10	.006	37.8 (11.4)	38.5 (13.2)	.485	35.0 (11.2)	39.5 (13.1)	<.001
Married or cohabitating (%/n unmarried)	37.7% (310)	35.7% (150)	39.8% (160)	.227	-3.85	<.001	39.5% (81)	37.1% (229)	.540	34.9% (73)	38.7% (237)	.336
Residence (%/n urban)	85.9% (706)	83.8% (352)	88.1% (354)	.080	1.72	.086	82.4% (169)	87.0% (537)	.102	84.7% (177)	86.3% (529)	.564
Household income				.002	13.70	<.001			.001			.030
< \$50,000	53.5% (440)	59.3% (249) ^a	47.5% (191) ^b				64.4% (132) ^a	49.9% (308) ^b		59.8% (125) ^a	51.4% (315) ^b	
\$50,000 +	42.9% (353)	37.1% (156) ^a	49.0% (197) ^b				33.7% (69) ^a	46.0% (284) ^b		35.4% (74) ^a	45.5% (279) ^b	
Unreported	3.5% (29)	3.6% (15) ^a	3.5% (14) ^a				2.0% (4) ^a	4.1% (25) ^a		4.8% (10) ^a	3.1% (19) ^a	
Disability (%/n yes)	51.1% (420)	-	-	-	-	-	-	-	-	-	-	-
Disability severity from anxiety and depressive symptoms (M/SD)	3.9 (0.7)	4.1 (0.6)	3.7 (0.8)	<.001	-.20	<.001	4.0 (0.7)	3.8 (0.7)	<.001	4.0 (0.6)	3.8 (0.7)	.002
Perceived social support (M/SD)	16.7 (4.6)	16.2 (4.7)	17.2 (4.5)	.002	-	-	-	-	-	-	-	-
Past-month medical cannabis use (%/n yes)	24.9% (205)	28.8% (121)	20.9% (84)	.009	1.67	.095	-	-	-	-	-	-
Medical cannabis use days (0-30, M/SD)	4.7 (9.9)	5.3 (10.5)	3.9 (9.2)	.042	-.08	.021	-	-	-	-	-	-
Past-month recreational cannabis use (%/n yes)	25.4% (209)	25.2% (106)	25.6% (103)	.899	1.88	.060	71.7% (147)	10.0% (62)	<.001	-	-	-
Recreational cannabis use days (0-30, M/SD)	3.3 (8.0)	3.4 (8.2)	3.1 (7.8)	.659	-.11	.001	-	-	-	-	-	-

Note. Each subscript letter denotes a subset of the column categories that do not significantly differ at the $p < .05$ level. Bolded p -values indicate a significant omnibus test at the $p < .05$ level.

Multivariable Associations among Disability Status, Social Support, and Cannabis Use

Participants with a self-reported disability had lower average social support than those without ($B = -.69$, $SE = .32$, $p = .031$; Table 2).

Black ($B = -1.06$, $SE = .45$, $p = .017$) and American Indian ($B = -1.21$, $SE = .45$, $p = .007$; versus NH White) race, older age ($B = -.03$, $SE = .01$, $p = .027$), and household income less than \$50,000 ($B = 1.52$, $SE = .33$, $p < .001$) were also associated with lower social support

Table 2. Association of Disability with Perceived Social Support ($N = 822$)

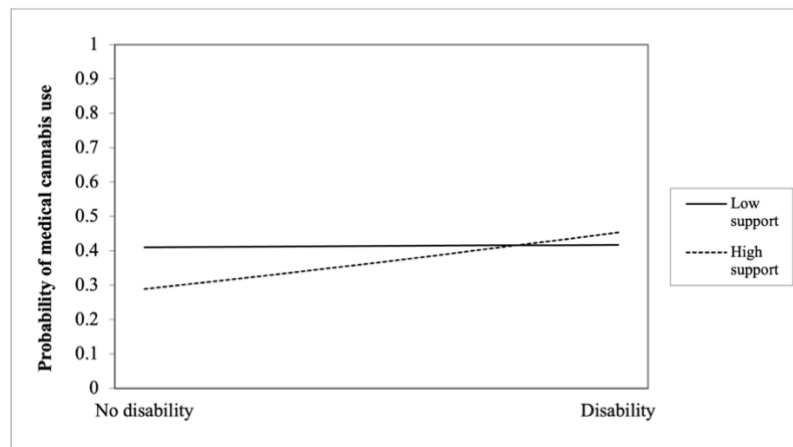
	$B(SE)$	p
Race and ethnicity (ref: Non-Hispanic White)		
Black	-1.06 (.45)	.017
American Indian	-1.21 (.45)	.007
Latinx	-.49 (.45)	.282
Gender (ref: female)	-.58 (.33)	.081
Age	-.03 (.01)	.027
Household income (ref: < \$50k)		
\$50,000 or more	1.52 (.33)	<.001
Unreported	.86 (.87)	.324
Disability (ref: no)	-.69 (.32)	.031

Note. Bolded p -values indicate a significant association ($p < .05$).

Having a disability (aOR = 1.45, 95% CI [1.04, 2.03], $p = .030$; Table 3) and having lower perceived social support (aOR = .94, 95% CI [.89, 1.00], $p = .038$) were associated with greater odds of medical cannabis use. A statistically significant disability X perceived social support interaction (aOR = 1.08, 95% CI [1.00, 1.16], $p = .045$) was observed (Figure 1). Simple slopes indicated that among those with a disability, social support was not associated with medical cannabis use ($B = .015$, $SE = .02$, $p = .525$). However, among those without a disability, higher social support was associated with lower odds of medical cannabis use ($B = -.06$, $SE = .03$, $p = .038$). Black (versus NH White; aOR = .55, 95% CI [.34, .90], $p = .016$) and male (versus female; aOR = 1.58, 95% CI [1.13,

2.22], $p = .008$) participants were statistically significantly more likely to use medical cannabis; higher-income participants were statistically significantly less likely (aOR = .57, 95% CI [.40, .81], $p = .002$). Disability and perceived social support were not statistically significantly associated with recreational cannabis use. American Indian (versus NH White; aOR = 1.77, 95% CI [1.12, 2.79], $p = .015$) and male (versus female; aOR = 1.85, 95% CI [1.32, 2.59], $p < .001$) participants were statistically significantly more likely to report recreational cannabis use; older (aOR = .97, 95% CI [.95, .98], $p < .001$) and higher-income (aOR = .66, 95% CI [.47, .93], $p = .019$) participants were less likely.

Figure 1. Disability Status X Social Support Interaction on Medical Cannabis Use



Note. "Low" and "High" social support were -1 and $+1$ standard deviations from the mean, respectively. Social support was mean-centered such that $M = 0$, $SD = 4.62$. Odds ratios were converted to predicted probabilities. Simple slopes were tested using the PROCESS Macro for SPSS, Model 1 (Hayes, 2013). The interaction was plotted in accordance with Dawson (2014).

Table 3. Associations of Disability and Perceived Social Support with Medical And Recreational Cannabis Use (N = 822)

	Medical cannabis use		Recreational cannabis use	
	AOR (95% CI)	<i>p</i>	AOR (95% CI)	<i>p</i>
Race and ethnicity (ref: Non-Hispanic White)				
Black	.55 (.34, .90)	.016	.81 (.49, 1.33)	.403
American Indian	1.39 (.90, 2.15)	.139	1.77 (1.12, 2.79)	.015
Latinx	.64 (.40, 1.03)	.067	1.09 (.68, 1.75)	.719
Gender (ref: female)	1.58 (1.13, 2.22)	.008	1.85 (1.32, 2.59)	<.001
Age	.99 (.98, 1.00)	.101	.97 (.95, .98)	<.001
Household income (ref: < \$50k)				
\$50,000 or more	.57 (.40, .81)	.002	.66 (.47, .93)	.019
Unreported	.35 (.12, 1.03)	.057	1.15 (.51, 2.64)	.734
Disability (ref: no)	1.45 (1.04, 2.03)	.030	.98 (.70, 1.37)	.903
Perceived social support	.94 (.89, 1.00)	.038	.95 (.90, 1.00)	.073
Disability X perceived social support	1.08 (1.00, 1.16)	.045	1.03 (.96, 1.10)	.473

Note. Bolded *p*-values indicate a significant association ($p < .05$).

In secondary analyses, greater disability severity from anxiety and depressive symptoms was statistically significantly associated with lower social support ($B = -1.21$, $SE = .22$, $p < .001$). Disability severity was also associated with greater odds of medical cannabis use (aOR=1.42, 95% CI [1.10, 1.83], $p = .007$) and recreational cannabis use (aOR = 1.40, 95% CI [1.09, 1.82], $p = .010$). However, there were no main effects of social support on medical or recreational cannabis use (p -values $> .186$), nor disability severity by social support interactions (p -values $> .738$).

Sensitivity Analyses

Among participants reporting any past-month medical cannabis use, there were no statistically significant main effects of disability (IRR = 1.04, 95% CI [0.77, 1.41], $p = .789$) nor social support (IRR = 0.99, 95% CI [0.94, 1.03], $p = .558$) in relation to days of use. There was no statistically significant disability X social support interaction (IRR= 1.00, 95% CI [0.94, 1.07], $p = .949$) in relation to days of use. Similarly, among participants reporting any past-month recreational cannabis use, disability was not associated with days of use (IRR = 0.90, 95% CI [0.66, 1.22], $p = .481$) nor social support (IRR = 0.98, 95% CI [0.94, 1.03], $p = .507$). The disability X social support interaction was not statistically significant (IRR = 0.98, 95% CI [0.91, 1.04], $p = .486$) in relation to days of recreational cannabis use.

DISCUSSION

In a sample of US adults with clinically significant anxiety and/or depressive symptoms, odds of medical cannabis use differed by disability status and perceived social support. Among participants with disabilities, odds of medical cannabis use did not differ based on perceived social support. However, among participants without disabilities, higher perceived social support was associated with lower odds of medical cannabis use. Recreational cannabis use was not associated with disability or social support.

The lack of a statistically significant association between social support and medical cannabis use among people with disabilities suggests that social support and medical cannabis use may meet different needs. People with disabilities may use medical cannabis to try to alleviate symptoms when other medical care has been ineffective or inaccessible (Garcia-Romeu et al., 2022; Vogel et al., 2024), while using social support for general well-being. Disability was not associated with recreational cannabis use, consistent with prior literature suggesting that disability was only overrepresented among people who use cannabis medicinally, not among people who use recreationally (Goulet-Stock et al., 2017). Reasons for cannabis use (medical versus recreational) were self-reported, and do not necessarily reflect differences in actual use behavior (e.g., products, dosing, desired effects; Bostwick, 2012). People with (versus without) disabilities may be more likely to attribute their cannabis use to a desire for symptom relief. Disability severity from anxiety and depressive

symptoms was significantly associated with both medical and recreational cannabis use. The line between medical and recreational cannabis use may be blurrier for individuals who are using cannabis to alleviate mental health symptoms. For example, using cannabis to elevate one's mood could be aimed at alleviating depression (i.e., medical use) or simply feeling good (i.e., recreational use).

All participants in this study had clinically significant anxiety and/or depressive symptoms, which may be ameliorated by social support (Roohafza et al., 2014). For participants who did not perceive their mental or physical health conditions as reaching the threshold of disability, social support may be greatly beneficial in relieving their mental health symptoms. Although social support likely benefits individuals with disabilities (Haegele et al., 2024; Saravanan et al., 2021; Scott & Haverkamp, 2014; Wei et al., 2023; Wu et al., 2024), results suggest that social support may not mitigate the need to use cannabis to treat medical symptoms. Other structural-level interventions may be needed, particularly improving healthcare access for individuals with disabilities, who may face multiple barriers to receiving care (e.g., lack of transportation, inaccessible healthcare facilities, limited availability of specialists; Meade et al., 2015).

In secondary analyses, disability severity from depressive and anxiety symptoms was significantly associated with lower perceived social support. Individuals with severe symptoms may struggle with socializing due to factors such as low energy, low motivation, poor self-perceptions, or strained relationships (Hajek et al., 2025). Social isolation can lead to lower social support and further worsen anxiety and depressive symptoms (Magomedova & Fatima, 2025). Lower perceived social support observed among adults with (versus without) disabilities is consistent with hypotheses and with nationally representative data (Centers for Disease Control and Prevention, 2023). On average, individuals with disabilities may experience greater loneliness than their peers (Emerson et al., 2021), due to inaccessibility of spaces and social situations that may have provided opportunities for social support (Bell & Clegg, 2012; Rokach et al., 2006).

In addition to disability and social support, cannabis use may be influenced by factors such as

minority stress (i.e., prejudice, discrimination, internalized stigma and other negative sociopsychological experiences based on one's stigmatized identity; Meyer, 2003) and high density of cannabis retail outlets in marginalized communities (Buckner et al., 2023; Cohn et al., 2023; Firth et al., 2022). In this study, Black and American Indian participants were more likely than NH White participants to report medical or recreational cannabis use. People of color are also affected by health inequities stemming from minority stressors such as discrimination in healthcare settings and socioeconomic disparities (Bailey et al., 2017). As cannabis legalization becomes increasingly widespread, ongoing attention should be paid to inequities in healthcare access and cannabis use.

Limitations

This study recruited a nationwide, racially and ethnically diverse sample of adults with anxiety and depressive symptoms, both with and without disabilities. However, results should be interpreted considering several limitations. First, past-month medical and recreational cannabis use were dichotomized for primary analyses, due to the relatively low prevalence of cannabis use in the sample, and we did not collect data on cannabis dependence symptoms. Future research should examine associations of disability and social support with cannabis dependence symptoms in a larger sample of adults who use cannabis. Second, participants were not asked which health condition(s), if any, limited their activities. Disability is not monolithic, and some disabilities may be more strongly associated with cannabis use than others. For example, while most adolescents with disabilities display greater risk for cannabis use than their peers without disabilities, one study suggested that those with self-care limitations may not display such risk (Schulz et al., 2024). Among US adults, population prevalence of cannabis use increased more rapidly among those with (versus without) disabilities related to hearing, walking, multiple impairments, and kidney disease (Yang et al., 2023). Although all participants had clinically significant mental health symptoms, some may have reported having a disability due to physical health symptoms, or both mental and physical health symptoms. Only half reported having a

disability, suggesting that despite their clinically significant anxiety and/or depressive symptoms, not all participants experienced limitations in their activities. The single-item measure of disability was intentionally broad, to capture the range of limitations an individual may experience when interacting with their environments; however, future research should include survey items on the type(s) of disabilities participants experience. Third, cannabis use among adults with clinically significant anxiety and/or depressive symptoms may differ from peers without these symptoms. Results should not be generalized to all US adults. Fourth, this study was cross-sectional, and causality could not be inferred. Longitudinal research is needed to examine temporal ordering of associations among disability, social support, and cannabis use.

Conclusions

Cannabis use may have both health benefits (e.g., pain relief, reduced seizure activity) and health harms (e.g., cannabis use disorder, worsened anxiety and depressive symptoms) (Chiu et al., 2021; Fischer et al., 2022; Muheriwa-Matamba et al., 2024; Sorkhou et al., 2024; Stetten et al., 2020). Results suggest that among adults with clinically significant anxiety and/or depressive symptoms, individuals with disabilities have elevated odds of using medical cannabis, regardless of how much social support they perceive having. Social support has been shown to increase well-being (Haeghele et al., 2024; Saravanan et al., 2021; Wei et al., 2023; Wu et al., 2024) and cannabis use may provide some symptom relief (Fischer et al., 2022; Stetten et al., 2020). However, as cannabis legalization expands, improving the accessibility of comprehensive healthcare services may be needed to support individuals with disabilities.

REFERENCES

Bailey, Z. D., Krieger, N., Agénor, M., Graves, J., Linos, N., & Bassett, M. T. (2017). Structural racism and health inequities in the USA: evidence and interventions. *Lancet*, *389*(10077), 1453-1463. [https://doi.org/10.1016/S0140-6736\(17\)30569-X](https://doi.org/10.1016/S0140-6736(17)30569-X)

- Bell, B. G., & Clegg, J. (2012). An ecological approach to reducing the social isolation of people with an intellectual disability. *Ecological Psychology*, *24*, 159-177. <https://doi.org/10.1080/10407413.2012.673983>
- Bentley, K. H., Gallagher, M. W., Carl, J. R., & Barlow, D. H. (2014). Development and validation of the Overall Depression Severity and Impairment Scale. *Psychological Assessment*, *26*(3), 815-830. <https://doi.org/10.1037/a0036216>
- Bostwick, J. M. (2012). Blurred boundaries: The therapeutics and politics of medical marijuana. *Mayo Clinic Proceedings*, *87*(2), 172-186. <https://doi.org/10.1016/j.mayocp.2011.10.003>
- Breen, K., & Johnston, T. (2024). *Maps show states where weed is legal for recreational, medical use in 2024*. *CBS News*. <https://www.cbsnews.com/news/legal-weed-map-states/>
- Buckner, J. D., Zvolensky, M. J., & Scherzer, C. R. (2023). Microaggressions and cannabis-related problems among Black adults: The roles of negative affect and cannabis use motives. *Cognitive Therapy and Research*. <https://doi.org/10.1007/s10608-023-10375-8>
- Campbell-Sills, L., Norman, S. B., Craske, M. G., Sullivan, G., Lang, A. J., Chavira, D. A., Bystriksky, A., Sherbourne, C., Roy-Byrne, P., & Stein, M. B. (2009). Validation of a brief measure of anxiety-related severity and impairment: the Overall Anxiety Severity and Impairment Scale (OASIS). *Journal of Affective Disorders*, *112*(1-3), 92-101. <https://doi.org/10.1016/j.jad.2008.03.014>
- Centers for Disease Control and Prevention. (2017). *CDC - 2015 BRFSS Survey Data and Documentation*. National Center for Chronic Disease Prevention and Health Promotion. Retrieved 29 April 2025 https://www.cdc.gov/brfss/annual_data/annual_1_2015.html
- Centers for Disease Control and Prevention. (2023). QuickStats: Percentage of adults aged ≥18 years who rarely or never get the social and emotional support they need, by sex and disability status - National Health Interview Survey, United States, 2021. *MMWR Morbidity and Mortality Weekly Report*, *72*(47), 1292. <https://doi.org/10.15585/mmwr.mm7247a4>

- Chiu, V., Leung, J., Hall, W., Stjepanović, D., & Degenhardt, L. (2021). Public health impacts to date of the legalisation of medical and recreational cannabis use in the USA. *Neuropharmacology*, *193*, 108610. <https://doi.org/10.1016/j.neuropharm.2021.108610>
- Cohn, A. M., Sedani, A., Niznik, T., Alexander, A., Lowery, B., McQuoid, J., & Campbell, J. (2023). Population and neighborhood correlates of cannabis dispensary locations in Oklahoma. *Cannabis*, *6*(1). <https://doi.org/10.26828/cannabis/2023.01.008>
- Dawson, J. F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology*, *29*(1), 1-19. <https://doi.org/10.1007/s10869-013-9308-7>
- Emerson, E., Fortune, N., Llewellyn, G., & Stancliffe, R. (2021). Loneliness, social support, social isolation and wellbeing among working age adults with and without disability: Cross-sectional study. *Disability and Health Journal*, *14*, 100965. <https://doi.org/10.1016/j.dhjo.2020.100965>
- Firth, C. L., Warren, K. M., Perez, L., Kilmer, B., Shih, R. A., Tucker, J. S., D'Amico, E. J., & Pedersen, E. R. (2022). Licensed and unlicensed cannabis outlets in Los Angeles County: the potential implications of location for social equity. *Journal of Cannabis Research*, *4*(1), 18. <https://doi.org/10.1186/s42238-022-00120-5>
- Fischer, B., Robinson, T., Bullen, C., Curran, V., Jutras-Aswad, D., Medina-Mora, M. E., Pacula, R. L., Rehm, J., Room, R., van den Brink, W., & Hall, W. (2022). Lower-Risk Cannabis Use Guidelines (LRCUG) for reducing health harms from non-medical cannabis use: A comprehensive evidence and recommendations update. *International Journal of Drug Policy*, *99*, 103381. <https://doi.org/10.1016/j.drugpo.2021.103381>
- Garcia-Romeu, A., Elmore, J., Mayhugh, R. E., Schlienz, N. J., Martin, E. L., Strickland, J. C., Bonn-Miller, M., Jackson, H., & Vandrey, R. (2022). Online survey of medicinal cannabis users: Qualitative analysis of patient-level data. *Frontiers in Pharmacology*, *13*, 965535. <https://doi.org/10.3389/fphar.2022.965535>
- Garey, L., Zvolensky, M. J., Gallagher, M. W., Vujanovic, A., Kendzor, D. E., Stephens, L., Cheney, M. K., Cole, A. B., Kezbers, K., Matoska, C. T., Robison, J., Montgomery, A., Zappi, C. V., & Businelle, M. S. (2022). A smartphone-based intervention for anxiety and depression in racially and ethnically diverse adults (EASE): Protocol for a randomized controlled trial. *JMIR Research Protocols*, *11*(12), e40713. <https://doi.org/10.2196/40713>
- Gimm, G., Parekh, T., & Kitsantas, P. (2023). Assessing the prevalence and risk factors of marijuana use in adults with disabilities. *Addictive Behaviors*, *138*, 107559. <https://doi.org/10.1016/j.addbeh.2022.107559>
- Glikberg, O., Livne, O., Lev-Ran, S., Rehm, J., Hasson-Ohayon, I., & Feingold, D. (2022). The association between cannabis use and perceived social support: the mediating role of decreased social network. *International Journal of Mental Health and Addiction*, *20*, 2799-2812. <https://doi.org/10.1007/s11469-021-00549-4>
- Goulet-Stock, S., Rueda, S., Vafaei, A., Ialomiteanu, A., Manthey, J., Rehm, J., & Fischer, B. (2017). Comparing medical and recreational cannabis users on socio-demographic, substance and medication use, and health and disability characteristics. *European Addiction Research*, *23*(3), 129-135. <https://doi.org/10.1159/000475987>
- Gulliver, T. L., & Fowler, K. (2022). Exploring social context and psychological distress in adult Canadians with cannabis use disorder: To what extent do social isolation and negative relationships predict mental health? *Psychiatric Quarterly*, *93*(1), 311-323. <https://doi.org/10.1007/s11126-021-09950-7>
- Haegele, J. A., Zhu, X., & Luginsland, L. A. (2024). The role of social support in the relationship between physical activity and health-related quality of life among adults with visual impairments. *Disability and Health Journal*, *17*(1), 101518. <https://doi.org/10.1016/j.dhjo.2023.101518>
- Hajek, A., Gyasi, R. M., Pengpid, S., Peltzer, K., Kostev, K., Soysal, P., Smith, L., Jacob, L., Veronese, N., & König, H. H. (2025). Prevalence of loneliness and social isolation amongst individuals with severe mental disorders: a systematic review and meta-analysis. *Epidemiology and Psychiatric Sciences*, *34*, e25. <https://doi.org/10.1017/S2045796025000228>

- Hasin, D. S., Shmulewitz, D., & Sarvet, A. L. (2019). Time trends in US cannabis use and cannabis use disorders overall and by sociodemographic subgroups: A narrative review and new findings. *The American Journal of Drug and Alcohol Abuse*, 45(6), 623-643.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis* (1 ed.). The Guilford Press.
- Kennedy, J., Wood, E. G., & Frieden, L. (2017). Disparities in insurance coverage, health services use, and access following implementation of the Affordable Care Act: A comparison of disabled and nondisabled working-age adults. *Inquiry: The Journal of Health Care Organization, Provision*, 54, 1-10. <https://doi.org/10.1177/0046958017734031>
- Kliem, S., Mößle, T., Rehbein, F., Hellmann, D. F., Zenger, M., & Brähler, E. (2015). A brief form of the Perceived Social Support Questionnaire (F-SozU) was developed, validated, and standardized. *Journal of Clinical Epidemiology*, 68(5), 551-562. <https://doi.org/10.1016/j.jclinepi.2014.11.003>
- Li, Y., & Rhubart, D. (2024). Cannabis use, social support and social engagement among working-age adults in rural America. *Preventive Medicine Reports*, 43, 102794. <https://doi.org/10.1016/j.pmedr.2024.102794>
- Lin, L. A., Ilgen, M. A., Jannausch, M., & Bohnert, K. M. (2016). Comparing adults who use cannabis medically to those who use recreationally: Results from a national sample. *Addictive Behaviors*, 61, 99-103. <https://doi.org/10.1016/j.addbeh.2016.05.015>
- Magomedova, A., & Fatima, G. (2025). Mental health and well-being in the modern era: A comprehensive review of challenges and interventions. *Cureus*, 17(1), e77683. <https://doi.org/10.7759/cureus.77683>
- Meade, M. A., Mahmoudi, E., & Lee, S. Y. (2015). The intersection of disability and healthcare disparities: a conceptual framework. *Disability and Rehabilitation*, 37(7), 632-641. <https://doi.org/10.3109/09638288.2014.938176>
- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, 129(5), 674-697. <https://doi.org/10.1037/0033-2909.129.5.674>
- Muheriwa-Matemba, S. R., Baral, A., Abdshah, A., Diggs, B. A., Gerber Collazos, K. S., Morris, K. B., Messiah, S. E., & Vidot, D. C. (2024). Cardiovascular and respiratory effects of cannabis use by route of administration: A systematic review. *Substance Use & Misuse*, 59(9), 1331-1351. <https://doi.org/10.1080/10826084.2024.2341317>
- O'Brien, M. T. (1993). Multiple sclerosis: the role of social support and disability. *Clinical Nursing Research*, 2(1), 67-85. <https://doi.org/10.1177/105477389300200107>
- Rokach, A., Lechcier-Kimel, R., & Safarov, A. (2006). Loneliness of people with physical disabilities. *Social Behavior and Personality*, 34(6), 681-700. <https://doi.org/10.2224/sbp.2006.34.6.681>
- Roohafza, H. R., Afshar, H., Keshteli, A. H., Mohammadi, N., Feizi, A., Taslimi, M., & Adibi, P. (2014). What's the role of perceived social support and coping styles in depression and anxiety? *Journal of Research in Medical Sciences*, 19(10), 944-949. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4274570/>
- Rup, J., Freeman, T. P., Perlman, C., & Hammond, D. (2021). Cannabis and mental health: Prevalence of use and modes of cannabis administration by mental health status. *Addictive Behaviors*, 121, 106991. <https://doi.org/10.1016/j.addbeh.2021.106991>
- Saravanan, A., Bajaj, P., Matthews, H. L., Tell, D., Starkweather, A., & Janusek, L. (2021). Social support is inversely associated with sleep disturbance, inflammation, and pain severity in chronic low back pain. *Nursing Research*, 70(6), 425-432. <https://doi.org/10.1097/NNR.0000000000000543>
- Scarfe, M. L., Muir, C., Rowa, K., Balodis, I., & MacKillop, J. (2022). Getting high or getting by? An examination of cannabis motives, cannabis misuse, and concurrent psychopathology in a sample of general community adults. *Substance Use: Research and Treatment*, 16, 11782218221119070. <https://doi.org/10.1177/11782218221119070>
- Schulz, J. A., Gimm, G., West, J. C., Kock, L., & Villanti, A. C. (2024). Patterns of alcohol, marijuana, and tobacco use among U.S. adolescents and young adults by disability

- status: 2015-2019. *Journal of Adolescent Health*, 74(4), 764-773. <https://doi.org/10.1016/j.jadohealth.2023.09.018>
- Scott, H. M., & Haverkamp, S. M. (2014). Mental health for people with intellectual disability: The impact of stress and social support. *American Journal on Intellectual and Developmental Disabilities*, 119(6), 552-564. <https://doi.org/10.1352/1944-7558-119.6.552>
- Sorkhou, M., Dent, E. L., & George, T. P. (2024). Cannabis use and mood disorders: a systematic review. *Frontiers in Public Health*, 12, 1346207. <https://doi.org/10.3389/fpubh.2024.1346207>
- Stetten, N., Pomeranz, J., Moorhouse, M., Yurasek, A., & Blue, A. V. (2020). The level of evidence of medical marijuana use for treating disabilities: a scoping review. *Disability and Rehabilitation*, 42(9), 1190-1201. <https://doi.org/10.1080/09638288.2018.1523952>
- Studer, J., Baggio, S., Dupuis, M., Mohler-Kuo, M., Daeppen, J. B., & Gmel, G. (2017). Substance use in young Swiss men: The interplay of perceived social support and dispositional characteristics. *Substance Use & Misuse*, 52(6), 798-810. <https://doi.org/10.1080/10826084.2016.1264966>
- Turna, J., Balodis, I., Munn, C., Van Amerigen, M., Busse, J., & MacKillop, J. (2020). Overlapping patterns of recreational and medical cannabis use in a large community sample of cannabis users. *Comprehensive Psychiatry*, 102, 152188. <https://doi.org/10.1016/j.comppsy.2020.152188>
- Turna, J., Simpson, W., Patterson, B., Lucas, P., & Van Amerigen, M. (2019). Cannabis use behaviors and prevalence of anxiety and depressive symptoms in a cohort of Canadian medicinal cannabis users. *Journal of Psychiatric Research*, 111, 134-139. <https://doi.org/10.1016/j.jpsychires.2019.01.024>
- U.S. Department of Agriculture Economic Research Service. (2023). *Rural-Urban Commuting Area Codes*. Retrieved 8 Oct 2024 <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/>
- Vogel, E. A., McQuoid, J., Romm, K. F., Kendzor, D. E., & Cohn, A. M. (2024). Unmet healthcare needs and medical cannabis use among sexual and gender minoritized adults in a high-stigma environment. *Journal of Homosexuality*. <https://doi.org/10.1080/00918369.2024.2302427>
- Wei, X., Wang, T., Zhang, Y., Jiang, N., Wang, Q., Cao, H., Shi, X., & Wang, J. (2023). The effect of anxiety, depression, and structural social capital on life satisfaction among people with hearing disabilities: a cross-sectional study in Shanghai, China. *Frontiers in Psychiatry*, 14, 1164324. <https://doi.org/10.3389/fpsy.2023.1164324>
- Wu, Y., Chen, J., Yin, G., Shen, M., & Li, Q. (2024). Mediated relationships between coping style and social support on the quality of life of disabled older adults. *International Journal of Nursing Practice*, e13279. <https://doi.org/10.1111/ijn.13279>
- Yang, K. H., Tam, R. M., Satybaldiyeva, N., Kepner, W., Han, B. H., Moore, A. A., & Palamar, J. J. (2023). Trends in past-month cannabis use among US adults across a range of disabilities and health conditions, 2015-2019. *Preventative Medicine*, 177, 107768. <https://doi.org/10.1016/j.ypmed.2023.107768>

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