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Cannabis use, comorbidities, and prescription medication use among older adults in a large healthcare system in Los Angeles, CA 2019-2020

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Abstract

Objective.—To describe the reported prevalence of cannabis use and co-use with prescription medications among older adult patients attending primary care (PC) clinics in Los Angeles, CA.

Methods.—We used electronic health record (EHR) data from sixty PC clinics part of a university-based, urban healthcare system. Patients' ≥ 50 years of age with an annual physical examination between July 2019 and May 2020 were eligible for inclusion (n=42,555). Cannabis use was assessed by clinic staff at the time of the visit and recorded in the EHR. We also used EHR data on clinical characteristics including current prescriptions and comorbidities.

Results.—The median age was 63 years (range: 50-101) and 56% were female. Recent cannabis use was reported by 7.6%, which was higher than tobacco use (4.0%; p<.01). Prevalence of cannabis use was higher among patients prescribed psychotropic medications. For instance, 10.9% of patients prescribed benzodiazepines reported cannabis use as compared to 7.3% among patients without a prescription for benzodiazepines (p<.01). Patients with neurologic/musculoskeletal medications such as antiepileptics also had a higher prevalence of cannabis use when compared to those without these prescriptions (13.6% vs. 7.6% respectively; p<.01) as did those who were prescribed muscle relaxants (10.3% vs. 7.5% respectively; p<.01). After adjusting for age, sex, race/ethnicity, and comorbidities those prescribed medications for psychiatric (adjusted OR=1.5;

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95% CI 1.4-1.7), respiratory (adjusted OR=1.2; 95% CI 1.1-1.3), or neurologic conditions (adjusted OR=1.4; 95% CI 1.2-1.5) had increased odds of cannabis use compared to those not prescribed these medications.

Discussion.—The prevalence of cannabis use among older adults attending PC clinics in a university-based healthcare system was higher among those prescribed medications, which may interact with cannabis. These findings suggest that key groups of older patients who may benefit from routine PC screening for cannabis use and brief advice.

Keywords

Cannabis; epidemiology; primary care

INTRODUCTION

In the United States, as of 2021 the number of states allowing for recreational cannabis use has expanded to include eighteen states, two territories, and the District of Columbia, with an additional 36 states allowing for medical use.[1] The timeline of expansion of policies decriminalizing cannabis use overlaps with the aging of a generation – namely baby boomers – with higher rates of lifetime experience with substance use and more accepting attitudes towards cannabis compared to earlier generations.[2–4] The increasing ease of access combined with the decreasing perception of harm related to cannabis use suggest the potential for initiation, re-initiation, or continued use and misuse among this population.[5–7] Indeed this is supported by a number of population-based studies demonstrating increases in cannabis use among older adults, which outpaces increases observed across younger age groups.[3,8–10] For instance, data from the National Survey on Drug Use and Health (NSDUH) showed a 71% increase in past-year cannabis use among those 50 years and older, with a staggering 250% increase among those 65 and older.[9]

Although cannabis use is increasing among older adults, the estimated prevalence remains lower than that seen among younger populations. Based on 2019 data from the NSDUH the estimated prevalence of past-year cannabis use was 8.6% among those 50-64 and 3.3% among those ≥65 years of age, compared to a high of 22.6% among those who were 21 years of age.[11] Even though the estimated prevalence of use is lower among older adults, factors associated with cannabis use are comparable to those seen among younger people. For instance, older cannabis users are more likely to be male, report social vulnerabilities such as criminal justice involvement and unstable housing, experience other life stressors and psychologic stress, and report use of other substances when compared to older adults who do not report cannabis use.[10,12,13] Unique to older adults is the potential for increased negative health outcomes associated with cannabis use given that older adults are more likely to have underlying medical conditions and prescription medications. This, along with other physiologic changes resulting from aging have the potential to lead to negative health outcomes related to cannabis use among this population.

Studies examining the benefits of cannabis for medicinal use are emerging; however, few large-scale studies that move beyond self-reported measures of health have considered the association between cannabis use and health among older adults.[14–16] Therefore, the

objective of this study was to describe the prevalence of cannabis use, medical conditions, and corresponding prescription medications among adults 50 years or older receiving primary care through a large university-based, healthcare system in Los Angeles, CA

METHODS

Study setting and design

The healthcare system which serves as the setting for this study encompasses a large and geographically diverse area covering 2,500 square miles, over 200 clinics, four hospitals, and more than 670,000 unique patients seen per year.[17] Within this system, primary care clinics, which includes family and internal medicine including geriatrics, pediatrics, and obstetrics & gynecology, provide care through sixty outpatient clinics with over 1,500 providers and an estimated 250,000 unique patients annually (unpublished health system data). We conducted a cross sectional study using electronic health record (EHR) data from patients attending primary care clinics within this health system. Those eligible for inclusion in this analysis were: (1) ≥ 50 years of age; (2) were seen at one of the primary care clinics within the health system; and (3) had an annual physical examination or well-visit between July 2019 and May 2020. Current cannabis use is assessed at the time of the annual physical examination, which is the reason this visit type served as the basis for inclusion in the study. The study was approved by the institutional review board at the University of California, Los Angeles. The need for informed consent was waived by the ethics committee.

Data collection and measures

Current cannabis use—During annual physical examination visits, patients are asked to report on their substance use including tobacco, alcohol, and other substances. This assessment is conducted by clinical staff in a face-to-face manner with reports of substance use consisting of both structured and free-text fields. Specifically, patients are asked if they have ever used any substances from a listing of over thirty drugs including cannabis, methamphetamine, and opioids. Those reporting yes to a history of use of any of the substances are asked about current use with free-text fields capturing frequency of use and other contextual factors surrounding substance using behaviors. An explicit timeframe for the assessment of current cannabis use is not specified in the EHR; however, the intent is to capture use that is temporally relevant to current health outcomes with most providers interpreting this as cannabis use in the past one- to three-months.

Current diagnoses and comorbidities—Clinical characteristics including current prescriptions and comorbidities associated with the visit in which substance use was assessed was also abstracted from the EHR. Comorbidities of interest included medical diagnoses in the following domains: circulatory system disorders, digestive system disorders, endocrine and metabolic disorders, mental and behavioral disorders, musculoskeletal system disorders, nervous system disorders, and respiratory diseases. Diagnoses of these conditions were based on the International Classification of Diseases, Tenth Revision (ICD-10) and a full listing of conditions considered for this analysis along with the codes are provided as part of supplementary material (Supplement Table 1).

Current prescription medications—The EHR was also used to abstract information on a listing of prescribed medications corresponding to the visit. This included current prescriptions for: cardiovascular, gastrointestinal, respiratory, psychiatric, and neurologic medications. A listing of the nearly 300 medications included as well as the categories assigned to each medication are provided in the supplement (Supplement Table 2).

Analytic strategy

Univariate analyses provided descriptive statistics for the sample overall and by age group. The primary outcome of interest (i.e., dependent variable) was cannabis use. Differences in the prevalence of cannabis use by demographic and clinical characteristics were based on t-tests, Fisher's exact test, chi-square methods, and non-parametric tests as appropriate. Associations between factors associated with cannabis use including prescription medications and age (i.e., independent variables) were examined using logistic regression analysis. In addition to sex and race/ethnicity, multivariable models adjusted for comorbidities using the Charlson Comorbidity Index (CCI) – a morbidity score validated in clinical settings.[18] The CCI score is based on nineteen medical conditions, with each condition being assigned a weighted score. A scoring algorithm using ICD-10 codes was utilized and each patient was assigned a CCI score.[19] All analyses were conducted using SAS version 9.4 (SAS Inc., Cary, NC).

RESULTS

Characteristics of the study population

Among the 106,370 patients seen in primary care during the study period, 45,240 patients met the eligibility criteria and among this group 42,455 patients (93.8%) had data on cannabis use and were included in this analysis. The median age was 63 years (range: 50-101), more were female (55.6%) and White/Caucasians comprised the single largest racial/ethnic group (66.3%) (Table 1). Overall, 7.6% of patients reported current cannabis use, which was higher than tobacco use (4.0%). However, the prevalence of cannabis use was higher among those who reported tobacco use as compared to those who did not report tobacco use (17.3% vs. 7.2% respectively; $p<.01$). Cannabis use was also higher among those in the younger age groups, declining to 2.0% among those aged 85 years or older (Table 2). The prevalence of cannabis use was higher among men compared to women (10.4% vs. 5.6%, respectively; $p<.01$) and varied by race/ethnicity with a higher prevalence of cannabis use reported by those who identified as White/Caucasian (8.4%) or African American/Black (8.8%) and lowest among those who identified as Asian (2.5%; $p<.01$).

Prevalence of cannabis use by clinical characteristics

The prevalence of cannabis use for each of the seven categories of comorbidities considered in this study are presented in Table 3. Overall, those who were diagnosed with a circulatory system condition had a lower prevalence of cannabis use when compared to those without these diagnoses (8.1% vs. 6.8%; $p<.01$)(Table 3). However, closer examination of specific conditions reveals a diagnosis of cerebrovascular disease was the exception, with those with a current diagnosis of this condition having a higher prevalence of cannabis use (12.5% vs. 7.6%; $p=0.04$). While no differences were noted in terms of prevalence of

cannabis use among those with and without asthma (8.1% vs. 7.6% respectively; p=0.48), cannabis use was significantly higher for those diagnosed with COPD (11.4% vs. 7.6% respectively; p=0.04) or emphysema (11.9% vs. 7.6% respectively; p=0.04). The highest levels of cannabis use was reported among those diagnosed with alcohol or opioid use disorders, with 20.4% of patients diagnosed with an alcohol use disorder reporting cannabis use as compared to 7.5% among patients without an alcohol use disorder (p<.01). Prevalence of cannabis use was also higher among those diagnosed with other mental health issues including anxiety disorders (9.6% vs. 7.5% respectively; p<.01) and depressive disorders (11.2% vs. 7.4% respectively; p<.01). These analyses were repeated for each age category (combining the two older age categories because of small sample sizes) and are included as part of supplementary material (Supplement Table 3). The age stratified analyses are comparable to findings from the overall analysis, with some subtle differences. In particular, we find that: (1) prevalence of cannabis use is lower among those diagnosed with circulatory system diseases, regardless of age; and (2) patterns of cannabis use overall and by age group are comparable among those with diagnoses of respiratory conditions, mental health conditions, or endocrine disorders; however, the smaller cells sizes in the older age group (i.e., ≥ 75 years) limits the power to detect statistically meaningful differences.

The prevalence of cannabis use also varied by current prescription medications (Table 4). Overall, those with a current prescription for medications used for cardiovascular disease had a lower prevalence of cannabis use (6.9%) as compared to those without a current prescription for cardiovascular medications (8.1%; p<.01)(Table 4). Regarding respiratory medications, nearly 9% of patients with prescriptions for inhaled short acting beta agonist and anticholinergics reported cannabis use, which was higher than those without a prescription for these medications (7.5%; p=0.03). By far, the highest prevalence of cannabis use was reported among those who had a current prescription for psychiatric and/or neurologic conditions. For instance, 23.0% of patients receiving medication treatment for tobacco cessation reported concurrent cannabis use as compared to 7.6% among those not receiving treatment for tobacco cessation (p<.01). A similar pattern was noted for those who had a current prescription for opioid analgesics, medications for the treatment of epilepsy, as well as medications to treat anxiety and depression including benzodiazepines, SSRIs, and SNRIs (p<.01 when comparing those with and without these prescriptions). Analyses of prescription medications and cannabis use stratified by age category are presented in Supplementary Table 4.

Factors associated with cannabis use

Based on multivariable analyses, age remained independently associated with cannabis use among our sample of older adults, with those in the younger age group (65-74 years) having the highest odds of cannabis use as compared to those 85 years and older (adjusted odds ratio (AOR)=4.2; 95% confidence interval (CI) 2.8-6.1) (Figure 1). After adjusting for age, sex, race/ethnicity we found that both the level of comorbidities as well as current prescriptions status was independently associated with cannabis use. Patients with a Charlson comorbidity index of five or more had a 30% increased odds of cannabis use as compared to those with a comorbidity index score of zero (AOR=1.3; 95% CI 1.1-1.7). With the exception of cardiovascular medications, those with prescriptions for any GI, respiratory,

neurologic, or psychiatric conditions had an increased odds of cannabis use. For instance, patients with a prescription for psychiatric medications had 1.5 times the odds of cannabis use as compared to those without a prescription for psychiatric medications (AOR=1.5; 95% CI 1.4-1.7), while patients prescribed CVD medications had a reduced odds of cannabis use when compared to patients not prescribed these medications (AOR=0.9; 95% CI 0.8-0.9).

DISCUSSION

Our findings suggest that cannabis use among older adults in primary care within this health system is twice that of tobacco use. Additionally, we find that cannabis use among those 65-74 years of age remains just as high as those in the younger age group (i.e., those 50-64 years). These data support other recent studies indicating increases in the prevalence of cannabis use among older adults.[8,9] However, our study finds cannabis use is higher than that estimated from other studies, with 65-74 year olds in this study having more than twice the estimates reported in NSDUH (8.4% vs 3.3%).[9] This difference may be partly explained by a number of factors specific to our study population including a setting where cannabis use is legalized, not only resulting in increased access but potentially destigmatizing the report of its use. These data, along with our finding that cannabis use was higher among those with prescription medications that may interact with cannabis, suggest that routine screening for cannabis should be integrated into primary care, especially for older patients.

Reasons for cannabis use among older adults are often medicinal with one of the most common reasons being pain, as well as insomnia, anxiety, and loss of appetite.[4,20] Consequently, it is not surprising that cannabis use was higher among those with a current diagnosis of certain medical conditions such as depression and anxiety, alcohol and opioid use disorders, as well as COPD and emphysema. Evidence regarding the potential therapeutic or harmful effects of cannabis in the context of these comorbidities are mixed. The efficacy of cannabis for chronic pain is well documented, with those using opioids for chronic pain reporting a decrease in pain, improvements in quality of life, and reductions in the use of opioids after adding cannabis to their pain management regimen.[21–23] However, in this study as well as others, cannabis use has been linked to substance use disorders including both opioid and alcohol use disorders, with data indicating that cannabis use may be associated with an increased incidence and persistence of these disorders.[24–26] With regards to mood disorders including anxiety and depression, a number of survey studies show a reduction in symptoms related to anxiety, however, these results stand in contrast with other clinical studies which indicate otherwise.[27,28] In the case of depression, not only has there been no clear evidence of benefit for depression, a number of studies show a harmful influence with cannabis use promoting the progression of depressive symptoms.[29,30] Evidence linking cannabis use to respiratory diseases was found to be insufficient based on a review conducted by the National Academies of Sciences, Engineering, and Medicine; however, this study along with a recent longitudinal study of nearly 18,000 patients suggest that cannabis use may be associated with respiratory conditions including asthma and COPD.[21,31]

The higher levels of cannabis use among older adults with chronic conditions occurs against a backdrop in which cannabis is viewed as a safe alternative to other pharmaceuticals,

with most patients reporting not talking to their provider about their cannabis use.[6,32,33] Even in instances when cannabis use was discussed with the provider, none of the patients received prescriptions for cannabis and the main source of cannabis information was friends, cannabis dispensary staff ("budtenders"), and the media.[32] While older adults express a desire for more openness with their providers about cannabis,[34] half of primary care providers surveyed reported that they are not ready or did not want to answer patient questions about medical cannabis.[35] This may be partly due to the lack of education on medical cannabis during medical training with surveys revealing that most medical school graduates, residents, and fellows do not receive education about medical cannabis, and are not prepared to discuss medical cannabis with their patients.[36] Strategies to bolster cannabis screening by primary care providers and interventions that improve providers' knowledge and skills in discussing cannabis use with older patients are needed since cannabis use is likely to continue among this group.

Among the clinical population included in this study, the prevalence of cannabis use was higher among those with current prescriptions for psychotropic medications such as opioid analgesics, muscle relaxants, benzodiazepines, and SSRIs/SNRIs. The acute impact of cannabis on neurocognitive outcomes such as memory and processing speed are well recognized, though data on the specific effects in older adults are limited.[37,38] This is particularly relevant since aging itself is associated with changes in these outcomes and can thus be further exaggerated among those reporting the use of psychotropic drugs as well as cannabis use.[39] This has implications in terms of falls and other injuries. A study by Choi et al. found that nearly one in three older cannabis users experienced injuries which was significantly higher than that noted among older cannabis non-users.[40] Furthermore, cannabis use lead to increased emergency department visits resulting from these injuries.[40] A number of pre-clinical and case studies have shown potential drug-drug interactions between cannabis and psychotropic drugs, which can have implications for the safety, efficacy, and tolerability of these commonly prescribed medications.[41,42] Research on cannabis dosing and drug-drug interaction are also sparse.[43] Most of the studies exploring drug-drug interactions are based on regulatory agency approved formulations of medical cannabis such as Dronabinol. However, recreational cannabis is known to have variable concentrations of cannabinoids, with current efforts to further increase the THC content in recreational cannabis 10- to 100-fold higher therefore further increasing the potential for drug-drug interactions.[41,44] Given the higher prevalence of cannabis use among patients with certain prescription medications, primary care providers will need to keep potential drug-drug interactions in mind. Furthermore, while many electronic health record systems provide drug-drug interaction warnings, enhancements to include consideration for recreational cannabis use may be useful.

The findings of this study should be interpreted in light of a number of limitations. Screening for cannabis use was based on patient self-report and conducted by clinic staff in a face-to-face manner. Although minimized by legalization of cannabis in California, patients may be reluctant to disclose information regarding socially stigmatized behaviors, resulting in response bias.[45] Further response bias may result from the differential comfort level of providers in assessing and discussing substance use. The lack of a systematic definition of 'current' cannabis use may also limit the interpretation of our findings. This

likely results in an underestimation of patients who are infrequent cannabis users. Data in the literature supports this, with a number of studies demonstrating that recall reliability is reduced when a substance is used less frequently or is an atypical event.[46,47] Furthermore, while recall for cannabis is best for the past 30 days, the test-retest reliability of 6- and 12-month recall periods are also excellent.[46,48] A number of studies have validated self-reports of substance use and show high concordance between self-reports of cannabis use as compared to toxicology results.[49,50] Together this, along with data that shows self-reports of substance use have high concordance with toxicology results suggests that while there may be bias resulting from the way in which cannabis use is assessed, the EHR assessment favors those who are recent and more regular cannabis users. This represents a group of patients most relevant to this analysis in terms of impact on health outcomes. Finally, our results are not generalizable to other clinical populations nor do they represent an unbiased estimate of cannabis use among older adults. Despite these limitations, this is one of a few studies linking current diagnoses and prescription medication use using medical record based data rather than self-report.

Our findings suggest that a nontrivial proportion of older adult patients in a private primary care health system report cannabis use and the proportion is higher among those with clinical conditions and/or prescription medications that may interact with cannabis. Older patients may benefit from routine primary care screening for cannabis use. System level strategies should consider screening tools that enhance cannabis screening efforts in clinical settings including the use of self-administered computerized screening integrated into the EHR. Additionally, primary care providers serving older patients may benefit from interventions that promote skills in patient-centered discussions regarding medical and recreational cannabis use and co-use with other prescription medications.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Key points

- Among older adults in primary care, levels of self-reported recent cannabis use was comparable among those 65-74 years as compared to those in the younger age group (50-64 years).
- Older adults with comorbidities and prescription medications for health conditions including respiratory, neurologic, and psychiatric conditions were more likely to report cannabis use as compared to those without these conditions.

Why does this matter?

These findings suggest that key groups of older patients, in particular those with health conditions or prescription medications that may interact with cannabis, are more likely to report cannabis use.

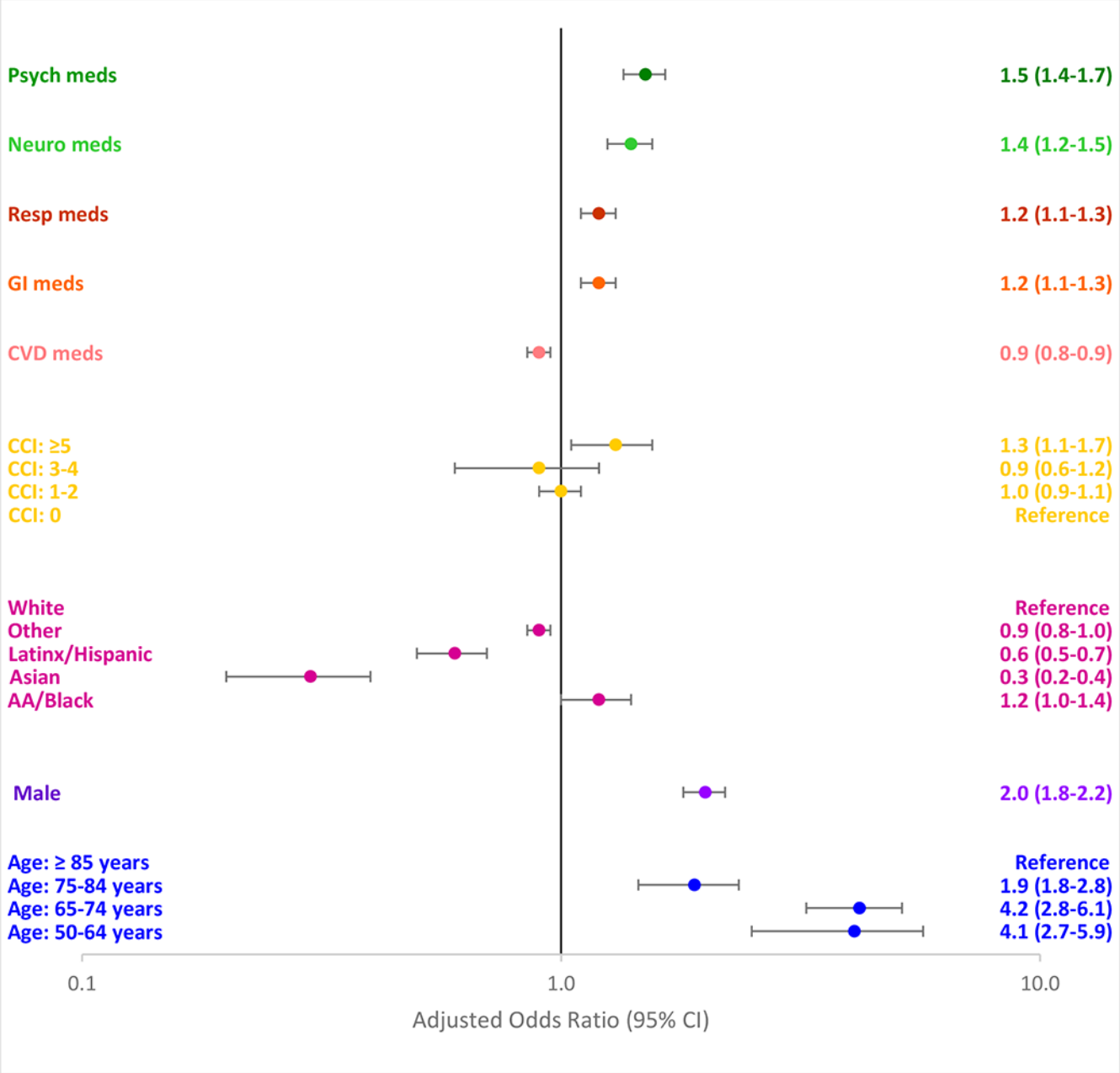

Figure 1.

Factors associated with cannabis use among patients 50 years of age or older with a well visit/physical exam through UCLA Health, July 2019-May 2020 (n=42,455)*

Abbreviations. AA=African American; GI=Gastrointestinal; CVD=Cardiovascular diseases; CCI=Charlson Comorbidity Index; CI=Confidence Interval

*Analysis based on separate multivariable regression models for each medication group, with each model including age, race/ethnicity, sex, and CCI

Table 1.

Sociodemographic characteristics of patients 50 years of age or older with a primary care well visit/physical exam through UCLA Health, July 2019-May 2020 (n=42,455) *

	All patients ≥ 50 years of age (n=42,455)		Age 50 - 64 years (n=23,863)		Age 65 - 74 years (n=12,167)		Age 75 - 84 years (n=4,979)		Age ≥ 85 years (n=1,446)	
	n	%	n	%	n	%	n	%	n	%
Sex										
Female	23,588	55.6	13,307	55.8	6,749	55.5	2,697	54.2	835	57.8
Male	18,867	44.4	10,556	44.2	5,418	44.5	2,282	45.8	611	42.2
Race/ethnicity										
African American/Black	2,139	5.4	1,197	5.4	600	5.2	267	5.6	75	5.5
Asian	4,108	10.3	2,424	11.0	1,049	9.1	479	10.1	159	11.6
Latinx/Hispanic	3,625	9.1	2,244	10.2	902	7.8	365	7.7	114	8.3
White	26,360	66.3	14,080	63.8	8,030	69.5	3,322	69.8	928	67.5
Other	3,511	8.8	2,116	9.6	973	8.4	324	6.8	98	7.1
Employment status										
Disabled	677	1.7	518	2.4	137	1.2	21	0.4	1	0.0
Employed	21,284	53.5	16,630	75.4	4,067	35.2	544	11.3	43	3.1
Retired	13,543	34.0	1,494	6.8	6,643	57.5	4,095	85.3	1,311	93.4
Unemployed	4,281	10.8	3,381	15.3	712	6.2	139	2.9	49	3.5
Partnership status										
Married/living with partner	27,942	66.7	16,404	69.7	8,040	66.8	2,892	58.9	606	42.5
Separated/divorced	3,566	8.5	1,679	7.1	1,181	9.8	584	11.9	122	8.6
Single	7,874	18.8	5,028	21.4	2,084	17.3	624	12.7	138	9.7
Widowed	2,422	5.8	366	1.6	700	5.8	799	16.3	557	39.0
Other	112	0.3	71	0.3	23	0.2	14	0.3	4	0.3
Insurance status										
Commercial	28,653	67.5	22,638	94.9	4,394	36.1	1,245	25.0	376	26.0
Government	13,319	31.4	888	3.7	7,679	63.1	3,691	74.1	1,061	73.4
Self-pay	393	0.9	268	1.1	81	0.7	37	0.7	7	0.5
Other	90	0.2	69	0.3	13	0.1	6	0.1	2	0.1

* sum may not equal total due to missing data

Table 2.

Prevalence of cannabis use by sociodemographic characteristics among patients 50 years of age or older with a primary care well visit/physical exam through UCLA Health, July 2019-May 2020 (n=42,455)*

	All patients ≥ 50 years of age (n=42,455)			Age 50 - 64 years (n=23,863)			Age 65 - 74 years (n=12,167)			Age 75 -84 years (n=4,979)			Age ≥ 85 years (n=1,446)		
	n	%	p value	n	%	p value	n	%	p value	n	%	p value	n	%	p value
Total	3,224	7.6	--	1,971	8.3	--	1,025	8.4	--	199	4.0	--	29	2.0	--
Sex															
Female	1,270	5.4	<.01	747	5.6	<.01	433	6.4	<.01	74	2.7	<.01	16	1.9	0.78
Male	1,954	10.4		1,224	11.6		592	10.9		125	5.5		13	2.1	
Race/ethnicity															
African American/ Black	189	8.8	<.01	118	9.9	<.01	58	9.7	<.01	11	4.1	0.01	2	2.7	0.56
Asian	104	2.5		64	2.6		31	3.0		8	1.7		1	0.6	
Latinx/ Hispanic	194	5.5		144	6.4		42	4.7		7	1.9		1	0.9	
White	2,218	8.4		1,303	9.3		744	9.3		149	4.5		22	2.4	
Other	272	7.8		186	7.9		88	9.0		14	4.3		2	2.0	
Employment status															
Disabled	96	14.2	<.01	82	15.8	<.01	13	9.5	0.18	1	4.8	0.03	0	0.0	0.55
Employed	1,679	7.9		1,279	7.7		367	9.0		33	6.1		0	0.0	
Retired	823	6.1		139	9.3		512	7.7		143	3.5		29	2.2	
Unemployed	328	7.7		261	7.7		60	8.4		7	5.1		0	0.0	

* sum may not equal total due to missing data

Table 3.

Prevalence of cannabis use by comorbidity status (current diagnosis) among patients 50 years of age or older with a well visit/physical exam through UCLA Health, July 2019-May 2020 (n=42,455)

	Cannabis use and Diagnosed with Condition		Cannabis use and Not Diagnosed with Condition		
	n	%	n	%	p value
Circulatory system diseases ^	**1,078**	**6.8**	**2,146**	**8.1**	**<.01**
Cerebrovascular disease (I67,I68, I69)	15	12.5	3,209	7.6	0.04
Coronary artery disease (I70, I25)	103	7.2	3,121	7.6	0.60
Myocardial infarction (I21, I25)	9	6.6	3,215	7.6	0.65
Hyperlipidemia (E78)	684	6.7	2,540	7.9	<.01
Hypertension (I10)	621	6.6	2,603	7.9	<.01
Heart failure (I50)	11	4.6	3,213	7.6	0.09
Other Heart Disease (I30-I52)	136	6.0	3,088	7.7	<.01
Peripheral artery disease (I73.9)	11	5.5	3,213	7.6	0.27
Respiratory diseases ^	**136**	**9.1**	**3,088**	**7.5**	**0.03**
COPD (J44)	23	11.4	3,201	7.6	0.04
Asthma (J45)	90	8.1	3,134	7.6	0.48
Emphysema (J43)	18	11.9	3,206	7.6	0.04
Malignant neoplasm of lung/bronchus (C34, C39)	11	13.8	3,213	7.6	0.04
Mental/Behavioral disorders ^	**525**	**9.7**	**2,699**	**7.3**	**<.01**
Anxiety disorders (F41)	189	9.6	3,035	7.5	<.01
Depressive disorders (F33)	222	11.2	3,002	7.4	<.01
Sleep disorders (G47)	193	8.5	3,031	7.5	0.10
Severe stress (F43)	39	10.7	3,185	7.6	0.02
Alcohol related disorder (F10)	34	20.4	3,190	7.5	<.01
Opioid related disorder (F11)	161	12.0	3,063	7.5	<.01
Psychosis (F29)	2	11.8	3,222	7.6	0.52
Endocrine/metabolic disorders ^	**282**	**6.1**	**2,942**	**7.8**	**<.01**
Diabetes mellitus (E08, E11, E13)	172	5.2	3,052	7.8	<.01
Obesity (E66)	129	7.7	3,095	7.6	0.91
Musculoskeletal system disorders ^	**286**	**8.0**	**2,938**	**7.6**	**0.36**
Rheumatoid arthritis (M05)	7	7.7	3,217	7.6	0.97
Rheumatism (M79)	180	8.4	3,044	7.6	0.17
Osteoarthritis (M16, M17, M18, M19)	110	7.3	3,114	7.6	0.71
Nervous system disorders ^	**12**	**5.7**	**3,212**	**7.6**	**0.29**
Parkinson's disease (G20)	7	5.1	3,217	7.6	0.25
Dementia (F03)	5	6.7	3,219	7.6	0.76

	Cannabis use and Diagnosed with Condition		Cannabis use and Not Diagnosed with Condition		
	n	%	n	%	p value
Digestive system diseases [^]	**47**	**8.6**	**3,177**	**7.6**	**0.36**
Inflammatory Bowel Disease (K50)	7	8.8	3,217	7.6	0.70
Inflammatory Bowel Syndrome (K58)	18	7.1	3,206	7.6	0.78
Enteritis/Colitis (K51, K52)	21	9.6	3,203	7.6	0.25

[^] Based on ICD-10 codes listed below each system

Table 4.

Prevalence of cannabis use by current medication status among patients 50 years of age or older with a well visit/physical exam through UCLA Health, July 2019-May 2020 (n=42,455)

	Cannabis use and Currently Prescribed Medication		Cannabis use and Not Currently Prescribed Medication		
	n	%	n	%	p value
Cardiovascular medications ^	**1,265**	**6.9**	**1,959**	**8.1**	**<.01**
Renin-Angiotensin-Aldosterone System	490	6.5	2,734	7.8	<.01
Beta Blockers	254	6.4	2,970	7.7	<.01
Calcium Channel Blockers	356	7.6	2,868	7.6	0.98
Diuretics	179	6.8	3,045	7.7	0.10
Statins	755	6.6	2,469	7.9	<.01
Other agents for dyslipidemia	49	6.5	3,175	7.6	0.25
Anticoagulants	80	6.6	3,144	7.6	0.17
Gastrointestinal medications ^	**137**	**8.6**	**3,087**	**7.6**	**0.13**
Antidiarrheal	21	7.1	3,203	7.6	0.74
Antinausea	116	8.9	3,108	7.6	0.08
Laxatives	83	10.6	3,141	7.5	<.01
Respiratory medications ^	**457**	**7.8**	**2,767**	**7.6**	**0.44**
Inhaled Corticosteroids - long acting beta agonist	254	7.1	2,970	7.6	0.22
Short acting beta agonist and anticholinergics	265	8.6	2,959	7.5	0.03
Other Respiratory agents	81	8.3	3,143	7.6	0.38
Psychiatric medications ^	**737**	**9.7**	**2,487**	**7.1**	**<.01**
Antipsychotics	29	9.6	3,195	7.6	0.19
Benzodiazepine	348	10.9	2,876	7.3	<.01
Selective Serotonin Reuptake Inhibitors (SSRI)	246	8.9	2,978	7.5	<.01
Serotonin-Norepinephrine Reuptake Inhibitors (SNRI)	97	10.4	3,127	7.5	<.01
Other Antidepressants and Anti-anxiety agents	252	10.6	2,972	7.4	<.01
Stimulants and Attention Deficit Hyperactivity Disorder agents	19	5.9	3,205	7.6	0.23
Neurologic medications ^	**655**	**8.7**	**2,569**	**7.4**	**<.01**
Headache	46	7.0	3,178	7.6	0.58
Epilepsy	45	13.6	3,179	7.6	<.01
Opioid Analgesic	161	12.0	3,063	7.5	<.01
Muscle Relaxants	107	10.3	3,117	7.5	<.01
Adjunct Medications for Pain	174	9.7	3,050	7.5	<.01
Smoking Cessation	17	23.0	3,207	7.6	<.01
Alzheimer's	14	4.8	3,210	7.6	0.08

^ Based on a current prescription for any of the medications listed below each class of drugs