Correlates of cannabis use disorder among prescribed and illicit medical cannabis users:

Findings from the Cannabis As Medicine Survey 2022-23 (CAMS-22)

Presented by

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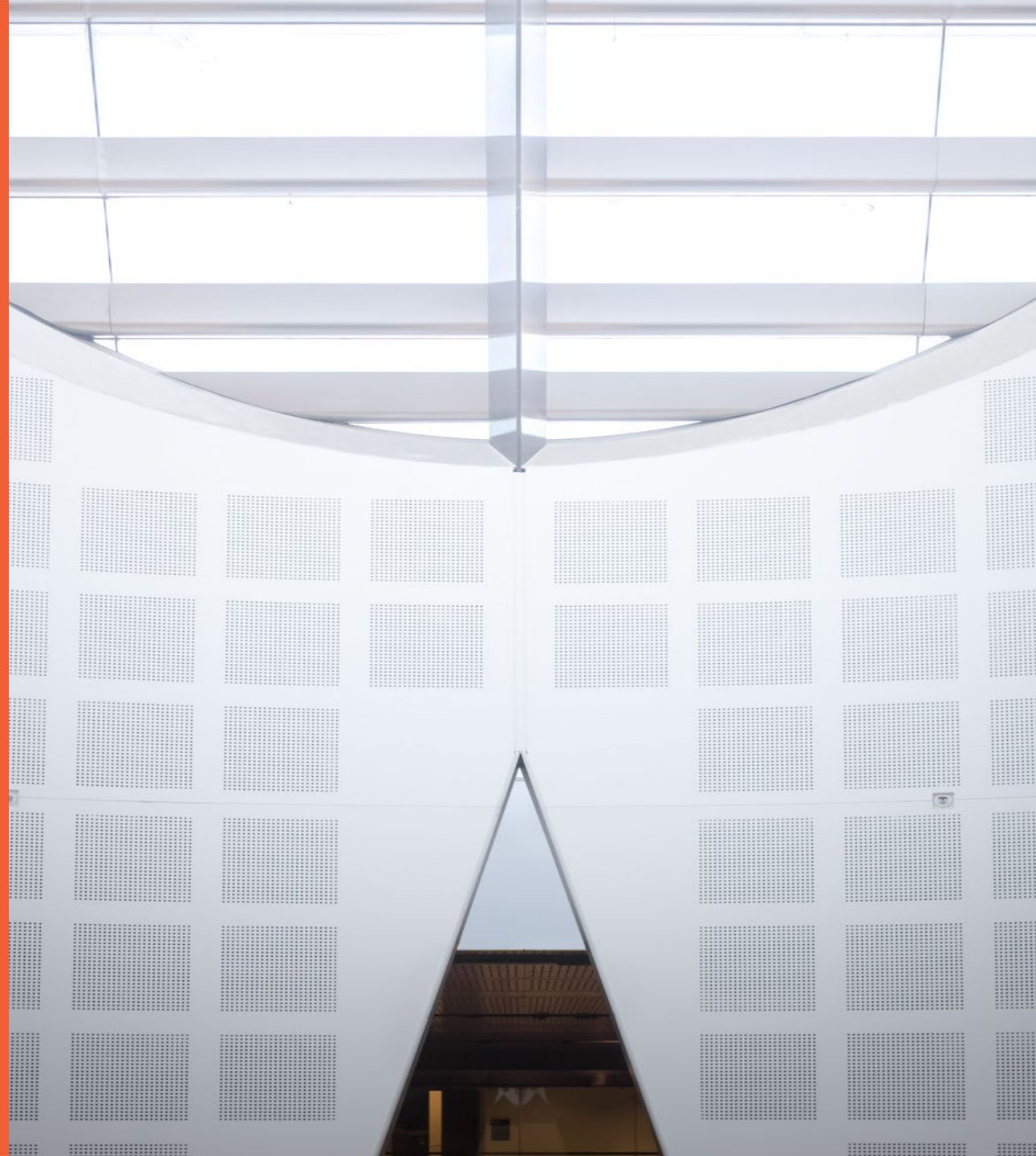
LAMBERT INITIATIVE FOR CANNABINOID THERAPEUTICS

DACRIN



Participating Organisations

LAMBERT INITIATIVE
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DACRIN

Background

- Medical cannabis legal in Australia since 2016
- Because medical cannabis often used to treat chronic, long-term conditions
  - Pain
  - Mental Health
  - Sleep
- With long-term use there is risk of cannabis use disorder

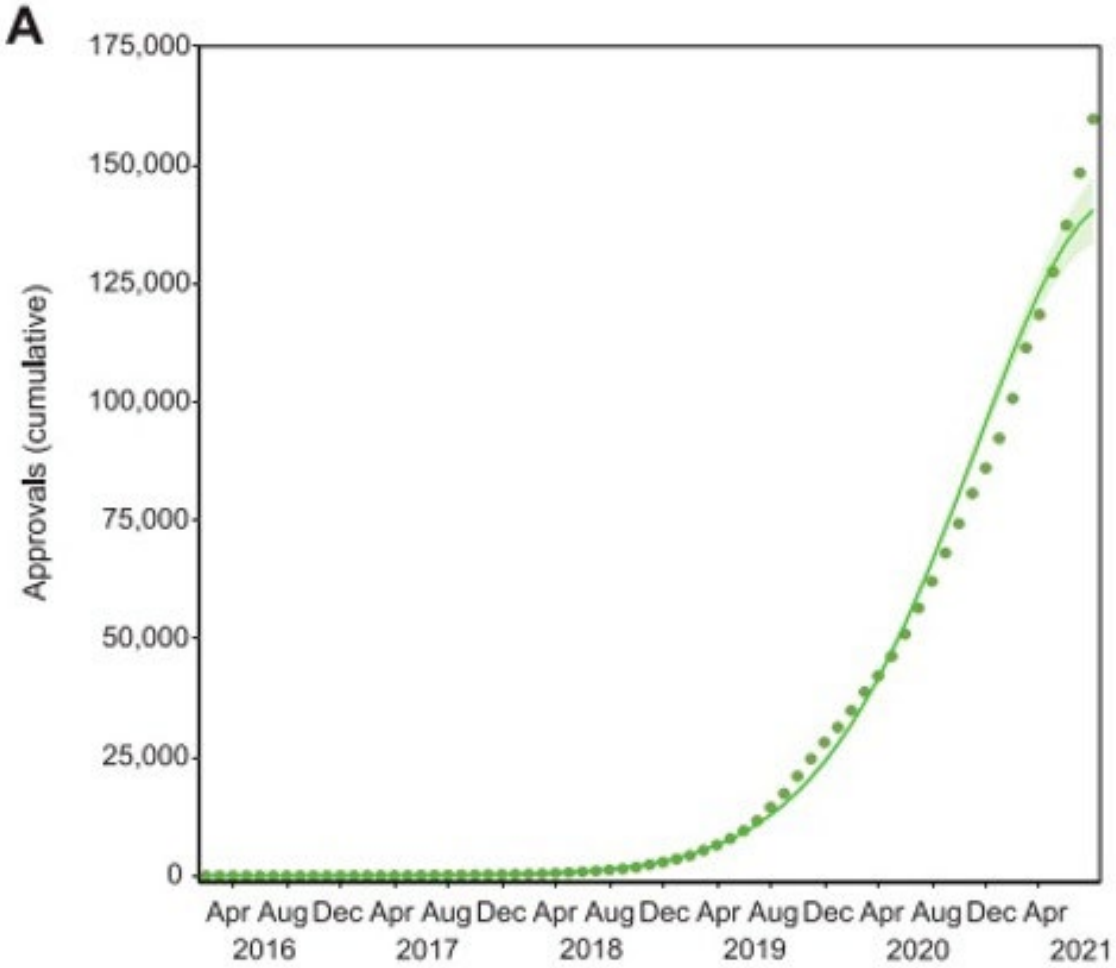
Background: Prevalence of CUD

- Data from meta-analyses
  - 22% of people who try cannabis nonmedically will develop cannabis use disorder (Leung et al. 2020)
  - 29% of people who use medical cannabis will develop cannabis use disorder (Dawson et al. 2024)
- Studies that have compared rates directly
  - CUD: 33% vs 25% (Choi et al)
  - Daily use: 33% vs 11% (Lin et al)
- With such high rates among Medical Cannabis users it is important to examine the factors associated with CUD

Background

Australia

- Prior to 2019 most sourced illicitly
- Prescribed use has increased dramatically since 2019 via the Special Access and Authorsied prescriber schemes
- But rates of medical cannabis use overall have not increased since 2019 (~3%; National Drug Strategy Household Survey 22-23)
- Hence many of the people who were self-medicating are now getting their medical cannabis prescribed



MacPhail SL, et al. Medicinal Cannabis Prescribing in Australia: An Analysis of Trends Over the First Five Years. Front Pharmacol. 2022 10;13:885655. PMID: 35620292

Background: Prevalence of CUD

- With so many people switching from self-medicating illicitly-obtained cannabis to having it prescribed by a doctor…
- …it would be reasonable to ask whether having it prescribed, ie. use supervised to some extent by a doctor, is associated with any difference in likelihood of getting CUD compared to obtaining it illicitly

Study aims:

(1) To estimate the prevalence of cannabis use disorder among medical cannabis users

(2) To explore what factors are associated with cannabis use disorder among *Prescribed* medical cannabis users

(3) To explore whether there are any differences between prescribed and illicit cannabis users in the influence of these factors

Methods

THE CAMS-18 SURVEY

The Cannabis As Medicine Survey – 2022-23

- Anonymous, cross-sectional, online survey collected between December 2022 and April 2023
- Measured the experiences of 4453 adult Australians who used cannabis to treat a medical condition in the previous 12 months
- Important: Our definition of medical cannabis was broad, encompassing both prescribed and non-prescribed use
- Respondents asked a range of questions about their medical cannabis use:
  - Amount of use
  - Conditions, symptoms they treat with cannabis
  - Barriers to access
  - Attitudes to current system

Outcome: DSM-5 cannabis use disorder, Yes/No

Criter	DSM-5 Criteria Number
I often t… onger period of time than I intended to	A1
I have a… mpts to cut down or control my cannabis use	A2
I spend … use cannabis, or recover	A3
I have c…	A4
My canr…	A5
I continu… problems … om spouses/partners/friends, a…	A6
I have given up or reduced … se of cannabis use	A7
I recurrently used cannabis in … otor vehicle, operating machinery)	A8
I continued to use cannabis even though it cau… ical health (e.g. cough)	A9
I continued to use cannabis more than before to get the desired effects or the same amount of cannabis has less effects than before	A10
Withdrawal or using cannabis to avoid withdrawal	A11

Subjective sense of loss of control unsu… attemp…

Continu… despite … conse…

Tolerance and withdrawal

Outcome: Meeting criteria for DSM-5 cannabis use disorder

DSM-5 thresholds for severity of CUD

- 0-1 criteria met: No CUD
- 2-3 criteria met: Mild CUD
- 4-5 criteria met: Moderate CUD
- 6 or more: Severe CUD

Two binary outcomes

Any CUD: 2 or more criteria

Moderate-Severe CUD: 4 or more

Primary Covariate: Prescribed vs Illicit cannabis use

Prescribed group: main source is or was prescribed

Illicit group: main source is or was illicit.

Other covariates

- Age
- Education
- Employment
- Days per wee
- Gender
- Relationship s
- Where they w
  social media,
- Condition trea
- Days per week alcohol use
- Days per week tobacco use
- Duration since first tried cannabis
- Duration since first used cannabis
- annabis use
- cal use
- l use for medical
- s CBD
- Route of administration (smoked vs edible vs vaped
- Mental Health
- Physical Health

Plus interaction between Prescribed vs Illicit and all these: 61 covariates in all

Results: the sample

- 1796/4453 (40%) completed all the questions relating to the DSM-5 CUD criteria and all 21 covariates. These respondents' data were used for analysis.
- 79% (1426/1796) said main source of medical cannabis was prescribed, 21% illicit
  - c/w 2% in CAMS-18 and 38% in CAMS-20

Results:

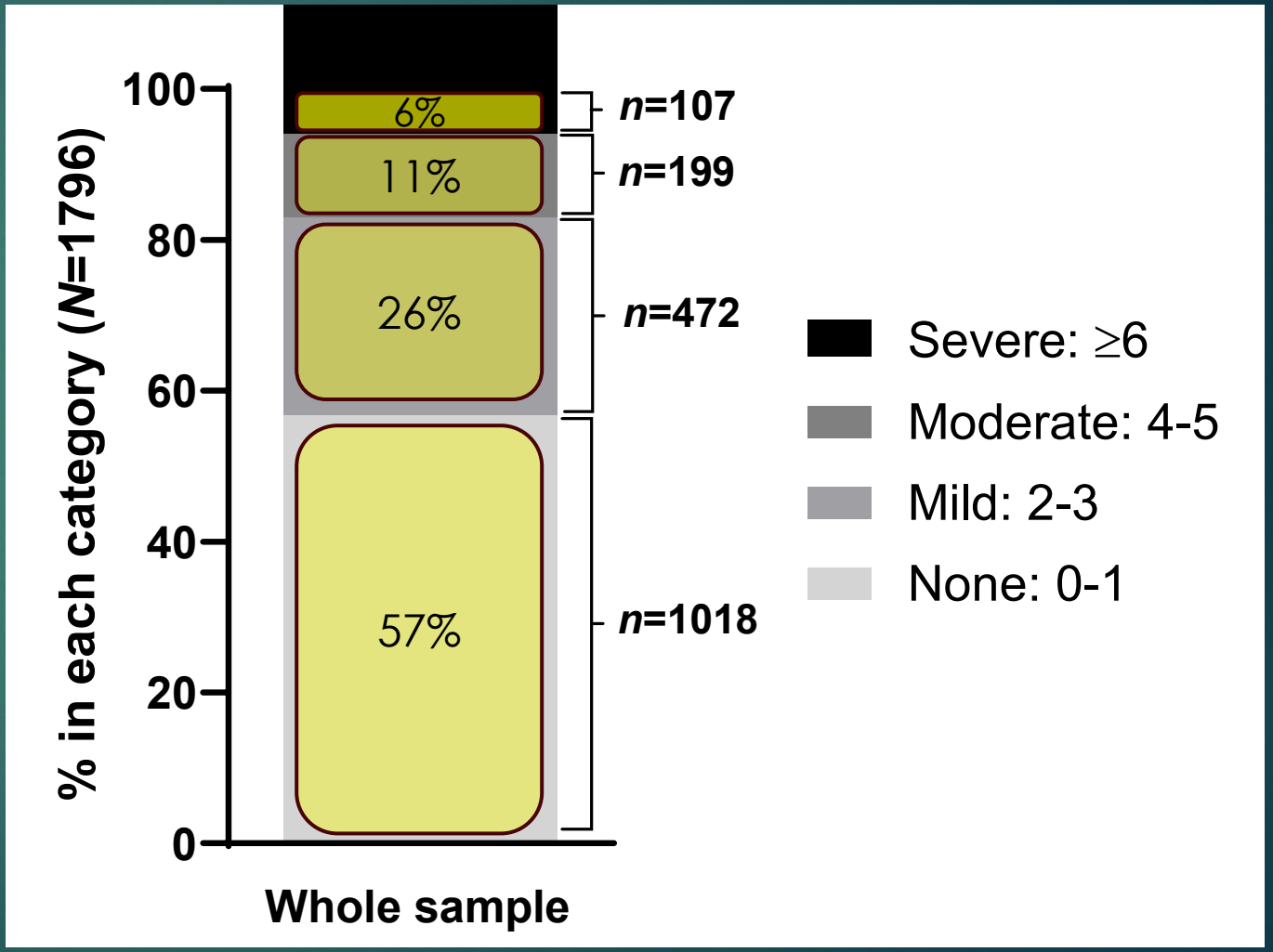
Severity of Cannabis Use Disorder

No CUD (0-1 symptoms) = 1018/1796

Mild CUD (2-3 symptoms) = 472/1796

Moderate CUD (4-5 symptoms) = 199/1796

Severe CUD (≥ 6 symptoms) = 107/1796

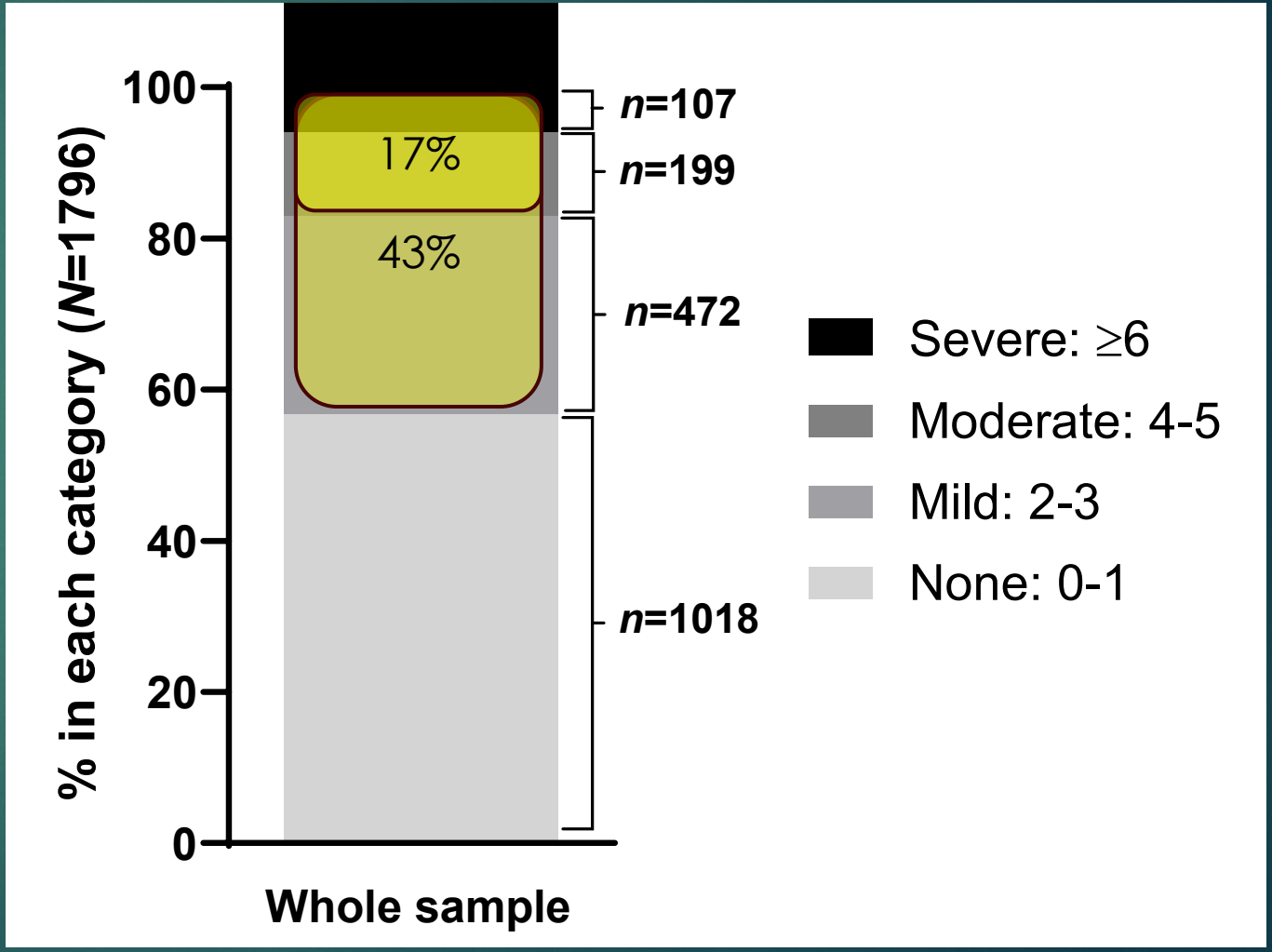


Results:

Study outcomes

Any-CUD (2+ symptoms) = 778/1796

Moderate-Severe-CUD = 306/1796



Results: Bivariate Relationships

Prescribed vs Illicit only predictor

THE CAMS-18 SURVEY

Results:

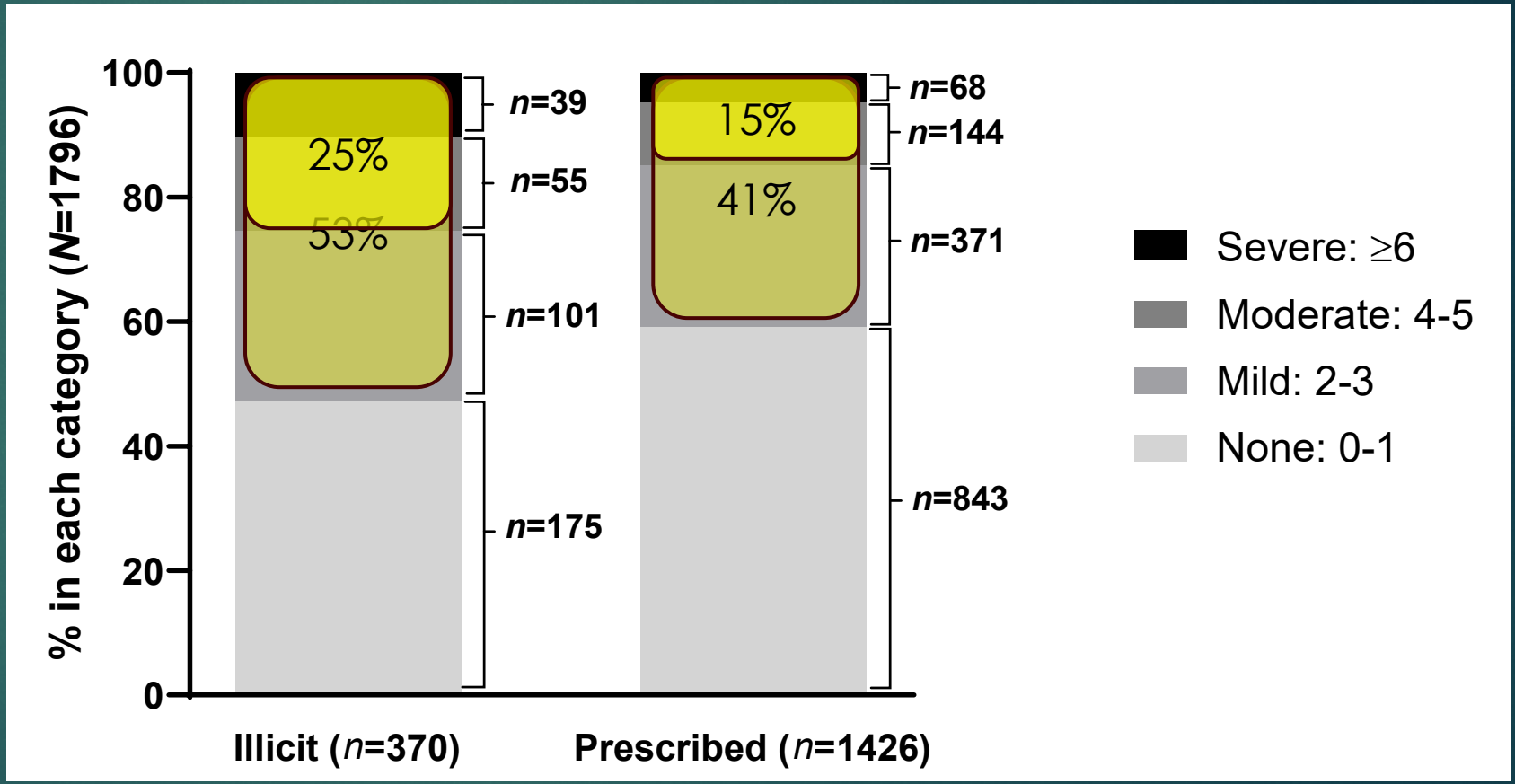
Study outcomes

Any-CUD (2+ symptoms)

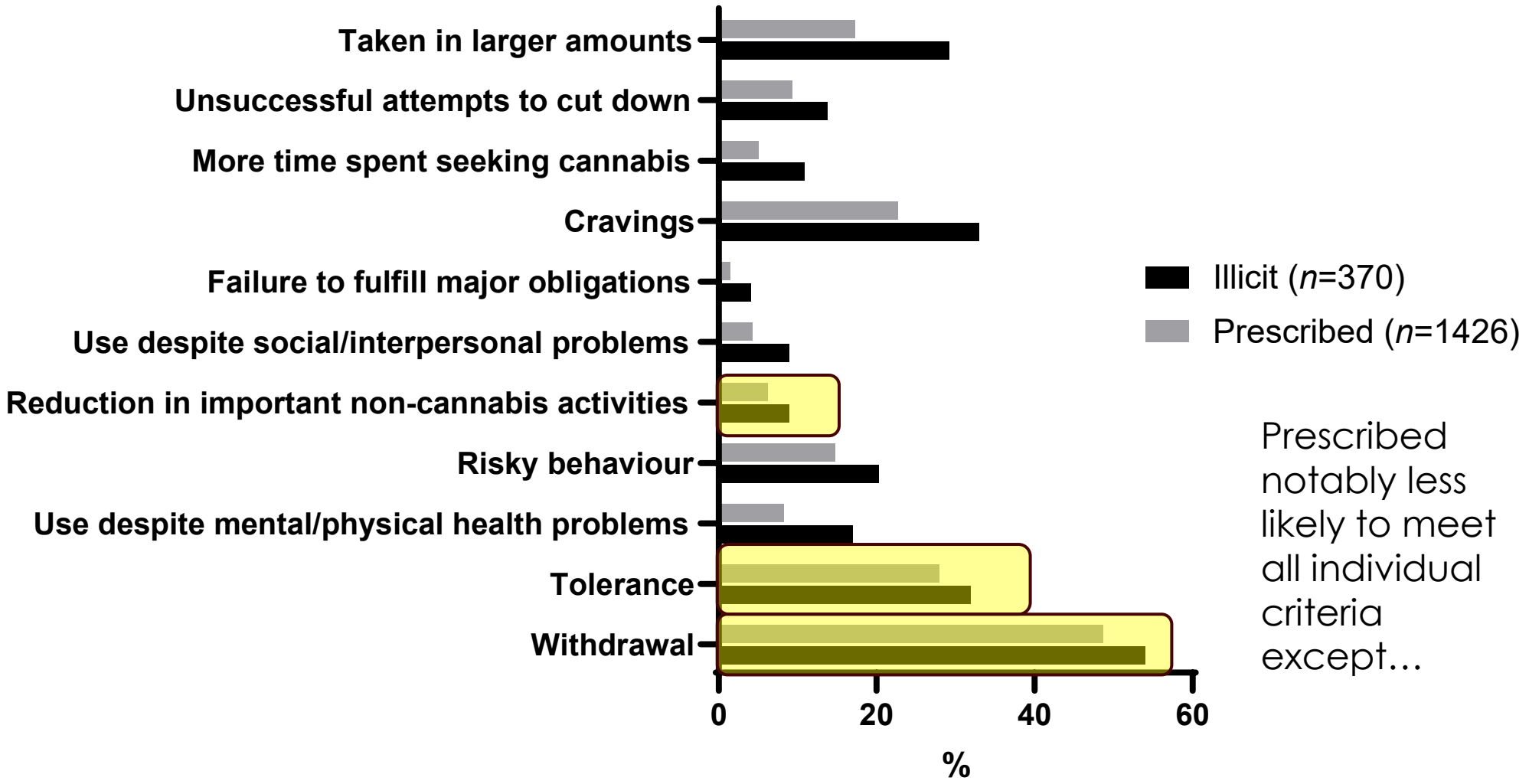
OR=1.6 (CI: 1.3, 2.0)

Moderate-Severe-CUD

OR=2.0 (CI: 1.5, 2.6)



Results: Individual Cannabis Use Disorder Criteria

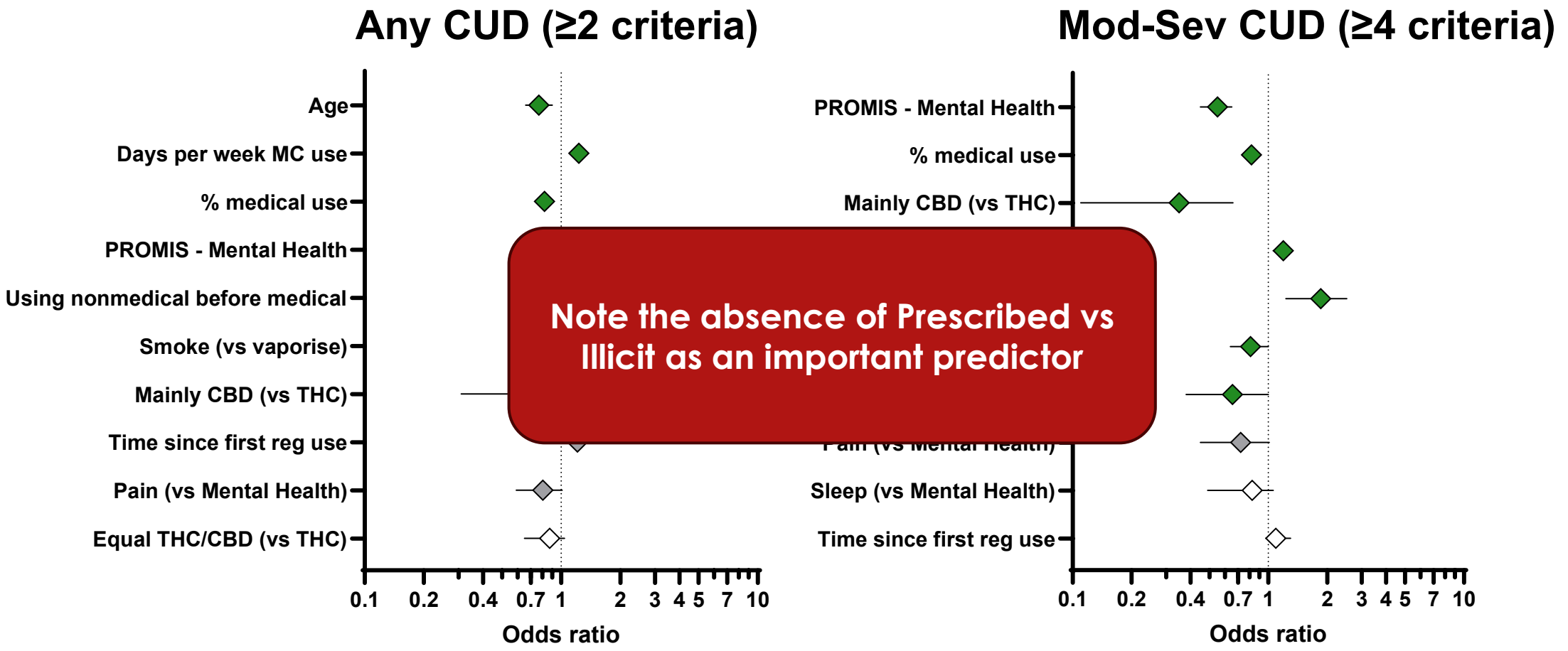


Prescribed notably less likely to meet all individual criteria except…

Results: Multivariate Relationships
All predictors

THE CAMS-18 SURVEY

Results: Correlates of Cannabis Use Disorder

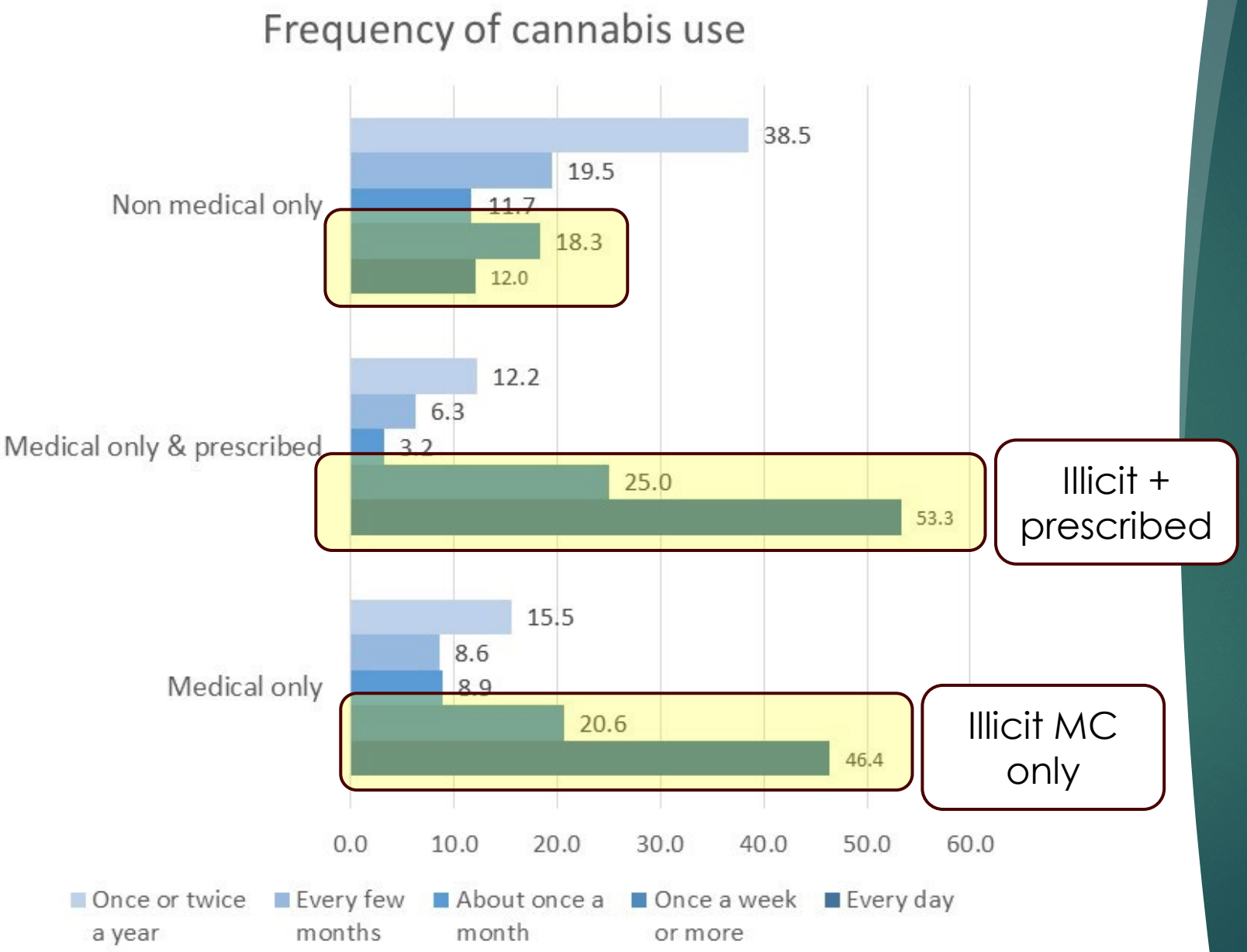


Summary

THE CAMS-22 SURVEY

Aim 1: Estimate Prevalence of Cannabis Use Disorder

- Over two-fifths of participants in survey (43%) met criteria for mild cannabis use disorder
  - Seems like a lot. A fault in our survey perhaps? Or surveys generally?
  - Dawson et al. 2024 Meta-analysis averaging across studies suggests 29%
    - However our estimate comparable rates to rates other studies
      - 38-47% (Myers et al. 2023; Bonn-Miller et al. 2014; Rubin Kahana et al. 2022 , Wall et al. 2019)
      - Studies with much lower estimates (10-13%) exclude daily/regular users (Cooke et al. 2023; Gilman et al. 2022, Gilman et al. 2023)



Illicit + prescribed

Illicit MC only

From National Drug Strategy Household Survey 22-23

Aim 1: Estimate Prevalence of Cannabis Use Disorder

Issue 1: Medical cannabis users use more cannabis than nonmedical users

Aim 1: Estimate Prevalence of Cannabis Use Disorder

- Issue 2: Medical only vs 'Dual use' (medical + nonmedical)
- Studies that have examined differences specifically
  - Gendy et al. 2023: 51% dual use users, 28% medical only users
  - Our study: Split on people who indicated 100% use for medical purposes
    - 54% (539/1007) among dual users vs
    - 30% (239/789) medical only
    - **OR = 0.4 (CI: 0.3, 0.4)** (Dual users 2.5 times more likely to meet CUD criteria)

Aim 3: Differences between Prescribed and Illicit Users

Bivariate analyses

Prescribed users

- Less likely to meet criteria for CUD, either any or moderate-severe, than illicit users
- Less likel

Multiple re

- When t vs illicit use was not an
- The influ CUD was no differen otable interactions)

That when there IS additional information about certain other factors, source of medical cannabis is no longer as important a risk indicator as those other factors.

Aim 2: To investigate the correlates of cannabis use disorder among *Prescribed* medical cannabis users

- Having better mental health
- Using less nonmedical cannabis
- Using less cannabis generally
- Being older
- Vaping or edibles rather than smoking
- Formulation with less THC more CBD
- Treating a pain condition rather than a mental health condition

…were all associated with reduced risk of Cannabis Use Disorder

Take homes

- Prevalence of CUD is high among medical cannabis users, due to long-term daily use, *especially* among those who use nonmedically as well as medically
  - Clinicians considering prescribing medical cannabis should consider use of universal precaution framework to minimise risks of clients developing cannabis use disorder.
- People who get their cannabis prescribed have lower rates of CUD than those who get it illicitly
  - Why? Exposure to medical advice maybe? Hard to tell with this survey
- There are more important correlates of CUD than whether a person gets it from a doctor or a dealer (e.g. mental health, age, route of admin, presence of nonmedical use)

Limitations

- 43% prevalence almost certainly an overestimate
  - Self-endorsing items on a checklist ≠ a formal CUD diagnosis
- Mild CUD is pretty mild & can be met simply by having an involuntary physiological response to prolonged use
  - probably needs to be a pCUD specifier (similar to pOUD): tolerance and withdrawal removed from criteria if medication taken as prescribed
- Correlates not predictors
- Many potential predictors not included

Thank you!

Differences between Prescribed and Illicit Users

Jordan Peterson says that women are not paid less because they are women

He says that if gender is the only variable in the regression then it predicts pay (with women getting less

But if you include things like personality traits in the regression then gender is no longer a predictor of pay

What predicts pay is being more assertive less deferential etc

See women are not discriminated against because they are women

But this is WRONG. The fact that gender no longer predicts pay when personality is taken into account does not mean that women are not discriminated against for being women, it means that the value that society at large assigns to traits that women tend to have (less domineering, less assertive, more polite, more empathetic) is less than the value it assigns to traits men tend to have. So we discriminate against women.

Bivariate associations: Prescribed vs Illicit

		Source of Medical Cannabis			
Variable	**Variable Type**	**Prescribed** (ref) n=1426	**Illicit** n=370	**Total** N=1796	**Group Difference[a]**
Age, in yrs-old	Numeric				-0.8 (CI: -2.2, 0.7)
Mean (SD)		41.8 (12.3)	41.0 (14.2)	41.6 (12.7)	
Median (IQR)		40 (32, 50)	40 (29.2, 51.8)	40 (32, 51)	
					0.6 (CI: 0.5, 0.8)
			%)	392 (22%)	
			%)	1404 (78%)	
			%)	1220 (68%)	**0.6 (CI: 0.5, 0.8)**
			0%)	280 (16%)	**1.4 (CI: 1.1, 2.0)**
			7%)	240 (13%)	**1.4 (CI: 1.1, 2.0)**
			4%)	56 (3%)	1.4 (CI: 0.8, 2.5)
					-0.7 (CI: -0.9, -0.3)
			2.4)	3.2 (2.4)	
			, 5)	4.5 (0, 5)	
			3%)	1165 (65%)	**0.7 (CI: 0.6, 0.8)**
			3%)	574 (32%)	**1.4 (CI: 1.1, 1.7)**
			4%)	57 (3%)	1.4 (CI: 0.8, 2.0)
					0.7 (CI: 0.6, 0.9)
			2%)	641 (36%)	
Partnered		940 (66%)	215 (58%)	1155 (64%)	
Recruitment source, n (%)	Categorical				
Social media (ref)		488 (34%)	223 (60%)	711 (40%)	**2.0 (CI: 1.7, 2.5)**
Medical cannabis provider		261 (18%)	21 (6%)	282 (16%)	**0.2 (CI: 0.1, 0.3)**
Other healthcare provider		9 (1%)	3 (1%)	12 (1%)	1.0 (CI: 0.3, 2.5)
Other		668 (47%)	123 (33%)	791 (44%)	**0.4 (CI: 0.3, 0.5)**

To what extent do the factors associated with CUD differ between prescribed and illicit users?

More likely to have degree

More likely to be employed

More days per week studying or

More likely to be male

More likely to be in relationship

a: *For continuous outcomes coefficients are mean difference, for categorical outcomes, odds ratios. Prescribed reference group OR < 1 means odds of illicit users meeting criterion in question are less than odds of prescribed users meeting criterion. For numeric < 0 means illicit had lower mean than prescribed* **b:** *≥3 days per week.*

Bivariate associations: Prescribed vs Illicit

		Source of Medical Cannabis			
Variable	**Variable Type**	**Prescribed** (ref) n=1426	**Illicit** n=370	**Total** N=1796	**Group Difference[a]**
Main condition treated, n (%)	Categorical				
Mental health (ref)		535 (38%)	143 (39%)	678 (38%)	1.0 (CI: 0.8, 1.3)
Pain		498 (35%)	112 (30%)	610 (34%)	**0.8 (CI: 0.7, 1.0)**
Sleep		249 (18%)	60 (16%)	309 (17%)	0.9 (CI: 0.7, 1.1)
Other		144 (10%)	55 (15%)	199 (11%)	**1.4 (CI: 1.1, 2.0)**
Days per week alcohol use	Numeric				0.2 (CI: -0.0, 0.4)
Mean (SD)		1.3 (1.8)	1.5 (2.0)	1.3 (1.8)	
Median (IQR)		0.5 (0, 1.75)	0.5 (0, 2)	0.5 (0, 1.75)	
Days per week tobacco use	Numeric				**1.3 (CI: 1.0, 1.6)**
Mean (SD)		1.4 (2.7)	2.7 (3.4)	1.6 (2.9)	
Median (IQR)		0 (0, 0)	0 (0, 7)	0 (0, 1.5)	
Duration since first tried cannabis – any reason	Numeric				-0.4 (CI: -1.9, 1.1)
Mean (SD)		24.4 (12.9)	24.0 (14.1)	24.3 (13.2)	
Median (IQR)		24 (14, 33)	23 (12, 34.7)	24 (13, 33)	
Duration since first tried cannabis – medical reasons	Numeric				**4.6 (CI: 3.5, 5.7)**
Mean (SD)		6.1 (9.7)	10.7 (11.2)	7.0 (10.2)	
Median (IQR)		2 (1, 7)	6 (3, 15)	2 (1, 9)	
Duration since first started using cannabis regularly[b] – medical reasons	Numeric				**4.5 (CI: 3.5, 5.6)**
Mean (SD)		5.0 (8.7)	9.4 (10.8)	5.9 (9.4)	
Median (IQR)		1 (1, 5)	5 (2, 13)	2 (1, 6)	

More likely to be treating a pain condition

Use less tobacco

Shorter duration since first used

…and since first started using regularly

a: *For continuous outcomes coefficients are mean difference, for categorical outcomes, odds ratios. Prescribed reference group OR < 1 means odds of illicit users meeting criterion in question are less than odds of prescribed users meeting criterion. For numeric < 0 means illicit had lower mean than prescribed* **b:** *≥3 days per week.*

Bivariate associations: Prescribed vs Illicit

		Source of Medical Cannabis			
Variable	**Variable Type**	**Prescribed** (ref) n=1426	**Illicit** n=370	**Total** N=1796	**Group Difference[a]**
Days per week medical cannabis use	Numeric				**-0.4 (CI: -0.6, -0.2)**
Mean (SD)		6.0 (1.7)	5.6 (2.1)	5.9 (1.8)	
Median (IQR)		7 (5.25, 7)	7 (5, 7)	7 (5, 7)	
Use before medical, n (%)	Categorical				
Had never used non-medically before using medically (ref)		46 (3%)	20 (5%)	66 (4%)	1.7 (CI: 1.0, 2.5)
Used non-medically but had quit for a year or more		660 (46%)	136 (37%)	796 (44%)	**0.7 (CI: 0.6, 0.8)**
Was using non-medically when started using medically		720 (51%)	214 (58%)	934 (52%)	**1.4 (CI: 1.1, 1.7)**
Proportion medical use	Numeric				**-10.7 (CI: -12.8, -8.7)**
Mean (SD)		89.2 (17.0)	79.0 (22.7)	87.0 (18.8)	
Median (IQR)		99 (84, 100)	85 (66.5, 99.8)	96 (80, 100)	
0% nonmedical use, n (%)	Binary	696 (49%)	93 (25%)	789 (44%)	**0.4 (CI: 0.3, 0.4)**
Nonmedical use ≤ 10%, n (%)	Binary	898 (63%)	137 (37%)	1035 (58%)	**0.3 (CI: 0.3, 0.4)**
Composition, n (%)	Categorical				
Mainly THC		957 (67%)	273 (74%)	1230 (69%)	**1.4 (CI: 1.1, 1.7)**
Equal THC/CBD		331 (23%)	65 (18%)	396 (22%)	**0.7 (CI: 0.6, 0.9)**
Mainly CBD		138 (10%)	32 (9%)	170 (9%)	0.9 (CI: 0.6, 1.3)
Route of administration, n (%)	Categorical				
Vaporised (ref)		697 (49%)	62 (17%)	759 (42%)	**0.2 (CI: 0.2, 0.3)**
Smoked		363 (26%)	240 (65%)	603 (34%)	**5.5 (CI: 4.3, 6.7**
Oral		366 (26%)	68 (18%)	434 (24%)	**0.6 (CI: 0.5, 0.8)**
PROMIS Global Mental Health	Numeric				**-1.6 (CI: -2.7, -0.6)**
Mean (SD)		47.1 (9.0)	45.5 (9.4)	46.8 (9.1)	
Median (IQR)		48.3 (48.3, 41.1)	45.8 (38.8, 50.8)	45.8 (41.1, 53.3)	
PROMIS Global Physical Health	Numeric				-1.4 (CI: -2.3, -0.4)
Mean (SD)		47.0 (8.2)	45.7 (9.3)	46.7 (8.5)	
Median (IQR)		47.7 (42.3, 54.1)	44.9 (39.8, 50.8)	47.7 (39.8, 54.1)	

Less frequent cannabis use

More likely to have had a break between using nonmedically and using medically

Greater proportion of total cannabis

More likely to use no (or very little)

More likely to use products containing CBD, less to

MUCH less likely to

Slightly better overall mental health

(is there a greater proportion of ‘dual users’ among prescribed vs illicit?