Frequent cannabis use is inversely associated with heroin, benzodiazepine, and alcohol use, independently of cannabis motives: Results from the European Web Survey on Drugs

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# OVERVIEW

#### Context

• Substitution of more harmful substances

#### Methodology

• Multilevel logistic regression

#### Results & Discussion

• Implications for harm reduction

### US TREND IN FREQUENT CANNABIS USERS

(All indexed to be 100 in 2008; Dashed lines indicate two major survey redesigns)



#### CONTEXT

- Motives for using cannabis may be diverse and include coping and therapeutic ones
  - Coping strategies can sometimes be confused with therapeutic motives when cannabis is used to manage anxiety, pain, or other symptoms (Walsh 2013).
  - Cannabis is also used as a harm reduction strategy among people who use other drugs (Mok 2023).
- Cannabis motives are related to cannabis use frequency (Bresin & Mekawi, 2019).
- Frequency of use is a strong predictor of both acute and chronic cannabis-related problems, including cannabis use disorder (CUD) (Stevens 2021).

#### CONTEXT

- Global increasing trend in the prevalence of CUD
  - 23% of those using cannabis recreationally may develop CUD (Leung 2020)
  - The prevalence of CUD seems higher in people who report any nonmedical motives (Lapham 2023)
- Understanding correlates of frequent cannabis use may help identify
  - At-risk users and orient prevention towards cannabis-related harms
  - Harm reduction strategy for reduce the use of more harmful psychoactive substances (medications & illicit drugs)

### CANNABIS USE PROBLEMS & MOTIVES

- Cannabis has many therapeutic uses, but little or no randomized clinical trials for most conditions (Schlag et al., 2021; Fortin et al. 2022)
- Adolescents who used cannabis frequently were more likely to endorse a set of coping motives (Patrick et al. 2024)
- Coping and conformity are most strongly associated with the development of cannabis use problems (Bresin & Mekawi, 2019)
- Cannabis users are more likely to use other drugs than non-users (Rabiee et al. 2020)
- Little is known of the concurrent influence of other substance uses and cannabis motives on cannabis use frequency.

### **RESEARCH QUESTION**

- Which psychoactive substances are associated with using cannabis frequently in Europe?
- Are socio-demographic characteristics associated with frequent cannabis use?
- Which use motives associated with higher frequency?
- Does patterns differ between coping and more recreational motives?

### PSYCHOACTIVE SUBSTANCES & HARMS

- Psychoactive substances have different expected externalities on individuals and society (Nutt, 2010)
- Cannabis legalization may affect the consumption of substances which impose substantial costs on society (Anderson and Rees, 2023)
- Only few substances have been studied through clinical trials
  - Evidence on CBD potential as a substitute (Britch et al., 2021)
- Economic and technical barriers limit the research with cannabis and with other plant-based substances (Fortin and Massin, 2020).

### CANNABIS SUBSTITABILITY WITH LICIT DRUGS

#### ALCOHOL

- Cannabis decriminalization or legalization (medical or/and recreational) reduce alcohol sales, binge drinking or past-month alcohol use (Anderson and Rees, 2023)
- GP survey showed that frequent cannabis use may be inversely associated with hazardous alcohol use (Berge et al. 2014)

#### TOBACCO

• Cannabis legalization (medical or recreational) either reduce tobacco use or found no evidence of association (Anderson and Rees, 2023)

# CANNABIS SUBSTITABILITY WITH OPIOIDS AND PAIN MEDICATION

#### HEROIN

• Medical cannabis legalization lead to 10-20% reduction in heroin-treatment admissions (Chu, 2015) and do not affect heroin use (Wen et al., 2015)

#### PRESCRIPTION OPIOIDS AND PAIN MEDICATION

- Legalization (medical, recreational or only-CBD) reduced pain-related prescriptions (Anderson and Rees, 2023)
- Cannabis use to manage opioid cravings is a prevalent motivation among people who use opioids (Reddon et al., 2023)
  - Associated with self-assessed reductions in opioid use
- For chronic non-cancer pain, medical cannabis has demonstrated comparable effectiveness to opioids while exhibiting lower discontinuation rates (Jeddi 2024)

### CANNABIS SUBSTITABILITY

#### BENZODIAZEPINE

 Cannabis use may be associated with reduction or discontinuation of benzodiazepine prescription (Purcell 2019; Dubois 2021; Bradford 2024)

#### COCAINE

- Medical cannabis legalization does not affect cocaine-treatment admissions or cocaine use (Anderson and Rees, 2023)
- Living near to a medical dispensary does not affect cocaine-related emergency visits (Conyers and Ayres, 2020)

### METHODOLOGY

- Sample (N=34 504) of last-year cannabis users from 30 countries
  - Daily or near-daily cannabis users (n=12 250)
- Inclusion of variables
  - Socio-economic and demographics
  - Area of residence
  - Cannabis motives and coping motives
  - Decriminalisation of possession
  - Substances used in the last 30 days
- Final model built using a backward stepwise selection procedure
  - The likelihood ratio test (p < 0.05) was used to define the variables to keep

### STATISTICAL ANALYSIS

- Multilevel logistic regression modeling was used to identify the determinants that increased/decreased the odds of respondents to consume cannabis frequently (+20 days per month)
- Random effects within countries were implemented in order to control for heterogeneity between groups
- Variance inflation factors analysis revelead the absence of multicolinearity between indipendent variables of the model.

### LOGISTIC REGRESSION

Associations between IVs and frequent cannabis use (aOR)





### Female -

- Prefer not to say -
- Secondary education -
  - University degree -
    - Self-employed -
    - Student/Working -
- Unemployed/Social support -
  - Disability payment/Other -
    - 25-35 ys old -
    - 35-45 ys old -
    - Over 45 ys old -
      - 288-909 € -
      - 909-3125 € -
      - Over 3125 € -

# SOCIO-DEMOGRAPHICS

#### CANNABIS MOTIVES & COPING MOTIVES

#### **Coping motives**

"To reduce stress/relax","To improve sleep","To treat depression/anxiety","To reduce pain/inflammations"



### COPING MOTIVES



#### OTHER SUBSTANCES AND CRIMINALIZATION



Cocaine -Ecstasy/MDMA -Amphetamine Heroin Benzodiazepine LSD Mushroom Alcohol Tobacco Criminalisation

### RESULTS

#### Using cannabis frequently is POSITIVELY associated with

- Using Tobacco, Mushroom, LSD, Cocaine, Amphetamine and MDMA
- Using cannabis to get high, to enhance performances or for coping motives
- Being a male
- Being older
- Being self-employed
- Living in a country where cannabis is decriminalized

#### Using cannabis frequently is NEGATIVELY associated with

- Using alcohol, heroin and benzodiazepine
- Using cannabis for curiosity
- Being a student
- Achieving a higher education

#### DISCUSSIONS

- Older users are more likely to use cannabis frequently
  - Older age is associated with poorer health status
- Self-employed users are more likely to be using cannabis frequently
  - Lower risk to lose their job
- Students are less likely to be frequent users
  - Lower income and purchasing power
- Those using cannabis to enhance productivity are more likely to be frequent cannabis users than those who use it for fun/pleasure
- The more **coping motives** (or co-morbidities for which cannabis is used) the more likely to be a frequent user
- Only 1 out of 50 'therapeutic users' enrolled in a medical cannabis program

### DISCUSSIONS

- Frequent use was strongly and dose-dependently associated with reporting coping motives (stress, anxiety/depression, sleep, and pain).
- Frequent cannabis users are less likely to use heroin, alcohol and benzodiazepines
- The strongest substitution effect is for alcohol compared to benzos
- The decision of physicians to prescribe benzodiazepines vs cannabis for anxiety and insomnia is driven by
  - Efficacy and side effects
  - Reimbursement policies
  - Legal protection for workplace and drug driving laws

## DRUG DRIVING LAWS

- Drug driving laws are considered as the major barrier to access to become a cannabis patient (Graham et al., 2023).
  - Medical defence for driving under the influence of psychoactive drugs with therapeutic application, if they have been prescribed and taken in accordance with a prescription
  - Only few countries apply exception for cannabis patients (Perkins, 2021)
- Cannabis patients are treated more like alcohol drinker than sick individuals
  - Recent trend to identify impaired driving solely on the presence of specific levels of THC in a biological sample (e.g. saliva in France) analogous to BAC limits for alcohol
  - These tests fail to discriminate between impaired and unimpaired drivers (Arkell et al., 2021) especially among frequent users
- First studies on cannabis patients found no impairments (Schiemer 2025)
  - Improvement of clinical symptoms may offset any detrimental cognitive effects
- Driving under the influence of benzodiazepine is considered more dangerous compared to driving under influence of cannabis (European Commission, 2023)

#### DISCUSSION

- If a substance that act as a substitute for cannabis impose more expected harms, cannabis could be studied as a treatment for
  - drug use disorder
  - Lower or stop the use of an alternative medication due to its side effects or low efficacy

#### DRUG HARMS' RANKING



Nutt et al., 2010

#### DRUG HARMS' RANKING



Nutt et al., 2010

### IMPLICATIONS FOR HARM REDUCTION

- This information can provide a knowledge base for the creation of drug social clubs (Belackova et al., 2022)
- Experience with creating a safer polydrug use practice and environments
  - Information with use patterns can help to identify optimal dosages
- Quality research could be targeted on users of more harmful drugs to understand the acceptability of cannabis as a substitute
- More research should investigate the motivations behind the polydrug use of cannabis with other drugs

#### LIMITATION

- Given the variation examined is purely cross-sectional, the direction of causality is not entirely certain
- Unobserved individual factors that are correlated with using cannabis may be driving the associations between substances, rather than a real substitution/complementation effect

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