Cultural attitudes toward cannabis in the United States are becoming more liberal, with more Americans self-medicating cannabis for a number of ailments, including migraines\(^1,2\). Both chronic and episodic migraines pose a major public concern when left untreated by negatively impacting health\(^3\) however the field is in the preliminary stages of describing and understanding relationships between cannabis consumption and migraine relief.

Using the anonymous “Cannabis and Health” online survey, basic demographic information, cannabis use profiles, migraine prevalence, percent relief from cannabis and non-cannabis treatments, and additional factors are described. This exploratory report lends strong support for further investigation into cannabis use and migraine relief. Additional factors are demographic information, cannabis use profiles, migraine prevalence, percent cannabis consumption and migraine relief.

**Materials, Methods & Demographics**

**Procedure**
- Voluntary, anonymous “Cannabis and Health” survey: https://www.change.cannahand
- Data collection Jan 2017-June 2018; additional detail in publications\(^4,5\)
- Reviewed & approved by IRB at CU Boulder

**Recruitment**
- Advertisements: Facebook (67%), Colorado dispensaries (11%), integrative clinic (22%)
- Targeting: individuals aged 21-70, CA., CO., NV., OR., WA. residents (cannabis legal)

**Inclusion criteria**
- Electronic informed consent, over 21 years, and endorsed cannabis use and migraines

**Primary Outcome Measures**
- Demographics & Other Cannabis Use Characteristics (Table 1)
- Migraine Prevalence & Interference
- Migraine Treatment Relief: Non-Cannabis (NC); e.g. OTC pain medication & Cannabis (C) Products

**Cannabis Use Patterns:**
- Cannabis Forms: flower, concentrates/fabbing, edibles, topical
- Cannabis Frequency: Per month (m), day (d), & draghit
- Cannabis Content (%, mg): 9-delta-tetrahydrocannabinol (THC); cannabidiol (CBD)

**Statistical Approach**
- Data collection in Quantics; SPSS for analysis (ps < 0.05)
- Statistical tests: repeated measures and Uni/Multivariate ANOVA, Correlations, \(r\) tests
- Data: reported as mean (\(\pm\)SEM) ± SD

**Results**

### 1. Cannabis Relief Greater than Non-Cannabis Relief & Weakly Correlates to Cannabis Use Patterns

**Figure 1.** Average (±SEM) relief from non-cannabis (NC) and Cannabis (C) products and the difference between C and NC relief shown in gray. Correlations (Pearson coefficient, p-value, and sample N) between migraine relief and cannabis use patterns by form, frequency, and content (inset Table 2).

<table>
<thead>
<tr>
<th>Cannabis Relief Percentage</th>
<th>NC (%)</th>
<th>Drug Hits per Day</th>
<th>THC mg/Day</th>
<th>CBD mg/Day</th>
<th>THC/EDibles</th>
<th>THC/Topicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migraines</td>
<td>40.4</td>
<td>5.9</td>
<td>0.96</td>
<td>1.1</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Non-migraines</td>
<td>35.5</td>
<td>5.2</td>
<td>0.86</td>
<td>1.0</td>
<td>0.4</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**Figure 2.** Average (±SEM) frequency of flower, concentrate, edible, and topical forms of cannabis used per day (Figure 2A) and month (inset Figure 2B).

### 2A. Migraine Respondents Use More Edibles than Non-Migraine Respondents

**Figure 3.** Respondents with higher relief from cannabis use less concentrated THC and edible CBD

**Figure 4.** Respondents with the highest relief from cannabis experience less interference from migraines

### 3. Respondents with Higher Relief from Cannabis Use Less Concentrated THC and Edible CBD

**Table 2.** Demographics & Other Cannabis Information

<table>
<thead>
<tr>
<th>Total (N, %)</th>
<th>Non-Migraine</th>
<th>Migraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Yrs ± SD)</td>
<td>36.8 ± 10.7</td>
<td>25.9 ± 12.5</td>
</tr>
<tr>
<td>Gender (%)</td>
<td>Male 60%</td>
<td>Female 40%</td>
</tr>
<tr>
<td>Race</td>
<td>White 79%</td>
<td>Black 4%</td>
</tr>
<tr>
<td>Cannabis Related</td>
<td>Medical Card (%)</td>
<td>47%</td>
</tr>
</tbody>
</table>

### 4. Respondents with the Highest Relief from Cannabis Experience Less Interference from Migraines

**Table 3.** Demographics & Other Cannabis Information

<table>
<thead>
<tr>
<th>Total (N, %)</th>
<th>Non-Migraine</th>
<th>Migraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Yrs ± SD)</td>
<td>36.4 ± 9.6</td>
<td>25.9 ± 12.5</td>
</tr>
<tr>
<td>Gender (%)</td>
<td>Male 38%</td>
<td>Female 62%</td>
</tr>
<tr>
<td>Race</td>
<td>White 83%</td>
<td>Black 2%</td>
</tr>
<tr>
<td>Cannabis Related</td>
<td>Medical Card (%)</td>
<td>46%</td>
</tr>
</tbody>
</table>

**Conclusions**

1. Migraineurs found more relief from cannabis compared to non-cannabis treatments, moderately correlating to frequency and cannabis strength patterns. These exploratory data indicate greater cannabis relief for migraines may be associated with use of low THC potency concentrates and high THC and low CBD potency edibles (Fig. 1).

2. Migraine and non-migraine groups have similar patterns of flower, concentrate, and topical use (ps > 0.072), yet migraineurs report more daily and monthly edible use (Fig. 2).

3. Lower relief (≤60% group), used a lower average THC concentrate content by 10% and their edible CBD content was lower on average by 22 mg (Fig. 3).

4. Migraineurs who reported complete relief from cannabis for their migraines (100% group) compared to those with 50% or less relief, reported a lower impact from migranes on general activity, locomotion, work, and sleep, lending to nearly half the total interference on their life (Fig 4).