A PROSPECTIVE, OBSERVATIONAL STUDY OF TOPICAL CANNABINOIDS FOR MUSCULOSKELETAL PAIN

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INTRODUCTION

Chronic musculoskeletal pain is one of the most common pain conditions. Topical cannabis preparations for joint pain (balms, salves, creams) are increasingly popular given their presumed safety due to local application, particularly those containing the non-intoxicating cannabinoid, cannabidiol (CBD). However, despite their widespread availability, no prospective evaluations of the analgesic efficacy nor systemic absorption of these products have been performed.

METHODS

After informed consent, participants with chronic peripheral joint pain were assessed via Mobile Pharmacology Laboratory visits prior to using a topical cannabinoid of their choice (baseline), within 96 hours after the first application, and then at one and two weeks after initiating use, with an additional virtual follow-up visit eight weeks later. The **primary outcome was change from baseline on the PROMIS Pain Interference** 6a with secondary outcomes including PROMIS Pain Intensity and the Patient Global Impression of Change (PGIC). Neurocognitive and motor tests included the Grooved Pegboard Test (GPT) and the DRiving Under the Influence of Drugs (DRUID) test. Venous blood draws were completed to assess the absorption of cannabinoids.

RESULTS

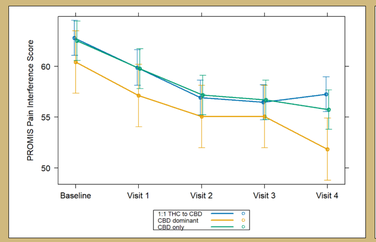
73 participants completed all visits, 67 of whom met the inclusion criteria for analysis and were grouped according to cannabinoid profile: CBD only, CBD dominant, or 1:1 CBD:THC. **PROMIS Pain Interference scores decreased significantly from baseline to 8 weeks in all three groups (p<0.001)**, with no significant differences between cannabinoid groups. Furthermore, these changes met the minimal clinically important difference (MCID) of >5 T-score point change. Similarly, PROMIS Pain Intensity significantly decreased from baseline to 8 weeks in all three groups (p<0.001). PGIC scores significantly increased over time (p<0.001) and were “definitely” or “greatly" improved in 25% of participants at two months. There were no differences from baseline in performance on GPT (p=0.23) or DRUID (p=0.1) tests. Three participants (4.8%) had low but detectable plasma levels of THC and/or CBD of less than 1ng/ml.

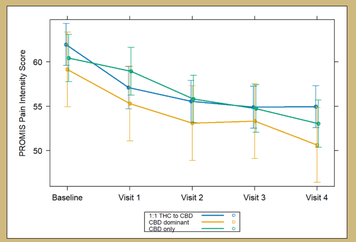




Dominant Cannabinoid	N (%)
1:1 THC to CBD	32 (48%)
CBD Dominant	10 (15%)
CBD Only	25 (37%)

PGIC (8 weeks)	N (%)
No change or worse	10 (15%)
Almost no change	10 (15%)
A little better	8 (12%)
Somewhat better	6 (9%)
Moderately better	16 (24%)
Definite Improvement	15 (22%)
Greatly improved	2 (3%)





DISCUSSION

This observational study suggests **topical cannabinoids may provide clinically meaningful pain relief for individuals with chronic musculoskeletal pain.** Measured plasma cannabinoid levels were minimal, suggesting topical cannabinoid products likely act on localized tissues without significant systemic effects. Further research within a randomized, placebo-controlled trial is warranted to further elucidate efficacy and optimal formulations of topical cannabinoids for chronic MSK pain.

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