Relationships Between Baseline Measures of Sleep and Intentions to Start Medical Marijuana Among Patients with Chronic Non-Cancer Pain

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BACKGROUND

- More than 70% of patients with chronic pain report sleep disturbances.
- Older adults are increasingly seeking medical marijuana (MM) to relieve chronic pain and improve sleep.
- Those who seek MM treatment may have worse pain or sleep, motivating them to start treatment sooner.

- **Objective:** To examine the differences between those with and without intention to start MM in terms of their baseline Fitbit-measured sleep duration and self-reported sleep quality.

METHODS

Sample and Measures: Baseline data from 96 participants in the prospective cohort *Study on medical Marijuana and Its Long-term Effects* (SMILE) in Florida, 48 planning to start MM treatment, 48 – not; 81 (84%) White, 65 (67%) female, *M* (*SD*) age = 64.93 (8.93).

Intake:
- *Intentions to start MM:* Do you plan to start medical marijuana? No/ yes
- *Self-reported sleep quality*: How would you rate your sleep quality during the past 30 days? (1 -very bad; 2 – fairly bad; 3 – fairly good; 4 - very good)

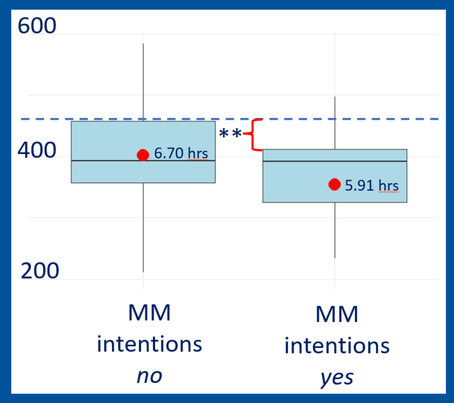
- *Sociodemographic factors: A*ge, sex, ethnicity/race, income, relationship status
- *Pain intensity:* GCPS pain intensity subscale, 3 items: How would you rate your pain right now/ in the past 6 mo-s, worst pain / in the past 6 mo-s, average pain on a 0-10 scale where 0 is "no pain" and 10 is "pain as bad as could be
- *Prescription opioid use:* 0 – no, 1 – yes

After intake participants started wearing Fitbit Charge 4/5s. Participants had not started medical marijuana within the 1st week, so their **first-week Fitbit data were analyzed as baseline**.

Data Analysis: Separate multivariate regression analyses for self-reported sleep quality and average Fitbit sleep duration as outcomes with the *lavaan* package in R, using maximum likelihood estimation with robust standard errors (MLR). *P*-values were adjusted for false discovery rate (FDR) using the Benjamini-Hochberg procedure.

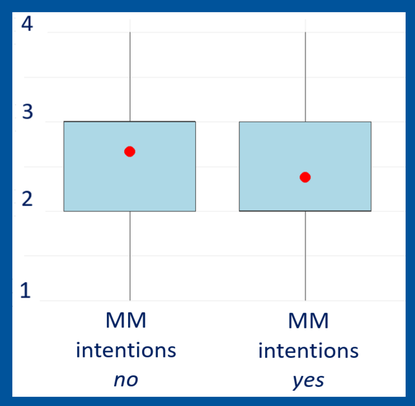
Descriptives by MM intention group

Average nightly Fitbit measured sleep (minutes)



Self-reported sleep quality

1 -very bad; 2 – fairly bad; 3 – fairly good; 4 - very good



Note: Box = interquartile range (IQR), black line = median, red dot = mean; ** p-value < 0.01; based on Mann-Whitney U test.

Multivariate regression results for average nightly Fitbit measured sleep (minutes)

	Estimate (*SE*)	*p* (FDR-adjusted *p*)
Intercept	562.479 (141.54)	0.000 (0.006)
MM intentions - *yes*	-52.01 (18.98)	0.006 (0.014)
Pain intensity	-0.95 (0.66)	0.155 (0.466)
Opioid use	-25.03 (25.2)	0.320 (0.618)
Sociodemographic factors		
Age	-0.27 (1.36)	0.841 (0.957)
Sex - male	-6.22 (23.66)	0.793 (0.997)
Ethnicity/ Race- Non-White*	-25.64 (31.06)	0.409 (0.787)
Income	3.09 (7.09)	0.663 (0.644)
Relationship status - partnered	20.34 (23.97)	0.396 (0.983)

Note: MM Intentions are coded as 0 – no, 1 – yes; opioid use is coded as 0 – no, 1 – yes; sex is coded as 0 – female, 1 – male; race/ ethnicity is coded as 0 – non-Hispanic White, 1 – non-White, *including Hispanic; relationship status is coded as 0 – not partnered, 1 – partnered.

Multivariate regression results for self-reported sleep quality

	Estimate (*SE*)	*p* (FDR-adjusted *p*)
Intercept	0.94 (0.80)	0.240 (0.466)
MM intentions - yes	-0.12 (0.14)	0.404 (0.618)
Pain intensity	-0.02 (0.00)	0.000 (0.000)
Opioid use	0.67 (0.16)	0.000 (0.000)
Sociodemographic factors		
Age	0.02 (0.01)	0.002 (0.009)
Sex - male	-0.18 (0.16)	0.259 (0.466)
Ethnicity/ Race - Non-White*	0.23 (0.19)	0.210 (0.466)
Income	0.02 (0.04)	0.594 (0.764)
Relationship status -partnered	0.22 (0.15)	0.132 (0.396)

Note: MM Intentions are coded as 0 – no, 1 – yes; opioid use is coded as 0 – no, 1 – yes; sex is coded as 0 – female, 1 – male; race is coded as 0 – non-Hispanic White, 1 – non-White, *including Hispanic; relationship status is coded as 0 – not partnered, 1 – partnered.

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RESULTS

- Participants with intentions to start MM slept on average **almost an hour less (measured by Fitbit)** than participants who did not intend to start MM, after adjusting for pain, opioid use, and sociodemographic factors.

- Participants with and without intentions to start MM **did not differ** in **self-reported sleep quality –** both groups reported "fairly bad" sleep.

- **Self-reported sleep quality** was negatively associated with pain intensity (B = - 0.02, p = 0.000) and positively - with opioid use (B = 0.67, p = 0.000) and age (B = 0.02, p = 0.009, all p-values FDR-adjusted for multiple testing).

CONCLUSIONS

- As hypothesized, our initial findings indicate that **less sleep** on average may be associated with **higher interest in MM** treatment among people with chronic pain.

- This finding highlighted the importance of **considering if groups (MM and Non-MM) match on baseline measures in prospective cohort studies**, as those who choose to start MM treatment may be experiencing more severe symptoms.

- A future research direction is to better understand the prospective effects of MM treatment on **self-reported and objective sleep measures** among older adults with chronic pain.

DISCLOSURES

- Authors have no conflicts of interest to disclose.

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