Insomnia is Associated with Neurofunctional Differences among Females Treated for OUD

Augustus M. White BA,[1] Michelle Eglovitch MPH,[1] Anna Beth Parlier-Ahmad MS,[1] Joseph M Dzierzewski PhD,[2] F. Gerard Moeller MD,[1] Caitlin E. Martin MD-MPH[1]

1 School of Medicine, Virginia Commonwealth University, Richmond, VA
2 National Sleep Foundation, Washington, DC

INTRODUCTION

- A bi-directional relationship between sleep and opioid use likely exists,[1,2] and emerging evidence suggests that poor sleep negatively impacts OUD treatment outcomes.[3]
- One potential mechanism linking poor sleep to OUD outcomes is through the impact of sleeping disturbances on the neurofunctional domains inherent to addiction.[4]

OBJECTIVES

To assess differences in five neurofunctional domains implicated in addiction, as a function of insomnia symptom severity, among females with OUD receiving buprenorphine for at least 6 weeks.

METHODS

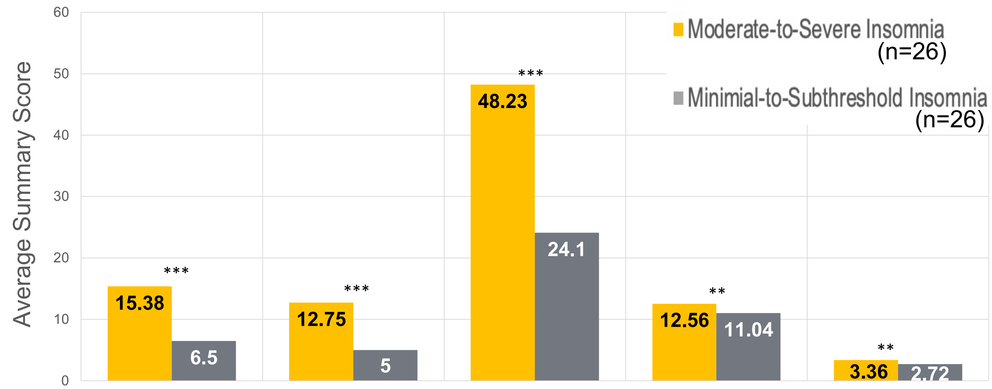
- Ongoing, cross-sectional survey conducted in clinical setting.
- **Inclusion criteria:** Females between the ages of 18-65, diagnosed with OUD and *stabilized on buprenorphine* (>= 6 weeks) at an outpatient treatment center.
- **Exclusion criteria:** Pregnant individuals, those with psychiatric impairments, those with a language (English) barrier.
- **Primary Outcome Measures:** The following neurofunctional domains[5] were assessed with the corresponding scales:
  - *Negative emotionality:* Distress Intolerance Scale, Patient Health Questionnaire (PHQ-9), Generalized Anxiety Disorder Scale (GAD-7), Global Mental Health (PROMIS-10 GMH), Posttraumatic Stress Disorder Checklist (PCL-5)
  - *Metacognition:* Metacognition Questionnaire-30 (MCQ-30)
  - *Interoception:* Multidimensional. Assessment of Interceptive Awareness (MAIA)
  - *Cognition:* 5-Trial Adjusting Delay Discounting, and
  - *Reward:* Short UPPS-P Impulsive Behavior Scale
  - Participants were also asked how much A) poor sleep *interfered with* and B) better sleep could *help with* recovery.
- **Primary Independent Variable:** Insomnia Severity Index (ISI):
  - Score 0-14: minimal-to-subthreshold insomnia symptoms
  - Score 15-28: moderate-to-severe insomnia symptoms
- **Analytic Approach**: Chi-squared and t-tests (alpha=0.10) compared ISI groups. Stata SE 17.

RESULTS

ISI groups did not differ with respect to average age, distribution of racial or ethnic identities, educational attainment, or employment status.

Figure 1. Difference in Negative Emotionality Indices by ISI Status (N=52)

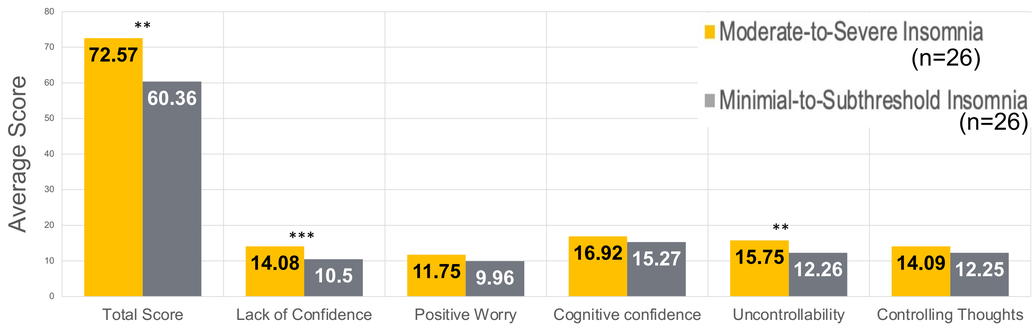
A higher burden of insomnia symptoms was positively associated with negative emotionality (e.g., depression, anxiety, post-traumatic stress, distress intolerance, poorer global mental health)



NOTE: ***p<0.01, **p<0.05, *p<0.10. Bars show average score for each group. Scale ranges: PHQ=0-27, GAD7=0-21, PCL5=0-80, PROMIS-10 GMH=0-20, Distress Tolerance Test= 1-5.

Figure 2. Difference in Metacognition by ISI Status (N=52)

A higher burden of insomnia symptoms was positively associated with higher levels of unhelpful metacognition (e.g., uncontrollable thoughts and lack of confidence)



NOTE: ***p<0.01, **p<0.05, *p<0.10. Bars show average score on MCQ-30 and its 5 subscales. Higher scores correspond to higher levels of *unhelpful* metacognition.

The neurofunctional domains of interoception, reward, and cognition did not differ between insomnia groups. Self-reported opioid craving also did not differ by ISI group.

RESULTS

Those with moderate-to-severe insomnia symptoms reported that poor sleep *interfered* (38% vs 8%) with OUD treatment AND that improved sleep would *help* (77% vs 50%) with recovery more than those with minimal-to-subthreshold symptoms

CONCLUSION

- Providers should consider assessing for symptoms of insomnia when treating patients with OUD, as experiencing insomnia symptoms may be associated neurofunctional phenotypes previously linked to addiction treatment outcomes.
  - Such insights may eventually aide in the creation of personalized treatment plans.
  - Metacognition and negative emotionality were the two neurofunctional domains which differed most between women receiving buprenorphine for OUD that did and did not experience a high burden of insomnia symptoms.
- Future studies should investigate if sex and gender moderate the relationship between sleep, neurofunction, and OUD outcomes.

Take Home Point
Among women who stabilized on buprenorphine for OUD, a higher burden of insomnia symptoms was associated with neurofunctional phenotypes associated with adverse addiction treatment outcomes (e.g., relapse).

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DISCLOSURES

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