

many worries (OR=1.3, $p<0.0005$), difficulty relaxing (OR=1.2, $p=0.004$), restlessness (OR=1.3, $p=0.001$), and irritability (OR=1.2, $p<0.0005$). PERCEPTION symptoms were uniquely, independently associated with anxiety level (OR=1.1, $p=0.03$), control (OR=1.2, $p=0.001$), many worries (OR=1.2, $p=0.001$), difficulty relaxing (OR=1.4, $p<0.0005$), irritability (OR=1.2, $p=0.018$), and feelings of fear (OR=1.2, $p=0.002$).

Conclusion: The DAYTIME and PERCEPTION symptoms of insomnia were strongly related to anxiety symptoms. Current treatments for insomnia focus mainly on improving sleep. Future research should test the hypothesis that treating daytime symptoms of insomnia may aid patients with comorbid anxiety.

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BROADLY ASSESSING SLEEP COMPLAINTS IN A SAMPLE OF PATIENTS WITH ADHD

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Introduction: It is commonly observed in clinical settings that patients with ADHD regularly present with comorbid “sleep disturbances”. In the absence of broad based sleep disorders assessments, it is thought that this represents Delayed Sleep Phase Disorder (DSPD). Recently, a surveillance study was undertaken in a university-based, outpatient specialty clinic for adults with ADHD, by adding a comprehensive sleep disorders screener (SDS-CL-25) to the clinical intake procedures. These data were used to ascertain which sleep disorders symptoms are common in this clinical cohort.

Methods: SDS-CL-25 data were collected in 150 subjects (93/57 male/female, mean age 32.8, age range 18-79). The SDS-CL-25 is a 25 item instrument developed to screen for 13 sleep disorders at one time (Sleep Dx symptoms are endorsed on Likert-scales; 0 [never] 4 [$>5x$ /week]). For the purposes of this study, the percentage of subjects endorsing frequent symptomatology (sum of the percent of endorsements for columns 3 & 4) was calculated per symptom. Sums of $\geq 20\%$ were considered, a priori, to be of clinical significance.

Results: Patients endorsed: increased fatigue (59%); SL or WASO or EMA's ≥ 30 minutes (40%; 26%; 21%, respectively); late preferred time to bed (31%); work & school limits sleep opportunity (30%); variable time to and out of bed (27%); and snoring (21%). The average percent endorsement was 15% (range 0-59%).

Conclusion: These results suggest that, consistent with clinical observations, adult patients diagnosed with ADHD frequently endorse late preferred time to bed, variable sleep wake schedules, work/school limitations on sleep opportunity, and sleep onset problems that are accompanied by daytime fatigue. This constellation of symptoms is consistent with the notion that patients with ADHD tend to have comorbid DSPD. The high prevalence of middle and late insomnia was unexpected and suggests that Insomnia Disorder (proper) may also be a feature of ADHD.

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CHARACTERISTICS OF UNTREATED SLEEP DISTURBANCE DURING INTENSIVE OUTPATIENT TREATMENT FOR SUBSTANCE USE DISORDERS: PRELIMINARY RESULTS FROM A LONGITUDINAL STUDY

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Introduction: Previous studies have shown that sleep problems are commonly reported during treatment for substance use disorders (SUDs) and sleep complaints have been linked to subsequent relapse. However, most of these findings were in well-controlled clinical trials and may not generalize to the public. Little is known about the natural progression of sleep complaints during treatment in community clinics, the most common treatment approach for SUDs. The aim of this study is to longitudinally assess prevalence of clinically significant sleep disturbance at baseline and post-treatment in a community-based intensive outpatient (IOP) SUD treatment program using a multi-method approach with well-validated measures of sleep.

Methods: Adults beginning IOP SUD treatment completed the Pittsburgh Sleep Quality Index (PSQI), Insomnia Severity Index (ISI), Nightmare Disorder index (NDI), and one week of actigraphy and sleep diaries. Measures were repeated following treatment (approximately 5 weeks later).

Results: Preliminary analyses on 21 adults who have been enrolled thus far revealed 85.6% of participants experienced sleep disturbance (PSQI > 5) at baseline. 28.5% of participants reached cutoff for moderate-to-severe insomnia symptoms (ISI > 15) and 42.9% reported nightmares more than once per week. Sleep parameters taken from actigraphy and sleep diaries revealed mean sleep efficiency was 77.5% (TST $M = 6.2$ hours; TIB $M = 7.9$ hours). These variables did not improve from baseline to post-treatment. Further, most measures indicated a worsening of sleep, though this did not reach significance (all $ps > .05$).

Conclusion: This preliminary data show a high prevalence of self-reported sleep complaints and objectively measured poor sleep efficiency that do not improve over the course of treatment. Data collection is ongoing and expected to at least double. More robust analyses, including differences between SUD type (e.g., cannabis vs. opioid) and relationship to relapse at post-treatment, will then be completed.

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DO SLEEP DISORDER SYMPTOM ENDORSEMENTS DIFFER BETWEEN ADHD SUBTYPES?

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Introduction: To date, research on differences in sleep complaints between patients with different subtypes of ADHD has been mixed. On balance, the evidence tends towards ADHD-Combined Presentation (ADHD-C) being associated with more severe sleep and sleep-related daytime complaints than ADHD-Primarily Inattentive (ADHD-I). In order to further assess this issue a surveillance study was undertaken in an active ADHD clinic by adding a comprehensive sleep disorders screener (SDS-CL-25) to the clinical intake procedures. These data were used to ascertain whether the two subtypes differ for any of 13 sleep disorders symptoms.

Methods: Subjects ($n = 132$; 83 male, 49 female, mean age 32.8, age range 18-79), presenting to the clinic for evaluation for ADHD were given the SDS-CL-25. The SDS-CL-25 is a 25-item instrument developed to screen for multiple sleep disorders at one time (problems are endorsed on a Likert-scale; 0 = never and 4 = more than 5x/week). Endorsements greater than 3x/week were counted as positive for the symptom and less than three days per week was considered negative. Percent per group was compared using Chi Square Analyses. Cumulative morbidity means were also analyzed using t-tests. The subtype, ADHD-I ($n=71$) and ADHD-C ($N=61$), was established using EMR records.

Results: No significant differences between patients with ADHD-I and ADHD-C were detected.

Conclusion: The lack of finding in the present analysis may reflect a lack of difference or a failure to detect differences based on the small sample sizes or lack of statistical control for likely confounders (age, sex, illness severity or chronicity, SES status, etc.). Analyses are ongoing.

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MENTAL HEALTH AND SLEEP DISORDERS ARE ASSOCIATED WITH ELEVATED C-REACTIVE PROTEIN IN RETURNING VETERANS

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Introduction: Mental health disorders and sleep disorders are associated with systemic inflammation, which may be a key element linking these highly co-occurring conditions to negative health outcomes. This study used national VA medical records to examine C-reactive protein (CRP) levels in Iraq/Afghanistan veterans based on presence of mental health and/or sleep disorder diagnoses.

Methods: We examined medical records for 16,576 Iraq/Afghanistan veterans under age 55 who had high-sensitivity CRP results reported. ICD diagnostic codes were used to compare CRP values for: a) veterans without sleep disorders or mental health diagnoses, b) veterans with mental health disorders only, c) veterans with sleep disorders only, and d) veterans with both conditions. In generalized linear models controlling for demographics, we examined the impact of diagnostic category on continuous CRP value as well as the risk of elevated CRP ($>3\text{mg/L}$).

Results: Veterans with mental health disorders (coeff=.14, $p<.001$) and comorbid sleep and mental health disorders (coeff=.21, $p<.001$) had higher continuous CRP values compared to veterans without either condition. Veterans with comorbid sleep and mental health disorders had higher continuous CRP values than veterans with sleep disorders alone (coeff=.22, $p<.041$); however, there were few patients in the current sample who were diagnosed with sleep disorders alone ($n=401$, 2.4%). Additionally, veterans with

mental health disorders (ARR=1.12, $p=.004$) and comorbid sleep and mental health disorders (ARR=1.15, $p=.001$) were more likely to have CRP values $>3\text{mg/L}$ compared to veterans without either condition.

Conclusion: Sleep disorders were highly likely to co-occur with mental health disorders in this sample of Iraq/Afghanistan veterans. Mental health disorders and comorbid mental health/sleep disorders were associated with elevated C-reactive protein, indicating these patients are at highest risk for negative health outcomes. Future studies should investigate directionality of relationships among sleep disruption, mental health symptoms, and inflammation.

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PHYSICAL ACTIVITY MODERATES THE SLEEP-EMOTIONAL DISTRESS RELATIONSHIP, BUT LESS SO AMONG BLACKS VS. WHITES

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Introduction: Emotional distress (ED) is associated with poor sleep. Research shows that minority populations experience greater vulnerabilities to both ED and poor sleep. Interventions such as relaxation training and behavioral therapy address this relationship but are not always successful. Research shows that physical activity (PA) is negatively associated with ED and positively associated with sleep duration. However, it is unclear whether PA attenuates the relationship between ED and sleep, and if this relationship differs by race/ethnicity.

Methods: We analyzed data from the 2005-2015 National Health Interview Survey (NHIS), a nationally representative dataset of 416,152 participants. ED, hours of PA per day, and average sleep duration were collected. Regression models with covariates (age, sex, employment status, BMI) were used to analyze the moderation effect of PA within sleep and ED. Regression models were stratified by race/ethnicity.

Results: 261,686 participants (45,926 blacks, 17.55%, and 215,760 whites, 82.45%) responded with the required variables for analysis. 63% of participants reported at least some physical activity. The results of the regression showed that a significant amount of variance in ED stemmed from sleep duration; $F(7, 121088) = 1,619.72$, $p < 0.001$. PA was found to have a significant main effect, $t(121,088) = 9.01$, $p < 0.001$. There was a significant moderation effect of PA, $t(121088) = 7.26$, $p < 0.001$. Stratification showed that the moderation effect of PA was not significant among blacks $t(121,088) = -1.45$, $p = 0.149$ and significant among whites $b = -.08$, $t(101,754) = -7.82$, $p < 0.001$.

Conclusion: The present study found support for moderation of PA in the sleep-ED relationship. However, it found that blacks do not experience the same benefits of PA in this relationship as whites. Further research should be performed to understand the connection of PA to sleep duration and ED.

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URBANICITY AND THE SLEEP-MENTAL HEALTH RELATIONSHIP

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