severity as a moderator of the association between OSA severity with mood, and with diabetes-related distress in adults with OSA and T2D.
Methods: This secondary analysis used pooled baseline data (N=240) from two independent randomized controlled trials that evaluating the efficacy of OSA and insomnia treatment in persons with T2D. OSA (apnea-hypopnea index [AHI] ≥ 5 events per hour) was determined by in-home ApneaLinkPlus®. Insomnia severity was measured by the Insomnia Severity Index, mood by the Profile of Mood States, and diabetes-related distress by the Problem Areas in Diabetes Scale. Possible moderator effect of insomnia severity was examined using hierarchical multiple linear regression analysis, controlling for demographic characteristics and restless leg syndrome (RLS).
Results: Participants were middle-aged (mean age ± SD [years] = 57.80 ± 10.17), White (65%), educated post high school (56.3%), evenly distributed by gender (49.6% female) and marital status (47.9%), with 34.3% reporting financial difficulty. Participants had poorly controlled diabetes (mean HbA1c ± SD [%] = 7.93 ± 1.62) and 15.5% reported symptoms of RLS. Insomnia severity had a moderating effect on the association between OSA severity and mood states (b = -.048, p = .017). Insomnia severity had no significant moderating effect on the relationship between OSA severity and diabetes-related distress (b = -.009, p = .458), but independently increased the level of diabetes-related distress (b =1.133, p < .001).
Conclusion: Insomnia severity moderated the association between OSA severity and mood states in adults with OSA and T2DM. Counterintuitively, as OSA severity increased, the level of mood disturbances decreased depending on insomnia severity. In addition, insomnia was independently associated with diabetes-related distress. These findings suggest that insomnia may be the primary underlying sleep disorder which is associated with psychological factors in persons with T2D. Findings need further investigation because psychological factors are known to be associated with worse glycemic control.
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0601

PREDICTING INCIDENT OUTCOMES FROM THE MICROSTRUCTURE OF SLEEP

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Introduction: Sleep contains rich information about health status, relevant to future health outcomes including dementia, cerebrocardiovascular diseases, psychiatric diseases, and mortality. We hypothesized that the risk of these outcomes is predictable from quantitative analysis of sleep microstructure.
Methods: We included participants who underwent a diagnostic study and age older than 18 years. We excluded participants with missing demographics or PSGs < 2.5 hours in duration. We considered 11 outcomes including dementia, mild cognitive impairment or dementia, ischemic stroke, intracranial hemorrhage, atrial fibrillation, myocardial infarction, type 2 diabetes, hypertension, bipolar disorder, depression, and mortality. The outcomes were determined using ICD codes, brain imaging reports, medications, and/or cognition scores. We extracted 86 spectral and time-domains features from overnight sleep EEG recordings, including 57 features from NREM sleep epochs, 21 from REM, and 8 covariates including age, sex, body mass index, and medication prescriptions including benzodiazepines, antidepressants, sedatives, antiseizure medications, and stimulants. We modeled risk using Cox survival analysis with death as a competing risk. Model calibration was assessed using the difference in 10-year cumulative incidence (10y-CI) between Cox estimate vs. Aalon-Johansen estimate (ground truth).
Results: There were 8673 participants with an average age of 51 years; 51% were female. Participants were partitioned into three groups: poor sleep (hazard > 3rd quartile (Q3)), average sleep (Q1 ≤ hazard ≤ Q3), and good sleep (hazard < Q1). The model was able to predict the 10y-CI not significantly different from the ground truth, except for the risk of intracranial hemorrhage in the poor sleep group. The outcome-wise mean prediction difference in 10y-CI was 2.3% for the poor sleep group, 0.5% for the average sleep group, and 1.3% for the good sleep group. The outcomes with the top three poor-to-average risk ratios (RR) were dementia (RR = 6.2 95% confidence interval [4.5 – 9.3]), mortality (RR = 5.7 [5.0 – 7.5]), and MCI or dementia (RR = 4.0 [3.2 – 4.9]).
Conclusion: Sleep EEGs contain decodable information about the risk for future incidence of mortality, dementia, cerebrocardiovascular and psychiatric diseases. The findings strengthen the concept of sleep as a window into brain and general health.
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0602

RAPID EYE MOVEMENT (REM) SLEEP DURATION IS INVERSELY RELATED TO DAYTIME PRURITUS SEVERITY: PRELIMINARY FINDINGS IN POSTTRAUMATIC STRESS DISORDER (PTSD) PATIENTS

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Introduction: Pruritus (itching) is one of the most distressing symptoms of dermatologic disease. There can be a bidirectional relationship between pruritus severity and sleep. Pruritus during sleep is most frequently encountered during stages N1 and N2 and sleep fragmentation can exacerbate pruritus. Often there are limited effective treatments available for pruritus. In this study we examined REM sleep data obtained from PTSD patients who reported somatic complaints including daytime pruritus. To our knowledge there are no studies of REM sleep and pruritus during wakefulness.
Methods: Seventy-five consenting patients with mild-to-moderate PTSD (all female; mean ±SD age 48.89 ±13.50 years) completed a battery of psychiatric and sleep ratings and underwent ≥ 1 home sleep apnea test (Watch PAT200; Itamar) which provided measures of %REM and REM duration. Exclusion criteria were use of benzodiazepines or narcotics. Pruritus was measured using Item 2 of the Pennebaker Inventory of Limbic Languidness (PILL), which assesses the frequency of common physical symptoms. For PILL Item 2 patients self-rated the frequency with which they experienced "Itchy eyes or skin" with a rating of "1" = ""never or almost never", "2"="less than 3 or 4 times per year", "3"="every month or so", "4"="every week or so', and"5"="more than once every week".
Results: The mean±SD % REM was 21.78 ±7.64 (range 1.76% to 40.69%); and overall duration of REM sleep (mean ±SD) was 91.37±38.20 minutes (range 5.01 to 194.47 minutes). The frequency of pruritus ratings were as follows:: 39.5% endorsed a rating of "5" . The remainder self-endorsed the following frequencies: "4" (15.8%), "3" (21.1%), "2" (15.8%), and "1" (7.9%)..

Pearson product moment correlation between the pruritus rating (item 2 of PILL) and REM sleep parameters were as follows: % REM (Pearson r= -0.172; p=0.144) and REM duration (Pearson r= -0.247; p=0.035).
Conclusion: Daytime pruritus was inversely related to the duration of REM sleep in a sample of PTSD patients. Pruritus can be a difficult condition to manage. Optimization of REM sleep may have a role in the management of pruritus.
Support (If Any): None

0603

CHANGES IN HEALTHCARE VISITS AND EXERCISE HABITS ASSOCIATED WITH POOR SLEEP IN SLEEP MEDICINE PATIENTS DURING THE COVID-19 PANDEMIC

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Introduction: Patients may be experiencing increased stress and sleep disturbance due to healthcare and changes in daily habit during the COVID-19 pandemic. Healthcare changes may include telemedicine visits, delayed or canceled appointments and sleep studies. The purpose of this study was to assess the association between changes in healthcare and daily habits on sleep.
Methods: Sleep medicine clinic patients completed an online survey during the pandemic and again 6 months later (December 2020 - May 2021), where they answered questions about COVID-19 (COVID-19 vaccination and test results, changes in health care visits and habits during the pandemic), PROMIS measures (Sleep Disturbance, Sleep-Related Impairments), and Insomnia Severity Index (ISI). General linear regression model was performed using SAS to determine if changes in healthcare and daily habits predicted poorer sleep.
Results: Among 81 patients who completed baseline survey, 54 (aged 55.2±18.4 y, 61% female, 70% Caucasian) completed the 6-month follow-up survey. Among them, 6% tested positive for COVID-19 and 83% were vaccinated. 30% changed their healthcare office appointments to telephone visits, 50% changed to video visits; whereas 22% cancelled and 30% rescheduled their healthcare appointments. At baseline, changes in health care visits had significant increase on ISI (3.98 ± 1.66, p=0.02). Upon follow-up, changes in health care visits had significant increase on ISI (4.77 ± 2.12, p=0.03) and Sleep Impairments (7.97 ± 3.83, p=0.04). A decrease in exercise predicted lower Sleep Disturbance (6.81 ± 3.31, p=0.04).
Conclusion: Sleep medicine patients who reported changes in health care visits at baseline and 6-month follow up reported higher insomnia severity, and sleep-related impairments. Changes in healthcare had deleterious effects on sleep and should be considered when managing patients' healthcare. Unexpectedly, patients who reported a reduced level of exercise reported improved sleep. Pandemic public policies (e.g., gym closures) may have made it more difficult to exercise but allowed for greater opportunity to sleep.
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0604

DEPRESSION, ANXIETY AND COPING-AVOIDANCE BEHAVIORS ASSOCIATED WITH LONG-TERM INSOMNIA SYMPTOMS DURING THE COVID-19 PANDEMIC

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Introduction: Stressful events, such as the COVID-19 pandemic, can have long-lasting, detrimental effect on sleep. It is important for practitioners to understand how their patients may be stil experiencing residual negative effects of the pandemic to optimize their care. In this study we evaluated how measures of self-reported measures of anxiety and depression during the COVID-19 pandemic predicted measures of sleep disturbnce 6 months later among sleep medicine clinic patients.
Methods: Between June-November 2020, 81 sleep medicine clinic patients (54.8±15.9 y, 44% male, 69% Caucasian) completed an online survey that included PROMIS measures (Sleep Disturbance, Sleep-Related Impairments, Informational Support, Emotional Distress-Anxiety) and Insomnia Severity Index (ISI). Patients were recontacted 6 months later to complete the same surveys. 54 patients (55.2±18.4 y, 39% male, 70% Caucasian) completed the follow-up survey and were included in this present analysis. We conducted multivariate regression analyses to determine how the change in self-reported PROMIS measures from baseline during the pandemic were predictive of post-pandemc 6 month follow-up PROMIS measures and ISI.
Results: PROMIS depression score at baseline was predictive of both sleep disturbance (0.63 ± 0.15; p<.0001) and sleep impairment (0.49 ± 0.18; p=0.01) 6 months later. Baseline brief coping avoidance also predicted 6 month sleep disturbance (0.85 ± 0.33; p<0.009) and sleep impairment (0.85 ± 0.33; p=0.014) as well as ISI (0.52 ± 0.18 units; p=0.006). Baseline anxiety predicted ISI at 6 months (0.25 ± 0.09 units, p=0.009).
Conclusion: Higher levels of self-reported depression, anxiety and coping-avoidance behaviors during the COVID-19 pandemic lead to long-lasting increase in sleep disturbance and impairment as well as insomnia. Addressing depression, anxiety and coping behaviors that occur as result as a stressful event is advised to avoid long-term detrimental effects on sleep.
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0605

LONGITUDINAL ASSESSMENT OF CPAP USE IN SLEEP MEDICINE CLINIC PATIENTS DURING THE COVID-19 PANDEMIC

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Introduction: Due to the COVID-19 pandemic, there may be changes in continuous positive airway pressure (CPAP) adherence. This study aimed to examine the longitudinal effect of using CPAP