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Introduction: Spiritual well-being can impact quality of life and survival among diseased populations, similarly to sleep. Despite beneficial effects of spiritual-based practices on sleep, few studies have investigated an association between these attributes. Our goal was to explore correlations between measures of sleep quality and spirituality among severe medical inpatients hospitalized for different reasons, testing whether sleep could be a mechanism by which spirituality influences clinical outcomes.
Methods: Patients (18+ years) admitted in two units of the University's hospital between Oct/2018 and Aug/2019 were invited to participate. Semi-structured interviews included the Duke Religiousness Index, the Belief into Action Scale, the Functional Assessment of Chronic Illness Therapy Spiritual Well-Being, the Pittsburgh Sleep Quality Index (PSQI), and the Short Form Six-Dimension (SF-6D) health index. Diagnoses were defined by the International Classification of Diseases. We used the Chi-square test, bivariate correlations, and Generalized Linear Models.
Results: A total of 146 consecutive patients were included (46.8±15.9 years, 51% men), 28% admitted for cardiovascular diseases, 26% for cancer, 20% rheumatologic disorders, and 26% for other conditions including hematological, nephro-urological, infectious, among other diseases. The mean PSQI was 10.1±4.7 and 55% of patients rated their sleep as poor. Average sleep duration was 6.5±1.9 hours. Insomnia (64%) was the most frequent sleep complaint, followed by nocturia (43%), pain (42%), and discomfort breathing (29%). There was a modest correlation between sleep quality and spiritual well-being (-0.23; $p<0.01$). Maintenance insomnia correlated with less spiritual peace/meaning (-0.27; $p<0.01$) and faith (-0.21; $p=0.01$), whereas pain, with more social (0.21; $p=0.01$) and private (0.24; $p<0.01$) religious activities. Initial insomnia also correlated with private activities (0.18; $p=0.04$). Seep quality (0.43; 0.25–0.62), spiritual peace/meaning (-0.21; -0.40-[-0.01]), and social religious activities (0.18; 0.04–0.32) were independent indicators of higher SF-6D scores, additional to an interacting effect between sleep quality and spiritual well-being predicting better quality of life.
Conclusion: Subjective sleep quality is associated with spiritual well-being and quality of life, independently of the nature and severity of the medical disease. Our findings also suggest that patients suffering from nocturnal pain and trouble falling asleep might be more engaged with religious activities.
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RELATIONSHIPS BETWEEN SLEEP AND PSYCHOLOGICAL ADJUSTMENT DURING THE COVID-19 PANDEMIC

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Introduction: Disruption of daily routines (employment, social interaction, health behaviors) during the COVID-19 pandemic has contributed to psychological distress (worry, rumination), likely impacting sleep-related behaviors. This study evaluated change in psychological adjustment and insomnia symptoms during the COVID-19 pandemic.
Methods: The sample included 192 adults from Utah who completed three data collection cycles across 9 consecutive months to assess self-reported depressive, anxiety, and insomnia symptoms. Anxiety and depressive symptoms were assessed via the Generalized Anxiety Disorder scale (GAD-7) and Patient Health Questionnaire depression scale (PHQ-8). Insomnia was measured by the Insomnia Severity Index (ISI). Data were analyzed using mixed-effect modeling and adjusted for anxiety and depression to determine their independent effects on insomnia symptoms. Spaghetti plots examined mean changes over time and significance was set at $p<0.05$. Average anxiety, depression, and insomnia severity scores were aggregated for each month.
Results: As participants' symptoms of anxiety and depression increased in severity, insomnia symptoms increased similarly. Over half of participants reported clinically significant ISI scores (59.38%). In both the random intercept and random slope models, there were significant independent effects of anxiety on insomnia severity ($F=20.69$; $p<0.0001$) and significant effects of depression on insomnia severity ($F=87.44$, $p<0.0001$). While the change in insomnia severity over time was on the boundary of statistical significance ($F=3.54$; $p=0.0618$), dropping from 15.17 (April) to 12.58 (December), our longitudinal analyses revealed no significant difference for the effect of anxiety or depression in predicting insomnia severity over time. Participants' monthly averages varied for sleep and psychological scores (ISI) from 12.58 to 16.07 (SD=3.76 to 6.34 for December and September, respectively), (GAD-7) from 3.47 to 6.39 (SD=3.36 to 5.26 for December and June, respectively), and (PHQ-8) 4.47 to 6.10 (SD=4.65 to 4.39 for December and June, respectively).
Conclusion: Results demonstrate high prevalence of insomnia symptoms during the COVID-19 pandemic and underscore the importance of examining mental health functioning and psychological resiliency on sleep in order to enhance prevention efforts in response to a significant stressor.
Support (if any):

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IMPACT OF WASHINGTON STATE COVID-19 LOCKDOWN ON SLEEP

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Introduction: The COVID-19 pandemic caused a global disruption to daily routines. Studies using surveys and sleep-related applications on mobile devices suggest that the pandemic has contributed to increases in sleep disruption or onset of new sleep disturbances. We present results from a naturalistic at-home study in which objective sleep measurements were made using both a wrist actigraph (Actiwatch-2, Philips Respironics) and a non-contact monitoring device (SleepScore Max, SleepScore Labs), comparing sleep measurements obtained immediately before and after the start of the first mandatory COVID-19 stay-at-home order in Washington State.
Methods: As part of a larger study, nine Washington State residents (ages 22–48, 5 female, 4 male; 6 insomniacs, 3 normal sleeper) were enrolled in a 10-week at-home sleep monitoring study, which involved 1 week of actigraphy, 8 weeks of non-contact monitoring (data available for 6 subjects), and 1 week of actigraphy. During the study, the Washington State governor issued a stay-at-home order, effective March 15, 2020. We compared sleep measurements obtained before this date (mean ± SD: 25.0 ± 15.0 nights) and after this date (25.2 ± 13.9 nights) using mixed-effects ANOVA.
Results: Non-contact monitoring measurements indicated that after the start of the lockdown, participants woke up later by 63.2 ± 12.1 min (mean ± SE; $F[1,299]=27.40$, $p<0.001$) without significant change in bedtime ($F[1,299]=0.29$, $p=0.59$). Sleep latency lengthened by 4.0 ± 2.3 min ($F[1,295]=4.92$, $p=0.027$), and there were

increases in number of awakenings (F[1,295]=6.22, p=0.013) and wake after sleep onset (F[1,295]=12.58, p<0.001). Actigraphy data complemented these results, showing delayed sleep onset by 53.4 ± 15.1 min (F[1,101]=12.46, p<0.001) and delayed final awakening by 104.3 ± 19.6 min (F[1,101]=28.43, p<0.001), with longer sleep duration (F[1,101]=6.06, p=0.016), increased number of awakenings (F[1,101]=13.00, p<0.001), and a trend for increased intermittent wakefulness (F[1,101]=3.88, p=0.052) post-lockdown.
Conclusion: In this sample, we found evidence of increased sleep disruption following the first Washington State stay-at-home order related to COVID-19. Our findings are consistent with previous studies based on self-report data, which observed later wake times and decreases in sleep quality post-lockdown.
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SLEEP APNEA SCREENING IN INPATIENTS ADMITTED WITH ACUTE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A FEASIBILITY STUDY

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Introduction: Obstructive sleep apnea (OSA) and Chronic obstructive airway disease (COPD) affect millions of Americans. The combination (overlap syndrome) results in increased morbidity, mortality and associated healthcare costs. Type III sleep testing via portable monitoring (PM) is not recommended for patients with COPD, and there is little guidance in regards to inpatient testing. We aim to determine the feasibility of inpatient PM for diagnosing OSA in patients admitted with acute exacerbation of COPD (AECOPD) and hypercapnic respiratory failure requiring noninvasive positive pressure ventilation (NIPPV).
Methods: This is a retrospective review of prospectively collected data. Inpatients 40 year-old and older admitted with AECOPD and PaCO2≥52mmHg on arterial blood gas (ABG) testing requiring NIPPV were included for analysis. One patient died and one withdrew consent. The remaining patients underwent overnight PM (ApneaLink Airtm by ResMed®) once clinically stable, off NIPPV, on oxygen when needed to sustain oxygen saturation at or above 88%. Patients were discharged on volume-assured pressure support ventilation (VAPS) for nightly use at home and followed for 6 months.
Results: Five patients were included. Average age was 60 years, majority were African-American males, former smokers (average 31.2 pack-years), with moderate to severe airflow obstruction (FEV1 24–52 %Pred). Except for one (BMI 17 kg/m2), patients had concomitant morbid obesity (average BMI 39.7 kg/m2). Four out of 5 patients had overlap syndrome (AHI 19.4/h -75/h). Follow-up objective download data demonstrated AHI <10 in all patients with available data (3/5 at 6 months). One patient required in-sleep center VAPS titration.
Conclusion: This pilot study suggests portable monitoring is feasible in diagnosing OSA in this complex patient population admitted for AECOPD, despite concomitant oxygen use during PM testing. Despite the small number of patients, 4/5 were diagnosed with moderate to severe OSA and objective data on VAPS demonstrated effective treatment. Further studies using PM for screening of OSA in inpatients with COPD and obesity and impact on patient-centric outcomes are needed.
Support (if any):