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Abstracts

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Physiology, College of Medicine, University of the Philippines Manila, Manila, Philippines

Introduction. COVID-19 has now infected over 187 million globally and continually disrupts society. World universities and colleges have been closed and have shifted to distance learning. This sudden change in living environment aggravates pre-pandemic mental and physical vulnerabilities of undergraduate students, including sleep. This systematic literature review aims to describe the prevalence of sleep problems, circadian rhythm disruption, sleep duration, sleep quality, insomnia symptoms, and psychological factors affecting sleep of undergraduate students from various global regions.

Methodology. A systematic search on March 2, 2020 for articles published from January 1 to December 31, 2020 using the search words “COVID-19,” “Coronavirus,” “Pandemic,” “Sleep,” “Mental Health,” and “Students” from PubMed, Scopus, and Cochrane yielded 757 articles. After removing duplicates, and excluding articles not meeting the selection criteria, 26 articles were included.

Results. Included works came from the USA (5), Italy (5), Spain (1), China (8), Bangladesh (2), UAE (1), Jordan (1), India (2), and Indonesia (1). All included studies recorded data on sleep after stay-at-home orders. Point prevalence of self-reported sleep problems varied across regions (n=3092, 12.6% in China; n=154, 32.5% in UAE; and n=75, 70.7% in Spain) but was increased when compared to values prior to stay-at-home orders (n=571, 10.1% in China; n=991, 31.4% in UAE; and n=75, 37.3% in Spain). There were also reported disruptions in sleep patterns in student populations from the USA (n=195), Italy (n=103), and India (n=3), delayed sleep times and wake up times in Italian (n=307, n=809) and American students (n=139, n=1222), reduced difference in sleep timing between weekdays and weekends in American students (n=139), irregular sleep and wake up times in Chinese students (n=323489) and UAE students (n=775). Sleep duration was also found to be increased when compared to pre-pandemic levels; and was >7 hrs in the USA (n=139, n=1222), China (n=2485), Bangladesh (n=1979, n=3122), and Indonesia (n=991). On the other hand, sleep quality of students measured via the Pittsburgh Sleep Quality Index varied across regions. Some studies in the USA found that sleep quality did not change (n=1222) but some found a significant worsening (n=107) as in Italian (n=307) and Spanish students (n=75). Furthermore, increased stress, depression, anxiety, discrimination, shame, stigma, negative affect; increased COVID-19 cases, increased digital media use; and living in a rural residence, being unemployed, inaccurate knowledge of COVID-19, and being a college student have been found to negatively influence sleep in the USA (n=1222), China (n=4099, n=995, n=304167), Italy (n=8177, n=307, n=809), Spain (n=75), and Bangladesh (n=3122).

Conclusion. Results highlight the impact of stay-at-home orders on the sleep of undergraduate students and reveal opportunities for local and global institutions to intervene with policies and programs to promote the well-being of this group.

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IMPACT OF NEIGHBORHOOD AND ENVIRONMENTAL FACTORS ON SLEEP HEALTH AMONG MIDDLE-AGED AND OLDER ADULTS IN THE CANADIAN LONGITUDINAL STUDY ON AGING

S. Stranges 1, R. Rodrigues 1, K.K. Anderson 1, R. Alonzo 1, P. Wilk 1, G. Reid 1, J. Gilliland 1, G. Zou 1, K. Nicholson 1, G. Guiana 1. 1Western University, London, Canada

Introduction: Emerging evidence emphasizes the importance of neighborhood and environmental factors on sleep patterns. Neighborhood and environmental effects may be opposing in terms of having a health enhancing versus a health threatening effect, therefore it is important to consider a range of factors together to determine the primary factors that influence sleep. Our objective was to explore the neighborhood and environmental correlates of sleep health in a population-based Canadian sample.

Methods: We used cross-sectional baseline data from the Canadian Longitudinal Study on Aging (CLSA), a survey of 30,097 community-dwelling adults, aged 45-85. Self-reported sleep measures included sleep duration, sleep dissatisfaction (vs satisfied/neutral), and sleep disturbances (difficulty initiating or maintaining sleep). We used environmental data from the Canadian Urban Environmental Health Research Consortium (CANUE) linked to CLSA data at the postal code level. We explored built and social environment variables (greenness, intersection density, dwelling density, points of interest, material and social deprivation), ambient variables (proximity to roadways, nighttime light, air pollution), and weather and climate (temperature, humidity, pressure, precipitation). We used modified Poisson regression to estimate prevalence ratios (PR) for the associations between neighborhood and environmental variables and sleep dissatisfaction and disturbances, and linear regression for sleep duration. We estimated unadjusted associations, estimates adjusted for all environmental variables, and estimates additionally adjusted for individual-level socio-demographic and clinical variables.

Results: In our preliminary findings from our unadjusted analyses, we observed a higher prevalence of sleep dissatisfaction among people residing in the highest quintile of material deprivation relative to the lowest quintile (PR=1.11, 95%CI 1.02, 1.21), as well as sleep disturbances (PR=1.13, 95% CI 1.05, 1.22). Additionally, we observed shorter sleep duration within the highest quintile of material deprivation compared to the lowest (coefficient = -0.13, 95% CI -0.20, -0.06). Higher levels of neighborhood greenness were significantly associated with a lower prevalence of sleep disturbances (PR=0.71, 95% CI 0.56, 0.90) and longer sleep duration (coefficient = 0.34, 95% CI 0.10, 0.58). Full adjusted results will be available for presentation at the conference.

Conclusion: Our findings provide novel evidence disentangling the relative importance of inter-related and competing environmental exposures on sleep health in a population-based Canadian sample of middle-aged and older adults.

IMPACT ON STRESS, MENTAL HEALTH, AND SLEEP QUALITY IN HEALTHCARE PROFESSIONALS DURING THE COVID-19 PANDEMIC: A FOLLOW-UP STUDY IN SPAIN

M. Moraleda-Cibrián 1, I. Palomares-Gonell 1, J. Albares-Tendero 1. 1Centro Medico Teknon, Sleep Disorders Center, Barcelona, Spain

Introduction: The COVID-19 pandemic has caused a challenging situation worldwide with a major health impact on vulnerable populations and populations with high risk for COVID-19 infection, such as healthcare workers. The purpose of the present study was to assess stress, anxiety, depression and sleep quality on healthcare workers in charge of patients with and without coronavirus in Spain from the first peak to the present time.

Methods: Observational study of active healthcare workers aged 25-69 years in charge of patients with and without coronavirus. An on-line questionnaire that included the perceived stress scale, the Goldberg anxiety and depression scale, the pre-sleep arousal scale and the Pittsburgh Sleep Quality Index was completed at the beginning of the COVID-19 pandemic and six months later.

Results: Overall 563 questionnaires were included. Of them, 425 were completed from April to July 2020 and 138 from January to October 2021. The mean age was 43±9.4, 81% were women, and 75% physicians. Moderate-severe stress was reported by 98% of subjects, positive screening for anxiety and depression was identify in 55% and 79% of the study population, and poor sleep quality in 97% of healthcare workers in charge of non-COVID patients showed more anxiety (59% vs. 43%, p=0.041) and singles (69% vs. 57%, p=0.037). Healthcare workers in charge of patients with COVID-19 compared with those in charge of non-COVID patients showed more anxiety (59% vs. 43%, p=0.02) and depression symptoms (68% vs. 82%, p=0.01). While regular sunlight exposure reduced the frequency of anxiety and depression, and regular physical activity of depression. Significant changes in sleep latency in healthcare providers on charge of patients with COVID-19 were observed throughout the pandemic, but not in global PSQI score.

Conclusions: Stress, mental health disturbance and poor sleep quality are common in Spanish healthcare providers, particularly in those on charge
of COVID’s patients. These findings persist throughout the different pandemic waves. 

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IMPROVEMENT OF SLEEP QUALITY SIX MONTHS AFTER TOTAL KNEE ARTHROPLASTY

A. Alipourian 1, N. Farhadian 1, E. Zereshki 1, H. Khazaie 1. 1 International Center of Clinical Sleep Medicine and Research, Bahiana University Hospital, Bahiana, Porto Alegre, Brazil; 2 Research Center of Neurology, University of Medical Sciences, Kermanshah, Iran, Islamic Republic of

Introduction: Total knee arthroplasty (TKA) is an accepted, effective treatment to restore function, relieve pain, and improve the quality of life in patients with advanced osteoarthritis. One complication of this major surgery is impaired sleep quality. This study examines the quality of sleep in patients undergoing TKA before and after their operation.

Materials and Methods: All relevant records were obtained using a systematic search in three online databases: PubMed, Scopus, and Cochrane library. Out of the 177 records retrieved, only eight matched the inclusion criteria. Due to the lack of sufficient data, only four studies entered the meta-analysis. Values reported for sleep quality based on the Pittsburgh Sleep Quality Index (PSQI) were extracted from patient records before and after surgery. A random-effect model was used to analyze the data.

Results: The results of the meta-analysis show a significant difference in the improvement of sleep quality after surgery at two time points of 4-6 weeks after surgery (SMD: -0.16; 95% CI: -1.05 to 0.74; P = 0.0) and 3-6 months after surgery (SMD: -0.92; 95% CI: -1.61 to -0.24; P = 0.0).

Conclusions: The results show that TKA generally improves the patients’ sleep quality. Although some studies reported disrupted sleep quality in periods close to the surgery (especially in the early days after surgery), all studies have reported improved sleep quality in the late postoperative intervals.

INSOMNIA, SLEEP DISORDERED BREATHING AND CARDIOMETABOLIC RISK FACTORS IN PATIENTS COMPLAINING OF PAIN IN THE OROFACIAL REGION

M. Meira e Cruz 1,2,3,4,5, I. Santos 2, D. Gozal 6, C. Salles 5, I. Rocha 1, D. Ettlin 4. 1 Centro Cardiovascular da Universidade de Lisboa, Cardiovascular Autonomic Function Lab, 1649-028, Portugal; 2 Centro Cardiovascular da Universidade de Lisboa, Lisbon School of Medicine, Sleep Unit, Lisbon, Portugal; 3 European Sleep Center, Lisbon, Portugal; 4 Faculdade São Leopoldo Mandic, Neuroimune Pain Interface Lab, Campinas, Brazil; 5 International Center of Clinical Sleep Medicine and Research, Bahiana School of Medicine and Public Health, Salvador, Brazil; 6 University of Missouri, Department of Child Health, Missouri, United States; 7 University of Zurich, Center of Dental Medicine, Zurich, Switzerland

Introduction: Insomnia and sleep disordered breathing (SDB) are the most common sleep disorders, with a significant impact on health. These two conditions frequently interact potentiating several problems. Cardiovascular and Metabolic disorders (CMD) are often linked to both insomnia and SDB when occurring in isolation. To clarify the impact of CMD risk either through sympathetic activation or via indirect factors involved in CMD pathogenesis (e.g., anxiety, depression, stress). Such burdens may aggravate pain perception and further negatively impact on general health and well-being. Therefore, this study aimed at investigating Insomnia, Sleep Disordered Breathing and Cardiometabolic Risk Factors (CMRF) and their interactions in Patients seeking care at an orofacial pain clinic.

Materials and Methods: Anonymized data of patients, both sexes, with persistent orofacial pain (69.1% women), were extracted from the WISE, a Swiss symptom collection platform, and analyzed. The sample was characterized from a demographic perspective, on the presence of self-reported SDB, on insomnia by applying ISI and on its relation with psychometric variables obtained through validated questionnaires. Prevalence data was estimated for insomnia (ISI>8), SDB (a positive answer for snoring and/or apnea complaints) and COMISA (Insomnia + SDB) both regarding demographics and BMI, smoking history and drinking history. Psychometric tests for anxiety (GAD-7), depression (PHQ-4 and PHQ-Str) and pain catastrophization (PCS) were applied to assess psychosocial stress factors acting as additional CMRF. Adversive statistical analysis was used together with analysis of variance and multiple regression models used to determine the associations between the variables under study. The statistical significance was set at p < 0.05.

Results: 1236 patients with orofacial pain complaints were enrolled (age between 10 and 89 years old, 69.1% females). From the global sample, 384 patients (31.1%) reported insomnia, either subclinical (n=184; 40.1%) or clinical (n=200; 43.6%) as defined by an ISI score > 8 and <15 or ≥ 15, respectively. Regarding SDB, 310 patients (25.0%) confirmed snoring or suffering from sleep apnea. Overall, 142 patients (11.5%) had COMISA. BMI of patients with COMISA was higher than those with isolated insomnia (p=0.001) but not different from those with isolated SDB (p=0.072). Current smoking history was more frequent (p<0.007) among patients with COMISA (23.9%) than in patients with isolated conditions (12% for insomnia and 22.0% for SDB). History of drinking was more frequent (p=0.007) in SDB (16.1%) and COMISA (14.1%) patients than in insomniaics (7%). Psychometric measures of anxiety, depression, stress, and pain catastrophizing were significantly higher for patients with COMISA compared to patients with isolated conditions, and their differences were clinically relevant between conditions.

Conclusions: Patients experiencing orofacial pain and who suffer from OSA or COMISA have additional CMD risks such as increased BMI and increased alcohol consumption compared to those with insomnia alone. Furthermore, COMISA patients scored highest on screening questionnaires for anxiety, depression, pain catastrophizing, and stress, all of which may further potentiate the risk for CMD.

IS PSEUDO-RBD A SEVERE FORM OF OSA?: FACTORS ASSOCIATED WITH RBD MIMICKING BEHAVIORS IN OSA

M.-K. Kang 1, D.-s. Shin 1, H.C. Lee 1, W.-j. Lee 1, K.-y. Jung 1. 1 Seoul National University Hospital, Neuroscience Research Institute, Department of Neurology, Jongno-gu, Seoul, Korea, Republic of

Introduction: Pseudo-RBD is defined as movement similar to REM sleep behavior disorder (RBD) along with sleep segments in the REM or non-REM sleep in association with optomotoric sleep apnea (OSA). In patients complaining of DEB, it is very difficult to distinguish between RBD and pseudo-RBD. Because these two diseases have different treatment options and prognosis, it is very important to distinguish between the two diseases. Therefore, the authors attempted to identify factors related to pseudo-RBD and to confirm the mechanism of pseudo-RBD by comparing the clinical characteristics of RBD with OSA, pseudo-RBD, and OSA without RBD patient groups with VPSG.

Materials and Methods: From May 2017 to December 2020, patients aged 18 years or older who underwent PSG were selected for OSA with an AHI of 5 or higher. Of the total 213 patients, 98 patients were finally enrolled and divided into three groups: idiopathic RBD with OSA, OSA without RBD, and OSA with RBD-mimicking symptoms (pseudo-RBD) according to the diagnostic criteria of the International Classification of Sleep Disorders, third edition. Clinical features such as gender, age, and comorbidities were compared, clinical presentation including questionnaires were compared, and VPSG findings were compared.

Results: There was no significant difference in RBD symptoms using RBDQ-KR and other questionnaires in three groups. In the pseudo-RBD group, AHI was higher than in the irBD with OSA group and the OSA without RBD group (p=0.031), whereas the lowest saturation was the lowest (p=0.005). Among pseudo-RBD, severe OSA was 60.0% (15/25), moderate OSA and Mild OSA were 20.0% each (5/25). In addition, REM/NREM AHI ratio and supine REM/NREM AHI ratio in mild OSA were significantly higher than those in moderate and severe OSA group (p=0.001, p=0.001). REM AHI and supine REM/NREM AHI ratio were the highest in pseudo-RBD group (42.80/hr, p=0.000, 1.77 p=1.77). In contrast, the irBD with OSA group had the lowest REM AHI and supine REM/NREM AHI ratio. Total arousal index and REM or NREM arousal index did not show any significant difference in the three groups, but during REM sleep, the respiratory arousal index was the highest in pseudo-RBD at