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screen use relates to the children's sleep, regardless of whether they are morning-, intermediate- or evening-types.

Acknowledgements: This study was developed as part of larger research project True Times – Morningness-eveningness and time-of-day effects on cognitive performances and emotional states: New lessons from children and adolescents (PTDC/PSI-ESP/32581/2017; CENTRO-01-0145-FEDER-032581), funded by Portugal 2020, Centro 2020, FEDER (UE), and FCT.

EVOLUTION OF A MOUTH BREATHER WITHOUT TREATMENT

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Introduction: The purpose of this study is to cooperate with the whole medical community engaged in the detection and prevention of OSA in infants, by showing how we can help our patients by mere clinical observation –mainly when the patient is a child, for whom we are the architects of his/her health and facial structure.

Materials and Methods: Based on pictures taken at different ages, mandibular angle and lower facial height were measured. In the same pictures, the appearance of adenoid facies was found, coincident with symptoms of infant OSA. Considering these images, the aim is to determine the opportunity of having a functional-orthopedic treatment which –as in this case– could have prevented the irreversible facial transformation. Timeline: 60 years.

Results: After analyzing the pictures which will be shown in the poster, we have the following **results:**

WHEN SHOULD WE HAVE INTERVENED?

Undoubtedly, as soon as symptoms and signs of respiratory obstruction appear, it is time to act. Let us bear in mind that the sooner we restructure the position of the tongue, we will recover the trophic stimulus that it exerts on the palate and on the floor of the nostrils. Let us remember that the Nitric Oxide secreted in the body by the paranasal sinuses will be essential for the sweep of microorganisms in the upper airway, and if these sinuses are obstructed, we will not have their help during growth.

Let's understand that surgery empties the airway, but does not increase its volume. That is only achieved with the help of an orthopedic treatment.

WHAT KIND OF APPLIANCES CAN YOU USE TO INTERCEPT MOUTH BREATHING?

Any type of equipment that stimulates muscle and bone activity will be useful. There are increasingly more comfortable, more aesthetic appliances for children. If we keep a mandibular forward force for continuous hours or more, the blood vessels of the propellant muscles become smaller, preventing adequate blood flow. By decreasing its gas exchange, Lactic Acid will accumulate. When the device is removed from the mouth, the propellant muscles will become hyper contractible (repeated involuntary contractions) whereby the jaw will move forward, even when the chosen device is not in the mouth all day. To sweep away the lactic acid, muscles increase their blood vessels, reaching them undifferentiated cells that turn into myoblasts, which will form new muscle fibers. This process will maintain stability during growth.

Conclusions: It is suggested that a respiratory sleep alteration during childhood impacts on the facial biotype, even after a tonsillectomy, if not treated orthopedically in order to revert and/or modify in due time the muscle and respiratory functions, which would lead to a factor that may cause OSA in adults.

Acknowledgements: Dr Liliana Gimenez, Dr Florencia Poletti, Dr Andrea Marti Garcia

GENDER- SPECIFIC ESTIMATES OF SLEEP PROBLEMS DURING THE COVID- 19 PANDEMIC: SYSTEMATIC REVIEW AND META- ANALYSIS

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Introduction: The outbreak of the novel corona virus disease 2019 (COVID-19) changed life styles world wide and subsequently induced individuals' sleep problems. Sleep problems have been demonstrated by

scattered evidence among the current literature on COVID-19; however, little is known regarding the synthesised prevalence of sleep problems (i.e. insomnia symptoms and poor sleep quality) formales and females separately.

Materials and Methods: The present systematic review and meta- analysis aimed to answer the impor-tantquestion regarding prevalence of sleep problems during the COVID-19 outbreak period between genders. Usingthe Preferred Reporting Items for Systematic Review sand Meta-Analyses guideline and Newcastle–Ottawa Scalecheck list, relevantstudies with satisfactory methodological quality searched for in five academic databases (Scopus, PubMed Central, ProQuest,Webof Science, and EMBASE) were included and analysed

Results: The protocol of the project was registered in the International Prospective Register of Systematic Reviews (PROSPERO; identificationcode CRD42020181644). Atotalof54papers(N=67,722) in the femal e subgroup and 45papers (N=45,718) in the male subgroup were pooled in the meta-analysis. The corrected pooled estimated prevalence of sleep problems was 24%(95% confidence interval [CI] 19%–29%)forfe-maleparticipants and 27%(95%CI24%–30%) formale participants

Conclusions: Although in bothgendersubgroups, patients with COVID-19, health professionals and general popu-lations how edthehighest prevalence of sleep problems, itdidnotreachstatistical significance. Basedon multivariablemeta-regression, bothgengergroupshadhigherprevalence of sleep problems duringthelockdownperiod. Therefore,healthcarepro-viders should pay attention to the sleep problems and take appropriate preventive action.

Acknowledgements: C-YL was supported in part by a research grant from the Ministry of Science and Technology, Taiwan (MOST109-2327- B -0 0 6 -0 0 5) .

HOW DOES AUSTRIA SLEEP? SLEEPING HABITS AND SLEEP PROBLEMS BEFORE AND DURING CORONA

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In the talk I discuss the sleeping habits and sleep problems before and during the Corona pandemic. An alarming increase in sleep problems from 6-year-old primary school children to adolescents and older adults is shown. Half of the interviewed adult Austrians (N=968) sleep less than 7 hours and only 31% classify themselves as "good sleepers". Changes due to the Corona pandemic and lockdown measures are also found across different cultural groups (Austria/Germany, Brazil, Greece, Cuba, Ukraine) and show, on the one hand, a high level of anxiety due to the pandemic (78% of respondents). In addition, in non-system-relevant jobs we see a consistent later going to bed and an extension of sleep times on working days (13 min daily), which in total lead to a reduced "social jetlag". People in system-relevant jobs also go to bed later and get up later, but show no increase in sleep time on weekdays and even a reduction in sleep time on days off (cf. Florea et al., 2021); overall, they also show a reduction in social jetlag, albeit to a lesser extent.

We find cultural differences only of a general nature in the sense that people in Greece and Ukraine go to bed and get up later than the other cultural groups studied.

Among children and adolescents (N= 2,232), we find 74.8% less physical activity during the Corona pandemic, 44.2% less exposure to daylight and 85% a strong increase in smartphone/tablet use during the pandemic or lock-downs. In addition, a shift of the sleep-wake rhythm to later times (for 94%) & more bedtime, and yet a subjective deterioration in sleep quality is also evident in that data. An alarming number of 33.3–45.3% depending on the age group now even subjectively report sleep problems during the pandemic (cf. Bothe et al., in preparation).

IMPACT OF COVID-19 PANDEMIC ON SLEEP OF UNDERGRADUATE STUDENTS: A SYSTEMATIC LITERATURE REVIEW

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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. Criteria for selection were: article is originally open-access and in English, participants are undergraduate students and not in the postgraduate level, sleep outcomes were assessed via objective or subjective tools, and participants did not belong to allied health courses.

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.

Acknowledgments. We would like to acknowledge the authors who have provided a copy of their works for this review.

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

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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

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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 identified in 55% and 79% of the study population, and poor sleep quality in 97% of healthcare workers in charge of patients with COVID-19. Anxiety was reported more frequently by females (62% vs. 48%, $p=0.041$) 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