Migraine Impact and Disability Assessment Scale and the Headache Impact Test, 6th edition. Erenumab efficacy and safety in migraine prophylaxis were also assessed using headache diaries.
Results: Twenty-nine patients completed three months of follow-up, whereas 15 patients completed 12 months. We found a weak improvement in daytime somnolence after three months of treatment, with stronger results after 12 months (median ESS score from 6.0 to 4.0, $p = 0.015$); a significant improvement in subjective sleep quality (median PSQI total score from 7 to 5; $p = 0.001$) was also observed. Home-PSG showed a significant increase in objective sleep efficiency, both after three (from 88.1 to 91.0, $p = 0.006$) and 12 months (from 87.1 to 91.0, $p = 0.006$) of treatment. This outcome was related to the improvement of some parameters, particularly the decrease in median wake time, wake after sleep onset and awakening index. In addition, our data confirmed erenumab effectiveness and safety in migraine prevention.
Conclusions: Our study demonstrated an improvement in both subjective and objective sleep quality in patients treated with a migraine-preventive therapy. Erenumab, in particular, does not cross the blood-brain barrier, thus a direct action on sleep central pathways is not expected and observed sleep changes could be due to migraine improvement itself. At least in part, migraine and sleep share common anatomic structures, neural pathways and signaling neurotransmitters. Neuropeptides like CGRP and pituitary adenylate cyclase-activating polypeptide (PACAP) are important migraine triggers. PACAP also plays a role in the hypothalamus for sleep homeostasis. In animal models, it seems to act on sleep-wake cycle pathway, clock genes expression and melatonin synthesis. However, little is known about CGRP circadian variability or indirect central effects due to peripheral modulation of CGRP with erenumab. Future studies are needed to better understand the mutual influence between migraine and sleep disorders.

ESTIMATED SLEEP-WAKE PATTERNS OBTAINED FROM A LARGE U.S. SAMPLE BY HOME-BASED UNDER-MATTRESS MONITORING DEVICES

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Introduction: Irregular sleep-wake schedules, characterized by high day-to-day variability in sleep duration or timing, were recently associated with cardiovascular disease and unfavorable metabolic profiles, such as increased blood pressure and insulin resistance. Shift work has also been associated with poor health outcomes including increased risk of diabetes, obesity, hypertension and cancer. However, the prevalence of irregular sleep-wake schedules in a large population has not been studied. This study aims to characterize sleep-wake schedules in a large U.S. sample.
Materials and Methods: Descriptive analysis was performed on collected de-identified data from 12507 users (46.9% female, mean age 48.5 ± 13.4 years) of a commercially available home sleep monitoring device (Sleeptracker-AI Monitor, Fullpower Technologies, California, USA). The device passively monitors sleep using piezo-electric sensors that register the forces exerted through the mattress. Only users with at least 300 days of recordings between January 2019 and December 2019 were included in this analysis. More recent data were excluded to avoid effects of the pandemic. In order to understand sleep-wake schedules and regularity of sleep, Total Sleep Time (TST) standard deviation (SD) and bedtime (BT) SD were included as parameters. Users were divided into six different age groups and weekly summaries of sleep parameters per subject were obtained. Statistical analyses were performed using Python (Python Software Foundation, version 3.8.3).
Results: 4,175,260 recorded nights were included in the analyses. In minutes, overall estimated TST SD across subjects' mean was 66.1 (18.7*) and BT SD was 55.6 (20.5*). Importantly, for TST SD over the week, across subjects only 25.0% (10.9%) of the variance is explained by the difference between weekends and weekdays, and for BT SD this value is only 26.7% (11.3%*); substantial variation remains even when considering only weekdays. Population was arbitrarily divided in 6 groups by age: Group 1 (20-30), 2 (30-40), 3 (40-50), 4 (50-60), 5 (60-70), and 6 (70-80). The estimated TST SD in age groups 1, 2, 3, 4, 5, 6 were as follows: 70.7 (20.0*), 67.2 (18.0*), 66.8 (18.5*), 66.1 (18.4*), 63.4 (18.2*), and 60.5 (18.9*) minutes. The estimated BT SD in each age group were: 62.1 (21.1*), 57.4 (19.4*), 57.0 (20.2*), 55.7 (20.0*), 51.6 (20.3*), and 46.7 (20.8*) minutes. When divided categorically into 2 groups of regular or irregular sleep schedules (≤60 mins TST SD and >60 mins TST SD respectively) we found the following: 67%, 61%, 60%, 58%, 53%, and 47% of Group 1, 2, 3, 4, 5 and 6 had an irregular sleep-wake schedule, and 58.4% overall.
Conclusions: Irregular sleep duration and timing were common over all age categories in this population, indicating that sleep habits might be a common and treatable risk factor of cardiovascular disease. Interestingly, this follows a clear age-dependent trend, with older age corresponding to more regular sleep-wake schedules. This provides a possible and important target for health policy. Furthermore, the ability to estimate sleep parameters in the home environment represents a powerful tool for public health campaigns.
*Standard deviation of mean sleep parameter SD

EVENING SCREEN TIME, SLEEP AND DIURNAL TYPE IN PRESCHOOL AND PRIMARY SCHOOL CHILDREN

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Introduction: The screen use seems to be increasing over the last years, and has been associated with more sleep problems. The main goal of the present study was to examine the relationships between evening screen use, diurnal type (morningness-eveningness) and the sleep-wake patterns (e.g., bed and rise times; sleep durations), in pre- and primary school children. Furthermore, it was specifically intended to investigate whether evening screen time would be a significant predictor of sleep variables, when controlling for other potential predictors, namely diurnal type. Additionally, we also compared sleep and psychological symptoms, according to children's school level and diurnal type.
Materials and Methods: The final sample encompassed a total of 605 children, being 186 (30.7%) pre-schoolers (4-6 years old; 48.4% girls), and 419 (69.3%) primary schoolers (7-9 years old; 49.5% girls). Diurnal type, sleep patterns, psychological symptoms, and evening screen use, were obtained through tutors'/parents' responses to the Portuguese versions of the Children's ChronoType Questionnaire - Morningness/Eveningness Scale (Werner et al., 2009), the Child Sleep-Waking Questionnaire (Clemente, 1997; Bos et al., 2009), the Strengths and Difficulties Questionnaire (Goodman, 1997), and a set of questions developed to assess evening (i.e., after dinner) time screen use (Gomes et al., 2018) — variables relevant for the present work were evening screen use time/duration, frequency (nights per week), how long before bedtime does the child stop using screens, type of use (passive…active).
Results: Most children (89.8% pre-schoolers, 91.5% primary schoolers) displayed evening screen use, with no statistically significant differences between pre and primary schoolers ($p = .593$) or between morning, intermediate and evening children ($p = .093$). The majority (58.5% pre-, 61.7% primary schoolers) use screens all/nearly all nights. Screen evening time averages were 56±35min (pre-schoolers) and 61±33min (primary schoolers). At least one hour prior to bedtime, 19.8% of pre- and 16.1% of primary schoolers interrupt screen usage. Psychological symptoms were higher in primary (vs pre-primary) schoolers, and evening-type children. The evening screen use variables (duration, and/or frequency, and/or type of use) were significantly correlated with later sleep-wake schedules variables ($p < .001$), shorter sleep periods ($p < .001$) and lower scores on prosocial behavior ($p < .001$). A more active use was correlated with longer sleep latencies ($p < .001$). Furthermore, in multiple hierarchical regression analyses, the evening screen time was a significant predictor of several sleep variables (bedtime and sleep period on school nights; sleep period, bed and rise times on/prior to free days), after controlling for sex, schooling level, and the children's diurnal type.
Conclusions: Research on the evening screen use, in children, as a function of diurnal type seems extremely scarce. Our results show that evening

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.
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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, bothgendergroupshadhigherprevalence of sleep problems duringthelockdownperiod.Therefore,healthcarepro-viders should pay attention to the sleep problems and take appropriate preventive action.
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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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