Smartphone. Adolescents who own a Smartphone reported shorter sleep duration during school days (no Smartphone=7.92±1.03 h; Smartphone=7.39±0.96 h; t=-2.09; p< 0.05). In addition, those responding messages during sleep went to bed later during weekends (no responding=01.98±2.06 h; responding=02.88±2.33 h; t=2.09; p< 0.05).
Conclusion: Using a Smartphone during sleep time interferes with sleep, aggravating the well-known sleep reduction that already occurs during adolescence.
Acknowledgements: We want to express our recognition and gratitude to the voluntary participants and the student assistants who helped with data collection and analyses.

Sleep Breathing Disorders

DETERMINING THE MANDIBULAR NORMAL RANGE OF MOTIONS IN YOUNG ADULTS: A GUIDE FOR DIAGNOSIS AND TREATMENT OF PATIENTS WITH MANDIBULAR ADVANCE DEVICES

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Introduction: The degree of mandibular protrusion is one of the key therapeutical choices of the treatment of patients affected by OSAS with Mandibular advancing devices (MAD). The aim of this study was to determine the range of mandibular maximum protrusion at 4 different anterior vertical opening (interincisal distances: 2, 5, 8, 11 mm).
Materials and methods: 175 students of Dentistry of the Universidad Alfonso X Madrid, aged 19 to 23 years (mean 21,3, SD 1,7, 92 female and 82 male) were selected for the study. All the subjects were asymptomatic for Temporomandibular Disorders, according to the Research Diagnostic Criteria/ Temporomandibular Disorders RDC/TMD, RDC /TMD. One investigator performed the measurements of the maximum protrusion range with 4 different George Gauge bite forks: 2 mm, 5 mm, 8 mm and 11 mm of interincisal vertical opening were taken into consideration. Statistical analyses were done with SPSS (Statistical Package for the Social Sciences) on version 17 and the STAT on version 11.
Results: Mean value for maximum protrusion were: − 12,5 mm with the 2 mm bite fork (n 175, range 11,5 to 15,5 mm; SD 0,81 mm), − 12,0 mm with the 5 mm bite fork (n 175, range 10 to 14,5 mm; SD 1,08 mm); − 11,3 mm with the 8 mm bite fork (n 75, range 9 to 15,5 mm; SD 1,50); -9,9 mm with the 11 mm bite fork (n 75, range 4,5 to 14 mm; SD 1,88 mm). As expected, the maximum protrusion is reduced significantly with the increase of vertical dimension from 2 mm (maximum protrusion: 12,5 mm) to 11 mm (maximum protrusion: 9,9 mm).
Conclusions: The knowledge of the normal ranges of mandibular movements can be important for diagnosis the MAD treatment of patients affected by OSAS. The study of the maximum protrusion at different mandibular vertical distraction on a larger population may lead to a better customization and design of mandibular advance devices.
Acknowledgements: Orthoapnea.

Restless Legs Syndrome (RLS)

LONG-TERM TREATMENT OF RLS/WED WITH THE SELECTIVE GLUTAMATE AMPA-RECEPTOR ANTAGONIST PERAMPANEL

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Introduction: Perampanel is a selective, noncompetitive AMPA receptor antagonist approved for the treatment of partial seizures. A previous report on 20 RLS patients showed a significant improvement of symptoms at a mean dose of 3,8 mg/day over 2 months[1]. We report here on an 18-month follow-up of these patients.
Materials and methods: Patients participating in this follow-up had previously participated in a two-month, open label study that included an immobilization test and polysomnography. Both responders and non-responders from the short-term treatment study were asked to participate in this follow-up phase. Perampanel was administered as monotherapy at a flexible dose between 2 − 6 mg/day over 18 additional months. Severity was assessed every two months using the IRLS, CGI, and Augmentation Severity Rating Scales (ASRS). At the end of the treatment, a multiple suggested immobilization test (mSIT) was performed. The main outcome was therapeutic response, defined as a 50% improvement in both IRLS scale and mSIT. Augmentation was evaluated by means of the ASRS and m-SIT.
Results: Out of 20 patients who had initially completed the short-term phase[1],17 agreed to participate in the long-term treatment phase, and 12 (70.5%) completed the18-month treatment period. As reported previously, IRLS score improved during the short-term treatment phase from a mean±SD: 23.7±4.2 to 11.5±5.3 [1] and at the end of the 18-month follow up period was 13.6±6.2 (mean (SD) dose of 4.2 mg/day). Nine (53%) patients were full, and three (17%) were partial responders. No cases of definite augmentation were observed. Main reasons for discontinuation were dizziness (2), irritability (1), and lack of efficacy (2).
Conclusions: These data suggest that perampanel exerts long-term therapeutic effects on RLS symptoms in most patients. If confirmed by future controlled studies, the AMPA-R antagonist perampanel might become a promising alternative to existing dopaminergic treatments. Pathophysiologic implications will be discussed in detail.
Reference:

[1] Garcia-Borreguero D, Cano I, Granizo JJ. Treatment of restless legs syndrome with the selective AMPA receptor antagonist perampanel. Sleep Med. 2017;34:105-108.

Excessive Daytime Sleepiness (not Narcolepsy)

DIETARY INTAKE OF CARBOHYDRATES, DAYTIME SLEEPINESS AND OBSTRUCTIVE SLEEP APNOEA IN ADULTS FROM REYKJAVÍK, ICELAND

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Introduction: Dietary carbohydrates (CHOs) might influence sleep quality and sleep patterns through their role on several sleep-related hormones, and their influence on tryptophan metabolism. In a population-based study of adults from Iceland, we investigated the association of CHO intake, obstructive sleep apnoea (OSA) and daytime sleepiness.
Materials and methods: Sample of 400 adult residents in Reykjavík, were invited to enroll in a study to investigate the prevalence of OSA, symptoms of poor sleep, and daytime sleepiness. A whole-night sleep study was performed at the subject's home using a T3 device (Nox Medical, Reykjavik, Iceland), with measures of sleep recorded and scored following the American Academy of Sleep Medicine guidelines. Data were considered eligible if the studies had ≥4 hours of scorable oxygen saturation and three respiratory traces: cannula flow, thorax, and respiratory inductive plethysmography belts. OSA was defined according to the apnoea-hypopnea index (AHI), as mild (AHI ≥5-14.9) moderate (AHI ≥15-29.9) or severe (AHI ≥30). The Epworth Sleepiness Scale (ESS) Questionnaire was also administered to ascertain symptoms of excessive daytime sleepiness (ESS ≥10). Frequent snoring was defined as reporting to snore ≥3 times per week. The internationally validated GA^{2}LEN food frequency questionnaire (FFQ) was used to enquire about usual intake of 250 food items, which included foods rich in various types of CHOs. Intake estimates of simple (sucrose, glucose, and fructose), semi-simple (oligosaccharides), complex (polysaccharides) and total CHOs were derived. The association between sleep outcomes and CHOs (per-tertile increase in intake) was examined using ordinal (OSA) or multiple logistic regressions, adjusting for several potential confounders.
Results: A total of 347 participants (mean age 54.8 ±6.8 y) had valid data on sleep, diet and potential confounders. 38.5% snored frequently, 25% had ESS ≥10, and 41% had mild to moderate OSA. 16% reported feeling moderately (n=35), quite a bit (n=18) or extremely (n=3) sleepy during the day. 30% of participants reported feeling sleepy during the day once or twice a week, 14% 3-5 times/week, and 7% every day or almost every day. A per-tertile increase in the intake of total CHOs was associated with a

statistically significantly higher risk of having an ESS ≥ 10 (adjusted [a] OR 1.59; 95% CI 1.01, 2.51; p-value 0.04). The associations between this outcome and total glucose or fructose were stronger (aOR per-tertile of intake 1.50; 95% CI 1.12, 2.01; p-value 0.006; and aOR 1.46; 95% CI 1.10; 1.193; p-value 0.009; respectively). Higher intakes of starch and of breakfast cereals were associated with less severe OSA (aOR, 0.72; 95% CI 0.53, 0.97; p-value 0.03; and aOR 0.76; 95% CI 0.59, 0.97; p-value 0.03; respectively). There was no evidence of association between measures of AHI and intake of CHOs.

Conclusions: Daytime sleep disturbances in middle-aged adults are highly prevalent. To our knowledge, this is the first population-based study to show that dietary CHOs, particularly refined sugars, were associated with a higher prevalence of symptoms related to daytime sleepiness. Improving the quality of CHO content in the diet might reduce the prevalence of these symptoms.

Movement Disorders

BEHAVIOURAL OBSERVATIONS STEP 2: DEVELOPING A SHARED ANNOTATION LANGUAGE FOR ANALYSIS OF VIDEO RECORDINGS

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Introduction: Individuals with mental health and/or neurodevelopmental conditions often display disruptive behaviours characterized as hyperkinesia, hypermotor-restlessness, and hyper/hypo-arousability, all grouped as "H-behaviours". In 2017, the Video-Working-Group of the International Paediatric Sleep Association developed a standardized framework for analyzing video recordings of H-behaviours. As a first step before assessing the suggested framework's feasibility and reliability, we investigated Suggested Clinical Immobilization Test (SCIT) snapshots. Our goal was to develop a shared annotation language among research assistants (RAs) that could later be applied in the annotation of video recordings.

Methods: Seven RAs without previous formal training in assessing H-behaviours analyzed video recordings of five adult volunteers undergoing a SCIT; a REDCap survey structure was used for data gathering. (A) RAs reviewed 24 SCIT snapshots and made qualitative free-hand observations (e.g. of body movements, facial expressions, etc.). (B) Two days later, the same 24 SCIT snapshots were reviewed in a randomized order. (C) A and B were repeated using prepared pictograms instead of free-hand observations. (D) The categorization of observations in 12 SCIT snapshots was further analyzed. (E) Interobserver variability was assessed.

Results: Observations were categorized as (i) descriptive; or (ii) interpretive (predictions or statements influenced by viewer's "Gestalt"-perception). Median number of descriptions and interpretations per SCIT snapshot for free-hand observations were 6 and 1, respectively. Interobserver consistency was 61.9% for descriptions and 36.6% for interpretations in free-hand observations. After grouping all movement-related pictograms, median number of descriptions and interpretations per SCIT snapshot were 2 and 1, respectively.

Conclusion: This exercise provided an introduction to structured behavioural observations of H-behaviours during SCITs. Free-hand observations yielded higher interobserver consistency in descriptions than interpretations. Unexpectedly, we found that the proportion of interpretations increased when annotating using pictograms. This learning experience emphasizes the importance of developing and optimizing neutral descriptors (i.e. pictograms) of body movements and behaviour patterns.

Acknowledgements: The members of the H-Behaviour Group at BC Children's Hospital Research Institute: Gabriella Horvath, Christine A. Loock, Alexander Rauscher, Sylvia Stockler.

Sleep Breathing Disorders

SCREENING FOR SLEEP APNEA USING OVERNIGHT HOME PULSE OXIMETRY

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Introduction: to evaluate the use of overnight home pulse oximetry (PO) in moderate (AHI≥15) or severe (AHI≥30) obstructive sleep apnea (OSA) screening. To assess if outpatient overnight home PO could be used to select patients for hospital polysomnography (PSG) for further OSA evaluation.

Materials and methods: patients in Vilnius University Santariskiu Klinikos Pulmonology and Allergology department with suspected SA during 2014-2017 were investigated. A prospective study was performed. Clinical score (CS) for predicting sleep apnea was evaluated. CS consisted of four symptoms – snoring, daytime sleepiness, breathing pauses during sleep and obesity. For patients whose CS was more than or equal 3, home PO was performed. Inclusion criteria for full polysomnography (PSG) was oxygen desaturation index (ODI) ≥ 15. ODI was considered as number of times per hour of sleep that the blood's oxygen level dropped ≥4% from baseline. Epworth sleepiness scale was also evaluated. When hospitalised, all patients underwent PSG.

Results: a total of 66 patients were investigated (male 88%), mean age 57±11 yrs. Majority of them were diagnosed with moderate (16.7%) or severe (77.3%) OSA. The sensitivity of pulse oximetry at ODI ≥ 15 was 93.9%, with the specify 42.9%. Likelihood ratio of being diagnosed with OSA – 1.64. We found that ODI has statistically significant correlation with AHI (AUC 0.87, R=0.554, p< 0.001).

Highest sensitivity of 81.8% and specificity of 85.7% was with ODI value 19,4.

In our study we didn't find any relation between AHI>15 and ESS (sensitivity 60%, specifity 20%, AUC 0.31)

When combining ODI>15 and ESS>10, the sensitivity was 66,7%, specifity 80%, likelihood ratio 3,3.

Conclusions: our study shows that ESS together with overnight home pulse oximetry, a simple and sensitive diagnostic test, could be used as a screening tool for moderate and severe OSA.

Basic Research

SELF-ASSESSMENT OF OBESITY AMONG SLEEP APNOEA PATIENTS

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Introduction: To assess how obese obstructive sleep apnea (OSA) patients evaluate their body weight. How obesity influences their quality of life. What measures they took or are willing to take to decrease their weight. To compare, if there is any difference between those who agree for bariatric suregry and those who disagree.

Materials and methods: 44 OSA patients (male 75%), mean age 56±11 yrs. were questioned. Mean body mass index (BMI) was 41±8 (male 36, women 49). Average apnea-hypopnea index (AHI) was 44,8. A questionnaire targeted the OSA patients´ perception of overweight and obesity was created. We asked how these patients realize their weight, how it influences their quality of life and how do they fight against obesity. We compared if there was any difference between those who agreed for bariatric surgery as weight loss measure and those who disagreed.

Results: All patients admitted that their weight was abnormal (59 % highly increased, 23 % averagely increased, 18 % slightly increased). Despite the fact that almost half of the patients (46%) claimed that being obese did not disturb their well-being, even 82% stated that they had worse physical capacity, for 55% obesity disturbed their everyday household. Majority of the patients (67%) tried to decrease their weight by changing their nutritional habits (66%), increasing physical activity (45%), 9% of the patients tried "over-the-counter" medications. Only 43% (19) of the patients consulted with the dietitian.

Although 43% of the patients succeeded to lose weight, only 10% managed to maintain these changes.

Only 10 (23%) would agree to undergo bariatric surgery (3 patients choosed liposuction, 3 gastric bypass surgery, 2 – gastric banding,