

Smartphone. Adolescents who own a Smartphone reported shorter sleep duration during school days (no Smartphone= $7.92\pm 1.03$  h; Smartphone= $7.39\pm 0.96$  h;  $t=-2.09$ ;  $p<0.05$ ). In addition, those responding messages during sleep went to bed later during weekends (no responding= $01.98\pm 2.06$  h; responding= $02.88\pm 2.33$  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.

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#### 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.

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#### 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<sup>1</sup>. 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<sup>1</sup>, 17 agreed to participate in the long-term treatment phase, and 12 (70.5%) completed the 18-month treatment period. As reported previously, IRLS score improved during the short-term treatment phase from a mean $\pm$ SD:  $23.7\pm 4.2$  to  $11.5\pm 5.3$ <sup>1</sup> and at the end of the 18-month follow up period was  $13.6\pm 6.2$  (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. Pathophysiological implications will be discussed in detail.

Reference:

- García-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  $\geq 4$  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  $\geq 5$ -14.9) moderate (AHI  $\geq 15$ -29.9) or severe (AHI  $\geq 30$ ). The Epworth Sleepiness Scale (ESS) Questionnaire was also administered to ascertain symptoms of excessive daytime sleepiness (ESS  $\geq 10$ ). Frequent snoring was defined as reporting to snore  $\geq 3$  times per week. The internationally validated GA<sup>2</sup>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  $54.8 \pm 6.8$  y) had valid data on sleep, diet and potential confounders. 38.5% snored frequently, 25% had ESS  $\geq 10$ , 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