2020-05-27

0915 Sleep Patterns and the Effect of Late Bedtime on School-Age Children and Adolescents: Preliminary Results

Matsangas, P; Gratsia, S; Cocos, A; Vastardis, H; Shattuck, N L

Oxford University Press

Sleep, Volume 43, Issue Supplement_1, April 2020, Page A348
http://hdl.handle.net/10945/69352

Conclusion: Initial data shows high occurrence of SDB in patients pre and post ITB placement leading to medical or surgical intervention in 35%. Post ITB PSGs showed worsened oAHI and CAI and lower oxygen saturation nadir. Possible mechanisms include depression of central respiratory drive and decreased pulmonary reserves. This study may help stratify and address risks of ITB for those with refractory spasticity and SDB.
Support: None

0915

SLEEP PATTERNS AND THE EFFECT OF LATE BEDTIME ON SCHOOL-AGE CHILDREN AND ADOLESCENTS: PRELIMINARY RESULTS

Matsangas, P.[1] Gratsia, S.[2] Cocos, A.[2] Vastardis, H.[2] Shattuck, N. L.[1]

[1]Human Systems Integration Program, Operations Research Department, Naval Postgraduate School, Monterey, CA, [2]Orthodontics Department, School of Dentistry, National and Kapodistrian University, Athens, GREECE.

Introduction: School-age children (6-13yrs) and teenagers (14-17yrs) should receive 9-11hrs and 8-10hrs of sleep/day, respectively. Several studies have shown, however, that these age groups are chronically sleep deprived. Our study assessed the sleep patterns of a sample of children and teenagers in Athens, Greece. The study is part of a larger project investigating the association between orthodontic treatment and sleep disturbances.
Methods: Participants (N=27; 69% females; 21 school-age children 9-13yrs, 6 teenagers 14-17yrs) were under treatment in the Orthodontic Clinic of the National and Kapodistrian University. Sleep was assessed with actigraphy/logs for 59±19 days.
Results: Participants slept on average 7.36±0.42hrs/day. Nighttime sleep was on average 7.23±0.43hrs (percentage sleep: 87.3%±3.38%). Four (14.8%) participants napped at least once/week. Compared to the lowest sleep duration recommended for their age group, participants showed a chronic sleep deficit of 1.42±0.52hrs/day (range: 0.32-2.15hrs). The younger age group had an average sleep deficit of ~1.6hrs compared to ~0.8hrs for the teenagers (p=0.006). During the school year, daily sleep duration increased by ~0.73hrs on weekends (7.78±0.67hrs) compared to school nights (7.05±0.48hrs; p<0.001). On average, school-age participants slept from 23:13 (±31min) until 7:19 (±22min) on school nights and from 23:23 (±2:72hrs) until 8:49 (±39min) on weekends. Teenagers slept from 00:34 (±36min) until 7:40 (±14min) on school nights and from 01:34 (±41min) until 10:34 (±48min) on weekends.
Conclusion: Our findings verify earlier survey results showing that restricted sleep is a problem for children and adolescents in Greece. To our surprise, both age groups go to bed quite late. The impact of late bedtime on sleep duration, however, is larger in the younger group due to their larger sleep needs. In contrast to earlier research in rural areas, napping was not common in our urban sample, probably due to extracurricular activities and studying at home.
Support: N/A

0916

THE USE OF IMMERSIVE VIRTUAL REALITY AND SLOW BREATHING TO ENHANCE RELAXATION AND SLEEP IN ADOLESCENTS

Yüksel, D. Goldstone, A. Prouty, D. Forouzanfar, M. Claudatos, S. Lee, Q. Wang, R. Dulai, T. Arra, N. Volpe, L. Durley, I. Baker, F. de Zambotti, M.

SRI International, Menlo Park, CA.

Introduction: Sleep disturbances frequently emerge during adolescence amongst profound, normative, sleep maturation and biopsychosocial changes. Factors like stress, worry or rumination may make falling asleep and maintaining sleep more difficult. Here, we evaluate the efficacy of a novel intervention based on virtual reality (VR) and slow breathing to promote bedtime relaxation and facilitate sleep in high-school adolescents.
Methods: Twenty-nine 16-18 year-old adolescents with (N=9, 6 girls) and without (N=20, 11 girls) sleep difficulties underwent two counterbalanced in-lab relaxation and baseline polysomnography (PSG) nights. For the relaxation condition, immediately preceding bedtime, participants were engaged in slow diaphragmatic breathing (to promote physiological downregulation) whilst passively experiencing a relaxation immersive VR environment, designed to promote cognitive relaxation/distraction (20min). On the baseline night, participants engaged in quiet activities (e.g., reading a book) before bedtime (20min).
Results: The VR intervention resulted in a significant immediate increase in perceived relaxation and reduced worry (p<0.05). Also, heart rate dropped (~5bpm) in the pre-to-post intervention (p<0.05), while no significant change in heart rate was evident before and after the time spent in quiet activities on the baseline night. PSG-defined sleep onset latency was shorter (~6min reduction) and sleep efficiency was greater (~3% increase) on the VR relaxation night compared to the baseline night (p<0.05). In addition, baseline sleep onset latency was related to the magnitude of the baseline-to-relaxation reduction in sleep onset latency in participants (R^2=0.70; p<0.01). There was no apparent difference in responses to the VR intervention between adolescents with or without insomnia.
Conclusion: Our data highlight the potential for combining cognitive relaxation/distraction strategies, using immersive VR technology and physiological downregulation, to promote bedtime relaxation and improve overall sleep quality in adolescents. Further research is needed to evaluate the feasibility and effectiveness of such interventions over time.
Support: National Heart, Lung and Blood Institute (NHLBI) R01HL139652 (to MdZ)

0917

DESIGNING A WEARABLE TECHNOLOGY-BASED SLEEP INTERVENTION TO SUPPORT SLEEP HEALTH AMONG ADOLESCENTS: USING A PARTICIPATORY DESIGN APPROACH

Beck, A. J.[1] Duffett-Leger, L.[1] Raffin Bouchal, S.[1] Ferber, R.[1,2] Ward, T.[3]

[1]Faculty of Nursing, University of Calgary, Calgary, AB, CANADA, [2]Faculty of Kinesiology, University of Calgary, Calgary, AB, CANADA, [3]University of Washington, School of Nursing, Seattle, WA.

Introduction: Sleep problems during adolescence are increasingly common and have been associated with adverse physical and psychological health outcomes. Efforts to improve insufficient sleep among adolescents have resulted in increased sleep knowledge and temporary enhancements in sleep hygiene. Good sleep hygiene is established through the development of daily routines that support healthy sleep. Wearable technology offers a potential solution whereby adolescents can acquire and manage healthy sleep habits. In this study, we are co-designing with adolescents a prototype intervention using wearable technology to promote sustained improvements in their sleep hygiene.