

Relationship of Sleep Duration, Concentration, BMI and Dietary Behavior of European Adolescents – Results From the HELENA-Study

Beatrice Hanusch,¹ Kathrin Sinnigen,¹ Luis Moreno,² Stefaan De Henauw,³ Frederic Gottrand,⁴ Francisco Ortega,⁵ Thomas Lücke,¹ and Mathilde Kersting¹

¹Research Department of Child Nutrition, University Hospital of Pediatrics and Adolescent Medicine, St. Josef-Hospital, Ruhr-University Bochum; ²Universidad de Zaragoza, Growth, Exercise, NUtrition and Development (GENUD) research group; ³Ghent University, Department of Public Health and Primary Care, Faculty of Medicine and Health Sciences; ⁴Univ. Lille, Inserm, CHU Lille, U1286 - INFINITE - Institute for Translational Research in Inflammation, and CIC 1403 - Clinical Investigation Center; and ⁵University of Granada, PROFITH 'PRoMoting FITness and Health Through Physical Activity' Research Group, Sport and Health University Research Institute (iMUDS), Department of Physical Education and Sports, Faculty of Sport Sciences

Objectives: Low sleep quality and duration are associated with the development of overweight and obesity. This link is discussed to result from an unfavorable selection of food items after sleep deprivation on the one hand; on the other hand, fatigue also reduces the willingness to engage in physical activity. Furthermore, sleep duration and quality seem to be associated with cognitive development in children. The aim of this analysis was to assess these associations in European adolescents.

Methods: As part of the Healthy Lifestyle in Europe by Nutrition in Adolescence "HELENA" study (October 2006 - June 2007), concen-

tration ability was assessed in 500 adolescents (12.5–17.4 years) using d2 test which was evaluated in age-corrected percentiles (concentration index). Sleep duration during the week and during the weekend was surveyed and divided into age-appropriate groups (too short, optimal, too long) with an optimal sleep duration of 9–12 h for 12-year-olds and 8–10 h for 13–18-year-olds. Dietary behavior was assessed using two 24 h recalls, which were subsequently summarized in the Diet Quality Index for adolescents (DQI). Body height and weight were collected and the calculated BMI was subsequently transformed to percentiles. Whether sleep duration was associated with BMI, dietary behavior, or attention was examined using the Kruskal-Wallis test. Furthermore, Spearman correlations were performed.

Results: On average, 59.4% (n: ♀ = 167; ♂ = 130) of adolescents slept for the optimal duration, 36.4% (n: ♀ = 96; ♂ = 86) slept too short, and 4.2% slept longer than recommended. No significant difference was observed between groups of sleep duration within BMI percentiles ($p = 0.193$), attention ($p = 0.520$), and DQI ($p = 0.742$). In addition, no significant correlation was observed between average sleep duration, BMI percentile, attention, and DQI. There was a significant negative correlation between age and sleep duration ($r = -0.317$; $p < 0.001$).

Conclusions: Even though slightly more than one third of the adolescents within the HELENA study got less than optimal sleep, no differences were found in terms of their BMI, dietary behavior or ability to concentrate, but age might play a role.

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