Adrenal

ODP029

Associations between Objective and Subjective Indicators of Stress and Sleep Disturbance in Adolescents and Young Adults from the General Population

Hanna Kische, PhD, Catharina Voss, MD, Lars Pieper, PhD, and Katja Beesdo-Baum, PhD

Background: Sleep is a complex and dynamic vital state, occupying one third of human's lifetime. Disturbed sleep can be a symptom of and a risk factor for a wide range of mental disorders and somatic diseases. One pathway through which sleep problems may lead to health problems is by dysregulation of the body's physiological stress response system as indicated by aberrant cortisol. Previous findings showed that poor sleep quality and sleep disruption were associated with elevated cortisol levels in adults. Regarding adolescents, there is evidence that sleep problems are linked to hyper-reactivity to stress with effects being stronger in girls than boys. In addition, adolescence itself was associated with decreased sleep quality and an increase in perceived stress dependent on age. However, little evidence is available for the association between objective and subjective stress markers and sleep in the daily life of adolescents from the general population. The aim of this study was to examine the association between 1) cortisol and 2) subjective stress with sleep in adolescents and young adults.

Methods: We used baseline data (11/2015–12/2016) of the Behavior and Mind Health (BeMIND) study, an epidemiological study based on a random community sample of individuals aged 14 to 21 years (Dresden, Germany, N = 1,180). We assessed sleep disturbance with the short form of the PROMIS Sleep-Disturbance questionnaire (8 items) via Ecological Momentary Assessment, conducted on four days directly after awakening, calculated mean. Cortisol was measured in hair (pg/mg) and saliva (nmol/l). Cortisol awakening response and total cortisol were calculated. Subjective stress was assessed via 1) the Perceived Stress Scale (PSS), 2) the Trier Inventory of the Assessment of Chronic Stress-Screening (TICS), and 3) two items for time urgency (subjective stress in school/at work/university and leisure, self-developed). Weighted linear regressions with robust standard errors were performed after exclusions (n = 1132, 48.4% female). Models were adjusted for sex, age, pubertal development and rerun in sex-specific analyses.

Results: Mean age was 17.83 (SD 0.07). Neither hair, nor saliva cortisol was associated with PROMIS Sleep (hair cortisol: unstandardized β-coefficient: -0.002, 95% confidence interval (CI): -0.012; 0.007). All analyzed subjective stress variables were associated with PROMIS Sleep. We found positive associations between PSS (β-coefficient: 0.151, 95% CI: 0.117; 0.183), TICS (β-coefficient: 0.056, 95% CI: 0.045; 0.066), and time urgency (β-coefficient: 0.114, 95% CI: 0.061; 0.166) with sleep. There was no evidence for sex-specific effects. Conclusion: Results confirmed the association between perceived stress and sleep in a population-based study with adolescents and young adults, that was previously shown mainly in adults. No evidence for a link between cortisol and sleep was found. Further analyses would benefit from a longitudinal perspective and consideration of
mediating/moderation variables to elucidate the complex interplay between stress and sleep.

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