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Factors associated with sleep deficit in children and adolescents

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Introduction: Individual behavior patterns may vary as a function of the interaction between rhythmic psychobiological activities and the circadian timing system. In children and adolescents, weekend and weekdays sleep schedules differ due to school attendance. Thus, the time at which classes begins may contribute to sleep deprivation in this population. Objective: In this epidemiological study, we evaluate the impact of school schedules in sleep parameters and, therefore, we analyze the difference between weekdays and weekend sleep schedules on sleep deficits in children and adolescents. Methods: This cross-sectional study involved 639 elementary and high-school students (mean age 13.03±2.62 years; 58.5% female) recruited from cities in the Vale do Taquari region, in Rio Grande do Sul, Brazil. Participants answered the Morningness-Eveningness Questionnaire (MEQ), and asked as to their sleeping habits on weekdays and the weekend. *Sleep deficit* was defined as the difference between sleep duration on weekdays and the weekend, using self-reported schedules. Sleep deficit was considered as a continuous variable for all analyzes. Results: According to our data, sleep duration and the midpoint of sleep in the weekdays were significantly higher in the afternoon school-time students comparing to morning school-time students. However, the morning school-time students presented the significantly highest age, bedtime and wake up difference, sleep deficit and social jet lag. Most students of the afternoon school-time do not take a nap during weekdays (15.3%) and weekends (13.8%). The difference between wake times and total sleep duration on weekends and weekdays was significantly higher in females than males. Sleep deficit was positively correlated with age ($r= 0.171$; $p < 0.001$) and negatively associated with MEQ scores ($r= -0.168$; $p < 0.001$). A step-by-step multivariate logistic regression identified social jetlag and the difference between weekdays and weekend waking times as significant predictors of sleep deficit (Adjusted $R = 0.95$; $F= 1817.665$; $p < 0.001$). Conclusion: Our results showed that school schedules influence the sleep parameters. The association of school schedules and physiological factors influence the sleep/wake cycle. This study was performed according to international ethical guidelines (ethics committee approval number: 12–0386 GPPG/HCPA). Keywords: Circadian rhythm, sleep deficit, school schedules. Projeto 12-0386