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Sleep and neurobehavioral characteristics of 5- to 7-year-old children with parentally reported symptoms of attention-deficit/hyperactivity disorder.

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OBJECTIVES: This study examined the hypothesis that domains of neurobehavioral function would be selectively affected by sleep-disordered breathing (SDB). Therefore, we assessed potential relationships between objectively measured sleep disturbances and neurobehavioral function in children with reported symptoms of attention-deficit/hyperactivity disorder (ADHD) and also determined the incidence of snoring and other sleep problems in 5- to 7-year-old children in the local community and potential relationships to parental snoring and passive smoking. **METHODS:** Parents of 5- to 7-year-old children in public schools were surveyed about their child's sleeping habits using a validated questionnaire. The questionnaire also asked whether they believed their child to be hyperactive or have ADHD. Children with reported symptoms of ADHD and control children were randomly selected and invited to the Sleep Medicine Center for an overnight polysomnographic assessment and a battery of neurocognitive tests. **RESULTS:** The questionnaire response rate was 47.6% (n = 5728). Frequent and loud snoring was reported for 673 children (11.7%). Similarly, 418 (7.3%) children were reported to have hyperactivity/ADHD, 313 (76.5%) of which were boys. Eighty-three children with parentally reported symptoms of ADHD were invited for full evaluation at the Sleep Medicine Center together with 34 control children. After assessment with the Conners' Parent Rating Scale, 44 children were designated as having "significant" symptoms of ADHD, 27 as "mild," and 39 designated as "none" (controls). Overnight polysomnography indicated that obstructive sleep apnea was present in 5% of those with significant ADHD symptoms, 26% of those with mild symptoms, and 5% of those with no symptoms. In the cohort, no sleep variable accounted for more than a negligible proportion of the variance in domains of neurobehavioral function. **CONCLUSIONS:** An unusually high prevalence of snoring was identified among a group of children designated as showing mild symptoms of ADHD based on the Conners' ADHD index identified from a community sample. However, whereas SDB is not more likely to occur among children with significant ADHD symptoms, it is significantly highly prevalent among children with mild hyperactive behaviors. Sleep studies further revealed that rapid eye movement disturbances are more likely to occur in children with significant symptoms, and they seem to impose significant but mild effects on daytime neurobehavioral functioning. We conclude that in children with significant symptoms of ADHD, the prevalence of SDB is not different from that of the general pediatric population and that rapid eye movement sleep in these children is disturbed and may contribute to the severity of their behavioral manifestations. Furthermore, SDB can lead to mild ADHD-like behaviors that can be readily misperceived and potentially delay the diagnosis and appropriate treatment.

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