

## Less REM sleep associated with being overweight among children and teens

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Children and teens who get less sleep, especially those who spend less time in rapid eye movement (REM) sleep, may be more likely to be overweight, according to a report in the August issue of *Archives of General Psychiatry*.

The obesity rate has more than tripled among children aged 6 to 11 years in the past 30 years, and approximately 17 percent of U.S. adolescents are now overweight or obese, according to background information in the article. Obesity results from an imbalance between calorie intake and energy expenditure from physical activity, but little is known about other factors that can alter this balance. A number of studies have documented an association between fewer hours of sleep and higher body mass index (BMI) in both adults and children.

Xianchen Liu, M.D., Ph.D., of the University of Pittsburgh School of Medicine Department of Psychiatry and Western Psychiatric Institute and Clinic of the University of Pittsburgh Medical Center, and colleagues studied 335 children and adolescents age 7 to 17 years (average age 10.8). For three consecutive nights, participants' sleep was monitored through polysomnography, which assesses total sleep time, time spent in REM, the time it takes to fall asleep and other variables. Weight and height were measured to calculate BMI.

A total of 49 participants (14.6 percent) were at risk for becoming overweight and 45 (13.4 percent) were overweight. Compared with children at a normal weight, those who were overweight slept about 22



minutes less per night and had lower sleep efficiency (percentage of time in bed that an individual is asleep), shorter REM sleep, less eye activity during REM sleep and a longer wait before the first REM period.

After adjusting for other related factors, one hour less of total sleep was associated with two-fold increased odds of being overweight and one hour less of REM sleep was associated with three-fold increased odds.

"Although the precise mechanisms are currently under investigation, the association between short sleep duration and overweight may be attributed to the interaction of behavioral and biological changes as a result of sleep deprivation," the authors write. Sleep loss causes changes in hormone levels that may affect hunger, and also provides an individual with more waking hours in which to eat. In addition, sleep loss contributes to fatigue the following day, which may decrease physical activity and calorie expenditure.

Source: JAMA and Archives Journals

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