Preventing Childhood Obesity: Wake Up, It's Time for Sleep!

Commentary on Drescher et al. Caffeine and screen time in adolescence: associations with short sleep and obesity. *J Clin Sleep Med* 2011;7:337-342.

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The obesity epidemic continues to be a major public health concern in the United States, with the prevalence of childhood obesity tripling since 1980.¹ Obesity in childhood is associated with both short- and long-term adverse outcomes.² Children who are obese tend to become obese adults,³ and, once present, obesity is notoriously hard to treat.⁴ The obesity epidemic has been paralleled by a similar epidemic of sleep deprivation. Across infancy, childhood, and adolescence, evidence suggests a decrease in sleep duration ranging from 30 to 60 minutes over the last 20 years, due largely in part to later bedtimes.^{5,6}

Sleep duration has been implicated as a potential risk factor for obesity. Several experimental and epidemiological studies in adults and children have reported an association between short sleep duration and increased body mass index (BMI). The study by Drescher et al.⁷ adds to this literature by showing a relationship between parent-reported total sleep time (TST) and BMI z-score among children 10-17 years of age. In this cross-sectional study, Drescher et al. found that decreased parent-reported TST was associated with higher standardized BMI. Although the cross-sectional design limits the ability to examine causality, the study had several strengths, including a diverse sample of children participating in a community-based cohort study, research-level measures of height and weight, use of both questionnaires and polysomnography to measure sleep, and careful measurement of physical activity and screen time.

Prevention and treatment of childhood obesity are national priorities, and potentially effective intervention strategies are critically needed to address the alarming increase of obesity prevalence in today's youth. The consistent association across adult and childhood studies of short sleep duration and high BMI suggests that modifying sleep duration may aid in decreasing the risk of obesity. The high prevalence of sleep insufficiency in adolescence and the inverse association between parent-reported total sleep time and BMI z-score reported by Drescher et al. also lend support to the importance of sleep as a key component of a healthy lifestyle and weight maintenance throughout the lifecourse.

Despite the increasing evidence relating sleep duration and obesity, few interventions have reported attempts to improve childhood sleep duration and quality to prevent obesity, and

more information is needed about potential intervention strategies to improve sleep. Drescher et al. identify two potential age-specific targets for sleep interventions, i.e., caffeine consumption and electronic screen time. Today's youth spends more time using media devices than ever before, and 71% of 8- to 18-year-old children have televisions in their bedrooms.⁸ Results reported by Drescher et al. suggest that lessening the amount of screen time to increase sleep duration may be an effective strategy for pre-adolescents less than 13 years old. Caffeine intake provides another interesting possible means to modify sleep duration. Due to caffeine's ubiquitous presence in everyday life and its inverse relationship with parent-reported total sleep time in children 13 years of age and older as reported by Drescher et al., decreasing caffeine use provides an additional way to address sleep insufficiency in older adolescents. Targeting caffeine and screen media could be potential intervention strategies for improving sleep duration among school age children and possibly also preventing obesity.

Identifying determinants of short sleep and obesity can also inform the design of interventions for high-risk populations. The disproportionate prevalence of obesity among racial/ethnic minorities of all ages has been widely documented, and studies have found racial/ethnic differences in many related risk factors in children including short sleep duration.⁹ Drescher et al. found that Hispanic adolescents had significantly higher BMI z-scores compared to their white counterparts and had significantly shorter parent-reported total sleep time. Thus, it is possible that targeting sleep duration may be a particularly effective strategy for obesity prevention among minority populations.

In summary, the study by Drescher et al. suggests it is time for obesity prevention efforts to "wake up" and consider the important role of sleep, which has largely been overlooked in traditional childhood obesity prevention discussions.

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DISCLOSURE STATEMENT

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