

# The Association between Sleep Duration and Overweight in a School-Age Population in Seoul (J Obes Metab Syndr 2017;26:45-51)

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Sufficient sleep is an important factor for a healthy lifestyle. In addition to restoring body functions and recharging energy, sleep plays many important roles in various physiological functions. Sleep affects growth and pubertal development in children and adolescents. Kwon et al.<sup>1</sup> showed that sleep duration was related to age at menarche in Korean elementary school girls. Sleep duration is inversely related to the prevalence of chronic diseases, including metabolic syndrome, type 2 diabetes mellitus, dyslipidemia, and cardiovascular diseases.<sup>2</sup> Individuals with an insufficient sleep duration showed an increased risk of obesity.<sup>3</sup> Pacheco et al.<sup>4</sup> suggested a link between overweight and obesity and altered sleep quality and also a link between slow-wave sleep duration and insulin resistance. Insufficient sleep results in the dysregulation of hormones that control appetite and energy balance and subsequently increases the risk of obesity.<sup>5</sup>

Shin<sup>6</sup> investigated the association between sleep duration and overweight in a school-age population in Seoul using the secondary data of a sample survey (n = 25,182) of the Student Health Examination in 2010. Shin<sup>6</sup> identified the proportions of those who were overweight [World Health Organization (WHO) definition of body mass index (BMI) > 1.0 standard deviation score (SDS)] and explored the association of overweight with sleep duration after ad-

justing for age and for meat and vegetable intake using multiple logistic and linear regression analyses. Shin<sup>6</sup> found that only 23.2% of participants slept 8 hours or more per day, and the proportions of overweight participants were 34.2% of boys and 19.5% of girls. Shin<sup>6</sup> also showed that significant odds ratios for overweight according to sleep duration (based on  $\geq 8$  sleeping hours) were 1.28 (for less than 6 hours), 1.31 (for 6-7 hours), and 1.28 (for 7-8 hours) in boys and 1.19 (for 6-7 hours) and 1.17 (for 7-8 hours) in girls.

These findings are very interesting and significant in terms of sleep as a causal variable of obesity in the Korean school-aged population. They also call attention to the activities that use sleep time to meet health needs.

The fact that most students do not obtain an optimal sleep duration ( $\geq 8$  hours) seems to be related to the educational environment in Korea. This study suggests that a school health policy for ensuring optimal sleep duration in the school-aged population should be developed for prevention of obesity.

The quality of sleep also has a significant relationship with overweight and obesity.<sup>4</sup> However, the association between the quality of sleep and overweight could not be investigated in this study.

As Shin<sup>6</sup> mentioned, this study defined overweight according to BMI SDS using growth reference values for 5-19-year-olds, as re-

ported by WHO. Percentile criteria for overweight based on the 2007 Korean growth chart is recommended instead of BMI SDS. It would also be significant to investigate the association between sleep duration and obesity, especially extreme obesity, in addition to that with overweight.

In conclusion, sleep duration is independently related to overweight, and only 23.3% of Korean students achieve an optimal sleep duration. Health and educational policies encouraging and ensuring adequate sleep duration in the school-aged population should be established. To support and confirm the results of this study, further investigations are needed using nation-wide data such as the Korea National Health and Nutrition Examination Survey.

### CONFLICTS OF INTEREST

The author declares no conflict of interest.

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