

Association between short sleep duration and the risk of sensitization to food and aero allergens in rural Chinese adolescents

1. S. Zhang^{1,2,†} <<http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2222.2010.03677.x/abstract#fn1>> ,

Clinical & Experimental Allergy

Volume 41, Issue 4, <<http://onlinelibrary.wiley.com/doi/10.1111/cea.2011.41.issue-4/issuetoc>> pages 547–555, April 2011

Summary

Background Both long and short sleep duration have been associated with obesity, cardiovascular disease, and diabetes. However, there have been no previous studies investigating the potential relationship between altered sleep duration and allergen sensitization.

Objective To explore the association between sleep duration and sensitization to food and aeroallergens.

Methods This study includes 1534 rural Chinese adolescent twins aged 12–21 years who completed standard sleep questionnaires and skin prick tests (SPTs) to nine food and five aeroallergens. Total sleep time was defined as the interval from bedtime to wake-up time minus sleep latency. Sensitization was defined as having at least one positive SPT.

Results Compared with individuals with the highest (third) tertile of sleep duration, those who slept less were more likely to be sensitized to any food allergen with odds ratios (ORs) of 1.9 [95% confidence interval (CI): 1.3–2.7] and 1.4 (95% CI: 1.0–1.9) for the first and second tertiles (trend test $P_{\text{trend}}=3 \times 10^{-4}$), respectively. The corresponding ORs for sensitization to any aeroallergen were 1.5 (95% CI: 1.1–2.0) and 1.3 (95% CI: 1.0–1.7) ($P_{\text{trend}}=8 \times 10^{-3}$). These associations were independent of percent body fat. In addition, we observed a significant dose–response association between the number of positive SPTs and percentage of shortest sleep duration (first tertile) ($P_{\text{trend}}=1 \times 10^{-3}$).

Conclusions and Clinical Relevance In this sample of relatively lean rural Chinese adolescents, we found that short sleep duration was associated with increasing risk of sensitization to food and aeroallergens, independent of percent body fat. Longitudinal studies are needed to further determine the temporal and causal relationships. If short sleep duration indeed is one of the risk factors for allergic sensitization, the global burden of allergic diseases could be dramatically reduced by providing appropriate guidance on sleep duration for youth.