Sleep duration, nutrient intake and nutritional status in UK adults

G.K. Pot[1,2], H.K. Al Khatib[2], M. Perowicz[2], W.L. Hall[2], S.V. Harding[2] and J. Darzi[2]

[1]*Vrije University Amsterdam, Section of Health and Life, Faculty of Earth and Life Sciences, Amsterdam, NL and*
[2]*King's College London, Division of Diabetes and Nutritional Sciences, SE1 9NH, London, UK*

The rise in the prevalence of obesity has been paralleled with a decline in sleep duration over the past century[1]. Disrupted sleeping patterns are emerging as a new and potentially important risk factor for obesity[2]. Short sleep duration and poor sleep quality have been associated with increased food intake and poorer diet quality[3]. However, the association between sleep and nutritional status remains underexplored. This study aimed to investigate the relationship between sleep duration and nutritional status in 2075 participants of the cross-sectional National Diet and Nutrition Survey Rolling Programme (NDNS-RP) (2008–2012) aged 18 years and over[4]. Sleep duration was categorized into short ($\leqslant$6 h), normal (7–8 h), and long ($\geqslant$9 h). Dietary intake was assessed using 4-day estimated food diaries and nutritional status was assessed using biomarkers in fasting blood samples and/or 24HR urine. Differences between the sleep categories were analysed using ANCOVA adjusting for sex, age and energy intake. Results showed that energy intake was significantly higher amongst normal sleepers (1742 ± 520kcal) compared to short (1677 ± 569kcal) or long sleepers (1583 ± 448kcal). Normal sleep was also associated with higher fibre intake ($p < 0.001$), higher vitamin C intake ($p = 0.04$) and higher iron intake ($p < 0.001$) compared to short or long sleep. Data from the nutritional biomarkers showed that normal sleepers tended to have higher total plasma carotenoids levels ($p < 0.001$), plasma selenium ($p = 0.01$) and urinary nitrogen levels ($p = 0.03$) compared to short or long sleepers. No associations were found for plasma ferritin ($p = 0.59$), vitamin B1 ($p = 0.31$), vitamin B2 ($p = 0.95$), vitamin B6 ($p = 0.07$), retinol ($p = 0.42$), 25-hydroxy-vitamin-D ($p = 0.35$), vitamin C ($p = 0.09$), alpha-tocopherol ($p = 0.60$), zinc ($p = 0.15$) nor urinary sodium ($p = 0.19$) or potassium ($p = 0.15$).

In conclusion, normal sleepers tended to have a marginally different dietary intake pattern as well as some differences in nutritional status compared to short or long sleepers. Our group is currently undertaking more in-depth analysis of the NDNS sleep data and dietary intake.

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