

Protein intake and its association with sleep: results from 3 cohort studies of U.S. American health professionals

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Sleep is related to chronic diseases and overall daytime functioning, and sleep disorders are a growing public health issue. Protein intake is a possible health beneficial factor influencing the quality of sleep. We investigated the association between protein intake and sleep quality in three U.S. American cohorts of health professionals. The Nurses' Health Study (NHS), the NHS II and the Health Professionals' Follow-up study (HPFS) were used for data analysis. Habitual dietary intake during the past year was assessed at baseline and every 4 years using validated semiquantitative food frequency questionnaires. In 2012 (HPFS), 2014 (NHS) and 2017 (NHS 2) sleep quality was measured in detail. In NHS, the original Pittsburgh Sleep Quality Index (PSQI) was used to measure sleep quality, while NHS II and HPFS used adapted versions. The sleep score was grouped into five similarly sized categories for ordinal logistic regression and Odds ratios (OR) and 95% confidence intervals (CI) were calculated to estimate the odds of good sleep quality (category 1) versus poorer sleep quality (categories 2-5) depending on protein intake. After excluding participants with chronic diseases, missing exposure or outcome data, our study populations comprised 32,212 women from NHS, 51,976 women from NHS 2, and 14,890 men from HPFS. Overall, no association between total protein intake and sleep quality was observed in the three cohorts. Women from the NHS 2 showed a significant negative association with sleep quality comparing quartile 1 of animal protein intake with quartile 4 (OR: 0.93, 95%CI: 0.88-0.99), although this trend was not significant in continuous analysis per 2% increase (0.99, 0.97-1.01).

Dairy protein consumption was associated with better sleep quality in women from the NHS 2 but with worse sleep quality in the HPFS. Higher intake of vegetable protein was associated with better sleep quality in participants from the NHS and HPFS (NHS: 1.10, 1.02-1.19; HPFS: 1.14, 1.03-1.26), whereas no association was observed in younger women from the NHS 2 (0.99, 0.94-1.04). There was no association between total protein intake and self-reported sleep quality in male and female US health professionals. However, our results indicate a difference with protein source. While the intake of animal protein tended to be associated with worse sleep quality and the results of dairy protein intake were inconclusive. Consumers with higher intakes of vegetable protein showed better sleep quality compared to those with lower consumption. Further studies are warranted to validate our findings.

References

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