**Association between excess sleep duration and risk of stroke: A population-based study**

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**SUPPLEMENTAL MATERIALS**

**Supplemental Table I. Weighted percentage of stroke events over median follow-up of 9.1 years stratified by sleep time category, age, and sex**

|  |  |
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| **Category** | **Weighted Percentage** |
| **Age <70** |  |
| <4 hours | 1.2 |
| 4 to 6 hours | 1.3 |
| 7 to 9 hours | 1.5 |
| >10 hours | 5.9 |
| **Age 70+** |  |
| <4 hours | 5.3 |
| 4 to 6 hours | 5.7 |
| 7 to 9 hours | 6.1 |
| >10 hours | 3.9 |
| **Male** |  |
| <4 hours | 2.2 |
| 4 to 6 hours | 2.2 |
| 7 to 9 hours | 2.3 |
| >10 hours | 3.0 |
| **Female** |  |
| <4 hours | 1.7 |
| 4 to 6 hours | 1.7 |
| 7 to 9 hours | 2.0 |
| >10 hours | 6.9 |

**Supplemental Table II. Sensitivity analyses adjusting for depression and changing upper category of sleep time.**

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| **Sensitivity analysis and sleep time category** | **aHRa (95% CI)** |
| **Include depression in model** |  |
| **<70 years old** |  |
| <4 hours sleep/night | 1.12 (0.48-2.58) |
| 4-6 hours sleep/night | 1.02 (0.71-1.47\_ |
| 7-9 hours sleep/night | Reference |
| >10 hours sleep/night | **2.49 (1.08-5.72)** |
| **>70 years old** |  |
| <4 hours sleep/night | 1.32 (0.29-6.11) |
| 4-6 hours sleep/night | 1.92 (0.79-4.67) |
| 7-9 hours sleep/night | Reference |
| >10 hours sleep/night | 1.54 (0.32-7.51) |
| **Change upper category of sleep to >9h** |  |
| **<70 years old** |  |
| <4 hours sleep/night | 1.34 (0.61-2.93) |
| 4-6 hours sleep/night | 1.00 (0.70-1.41) |
| 7-8 hours sleep/night | Reference |
| >9 hours sleep/night | 1.03 (0.53-2.01) |
| **>70 years old** |  |
| <4 hours sleep/night | 0.71 (0.16-3.24) |
| 4-6 hours sleep/night | 1.05 (0.55-1.99) |
| 7-8 hours sleep/night | Reference |
| >9 hours sleep/night | 0.80 (0.38-1.70) |

**a**Hazard ratios from full model adjusted for sex, body mass index, hypertension, diabetes, smoking, income quartile, rural residence, alcohol consumption, education, ethnicity, marital status, and other co-morbidities (migraine, arthritis, COPD, and asthma).

bDepression variable available for 54,075 respondents.

**Supplemental Table III. Sensitivity analyses for ischemic stroke only**

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| --- | --- | --- | --- |
| **Ischemic stroke only** | **aHRa (95% CI) for simple model** | **aHR for vascular model** | **aHR for full model** |
| **<70 years old** |  |  |  |
| <4 hours sleep/night | 1.82 (0.91-3.63) | 1.67 (0.77-3.63) | 1.47 (0.63-3.44) |
| 4-6 hours sleep/night | 0.99 (0.74-1.31) | 0.99 (0.70-1.39) | 1.06 (0.73-1.54) |
| 7-9 hours sleep/night | Reference | Reference | Reference |
| >10 hours sleep/night | **3.02 (1.60-5.71)** | **2.45 (1.12-5.39)** | 1.92 (0.80-4.61) |
| **>70 years old** |  |  |  |
| <4 hours sleep/night | 1.05 (0.52-2.13) | 0.78 (0.17-3.65) | 0.74 (0.15-3.61) |
| 4-6 hours sleep/night | 0.90 (0.71-1.13) | 0.96 (0.51-1.80) | 1.0 (0.52-01.93) |
| 7-9 hours sleep/night | Reference | Reference | Reference |
| >10 hours sleep/night | 1.41 (0.83-2.41) | 1.57 (0.61-4.05) | 1.50 (0.58-3.91) |

**a**Hazard ratios from simple model adjusted for sex only; aHR from vascular model also adjusted for body mass index, hypertension, diabetes and smoking; aHR from full model also adjusted for income quartile, rural residence, alcohol consumption, education, ethnicity, marital status, and other co-morbidities (migraine, arthritis, COPD, and asthma).