Gender-Specific Associations of Short Sleep Duration With Prevalent Hypertension

To the Editor:

We read the interesting recent article by Cappuccio et al.,1 who found that sleep deprivation was positively associated with hypertension among women. We examined this hypothesis in our ongoing Heinz Nixdorf Recall Study, a prospective population-based cohort study.2,3 Interestingly, we were able to corroborate the gender specificity of the association between short duration of sleep (≤5 hours per night) and prevalence of hypertension, although we observed a weaker association.

The age-adjusted prevalence ratio in our study was 1.05 (95% CI: 0.89 to 1.23) among men and 1.24 (95% CI: 1.04 to 1.46) among women. Furthermore, we observed that daily long siesta (midday naps) is associated with excessively short and long sleep durations at night. However, adjustment for regular siesta did not change the estimates (Table).

Some points deserve critical appraisal. First, the authors state, “among women, in fully adjusted analyses, short duration of sleep (≤5 hours per night) was associated with higher risk of hypertension compared with the group sleeping 7 hours (OR [odds ratio]: 2.01; 95% CI: 1.13 to 3.58).” This result does not correspond with any result in their tables.

Second, in their cross-sectional analysis, the authors calculated prevalence odds ratios and interpreted them as relative risks. However, the odds ratio does not appropriately depict the clinical and public health relevance in light of the high prevalence of hypertension: in their data, the prevalence of hypertension among women who sleep ≤5 hours is 36.9% and among women who sleep 7 hours per night is 25.5%. The unadjusted relative risk (ratio of prevalences) of Cappuccio et al.1 of 1.45 is considerably closer to the null value than the reported unadjusted odds ratio of 1.72.

Table. Sleep Duration at Night and Age-Standardized Prevalence of Hypertension and Daily Siesta Among 4797 Men and Women of the Heinz Nixdorf Recall Study, Aged 45 to 74 Years

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>≤5 h</th>
<th>6 h</th>
<th>7 h</th>
<th>8 h</th>
<th>≥9 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N (%)</td>
<td>228 (9.6)</td>
<td>517 (21.8)</td>
<td>816 (34.4)</td>
<td>641 (27.0)</td>
<td>172 (7.3)</td>
</tr>
<tr>
<td>Age (SD), y</td>
<td>58.0 (7.3)</td>
<td>58.5 (8.0)</td>
<td>58.4 (7.7)</td>
<td>61.6 (7.4)</td>
<td>63.2 (7.0)</td>
</tr>
<tr>
<td>Hypertension, %†</td>
<td>42.2</td>
<td>40.3</td>
<td>41.2</td>
<td>47.1</td>
<td>44.0</td>
</tr>
<tr>
<td>Daily siesta, any duration, %†</td>
<td>18.6</td>
<td>19.1</td>
<td>14.6</td>
<td>15.7</td>
<td>17.4</td>
</tr>
<tr>
<td>Daily long (&gt;1 h) siesta, %†</td>
<td>4.3</td>
<td>3.0</td>
<td>3.1</td>
<td>3.0</td>
<td>4.2</td>
</tr>
<tr>
<td>Model-based prevalence ratio‡</td>
<td>1.05 (0.89 to 1.23)</td>
<td>0.99 (0.88 to 1.13)</td>
<td>Ref</td>
<td>1.14 (1.02 to 1.27)</td>
<td>1.06 (0.90 to 1.25)</td>
</tr>
<tr>
<td>Women</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N (%)</td>
<td>337 (14.1)</td>
<td>480 (20.1)</td>
<td>775 (32.4)</td>
<td>630 (26.3)</td>
<td>170 (7.1)</td>
</tr>
<tr>
<td>Age (SD), y</td>
<td>60.1 (7.6)</td>
<td>59.1 (7.9)</td>
<td>58.7 (8.0)</td>
<td>59.8 (7.5)</td>
<td>62.5 (6.4)</td>
</tr>
<tr>
<td>Hypertension, %†</td>
<td>35.1</td>
<td>25.9</td>
<td>28.2</td>
<td>27.2</td>
<td>29.1</td>
</tr>
<tr>
<td>Daily siesta, any duration, %†</td>
<td>16.7</td>
<td>13.8</td>
<td>13.5</td>
<td>13.5</td>
<td>13.3</td>
</tr>
<tr>
<td>Daily long (&gt;1 h) siesta, %†</td>
<td>3.8</td>
<td>1.5</td>
<td>1.4</td>
<td>0.8</td>
<td>2.7</td>
</tr>
<tr>
<td>Model-based prevalence ratio‡</td>
<td>1.24 (1.04 to 1.46)</td>
<td>0.91 (0.76 to 1.08)</td>
<td>Ref</td>
<td>0.95 (0.81 to 1.11)</td>
<td>1.09 (0.87 to 1.37)</td>
</tr>
</tbody>
</table>

*Sleep duration at night was asked in hours and minutes; eg, 7 hours of sleep includes 6.5 hours up to 7.5 hours, etc; overall, 15 men and 16 women have been excluded because of missing data.
†Age standard is the age distribution of the overall group of subjects without known history of coronary artery disease.
‡Log prevalence regression adjusting for age (disjoint indicator variables); Wald CIs.

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