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 (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 al1 of 1.45 is considerably closer to the null value than the reported unadjusted odds ratio of 1.72.

Disclosures

S.M. has received research support from and has participated in speaking engagements for Sanofi-Aventis Deutschland GmbH. K.H.J. has received research support from 3M Medica Deutschland GmbH, Apogepha Arzneimittel GmbH, Astra-Zenica GmbH, Boeringer Ingelheim Pharma GmbH, Dr Regenold GmbH, Ferring Arzneimittel GmbH, Fujifilm Europe GmbH, IFAG Basel

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 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 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.

Andreas Stang  
Clinical Epidemiology Unit  
Institute of Medical Epidemiology, Biometry, and Informatics  
Martin-Luther-University of Halle-Wittenberg  
Sachsen-Anhalt, Germany

Susanne Moebus  
Institute of Medical Informatics, Biometry, and Epidemiology  
University of Duisburg-Essen  
Duisburg-Essen, Germany

Stefan Möhlenkamp  
Clinic of Cardiology  
West German Heart Center  
University of Duisburg-Essen  
Duisburg-Essen, Germany

Karl Heinz Jöckel  
Institute of Medical Informatics, Biometry, and Epidemiology  
University of Duisburg-Essen  
Duisburg-Essen, Germany

on behalf of the Heinz Nixdorf Recall Study Investigative Group


Gender-Specific Associations of Short Sleep Duration With Prevalent Hypertension
Andreas Stang, Susanne Moebus, Stefan Möhlenkamp, Raimund Erbel and Karl Heinz Jöckel
on behalf of the Heinz Nixdorf Recall Study Investigative Group

Hypertension. 2008;51:e15-e16; originally published online January 28, 2008;
doi: 10.1161/HYPERTENSIONAHA.107.108456
Hypertension is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2008 American Heart Association, Inc. All rights reserved.
Print ISSN: 0194-911X. Online ISSN: 1524-4563

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://hyper.ahajournals.org/content/51/3/e15

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published
in Hypertension can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial
Office. Once the online version of the published article for which permission is being requested is located,
click Request Permissions in the middle column of the Web page under Services. Further information about
this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Hypertension is online at:
http://hyper.ahajournals.org//subscriptions/