Sleep Disturbance Severity is Associated with Earlier Self-Reported Onset of Cognitive Decline Among Older Adults

Anthony R. Stabler, M.A.1,2, & Jeri Morris, Ph.D.2

1Department of Psychiatry and Behavioral Sciences, Kansas University School of Medicine–Wichita, Wichita, KS
2Department of Psychology, Roosevelt University, Chicago, IL

Introduction

• Sleep quality impacts cognitive functioning across the lifespan.1 Older adults in particular are more likely to experience changes in cognitive functioning as a result of sleep disturbance.2

• Older adults with dementia often experience poor quality of sleep characterized by shorter sleep duration, increasingly fragmented sleep, altered circadian patterns, and elevated rates of sleep-disordered breathing.3 Researchers have become increasingly interested in the extent to which sleep disturbance contributes to risk for cognitive decline among older adults.4

• Among healthy aging populations, poor sleep duration (<7 hours; >8 hours) and fragmented sleep were associated with lower cognitive outcomes.4 This relationship is not confounded by cerebrovascular disease, depression, or medication usage.5

• Cognitive domains typically affected by sleep disturbance among healthy older adult populations include initial learning, working memory, attentional set-shifting, sustained attention, and abstract problem solving.

• The present study seeks to better understand sleep and cognitive functioning by investigating the extent to which severity of sleep disturbance is associated with self-reported age of cognitive decline onset among older adults populations.

Methods

• Archival data from 18,134 older adults (>60 years) was selected from the National Alzheimer’s Coordinating Center’s Uniform Data Set, with a sample average of 76.9 (SD=8.6) years of age and 14.4 (SD=3.8) years of education. Gender distribution was 53.5% male.

• At the 1st evaluation, all participants estimated the age at which they began experiencing a decline in their cognitive functioning.

• Sleep disturbance severity data was obtained from participants’ answers to sleep-related questions on the Neuropsychiatric Inventory Questionnaire (NPI-Q), with ratings of mild (1), moderate (2), or severe (3) sleep disturbance.

• Frequency statistics of NPI-Q severity ratings were utilized to examine proportions of sleep disturbance severity among the total population. A Pearson’s correlation was utilized to examine the relationship between sleep disturbance severity and age of cognitive decline onset. ANCOVA analyses were utilized to control for years of education, cerebrovascular disease, and BMI in examining the relationship between sleep severity and age of cognitive decline onset.

Results

• See Table 1 for full sample frequencies of NPI-Q severity.

• See Table 2 for correlation analyses.

• See Table 3 for discussion of further analyses.

Conclusions

• The negative relationship between sleep disturbance severity and self-reported age of cognitive decline onset remained significant after controlling for years of education, history of cerebrovascular disease, and body mass index.

Table 1

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<th>Severity</th>
<th>N</th>
<th>Mean Age (SD)</th>
<th>t</th>
<th>p</th>
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</thead>
<tbody>
<tr>
<td>No sleep disturbance</td>
<td>5,568</td>
<td>69.3</td>
<td>-0.038</td>
<td>.005</td>
</tr>
<tr>
<td>Sleep disturbance</td>
<td>48.4</td>
<td>76.9 (8.6)</td>
<td>6.3</td>
<td>.005</td>
</tr>
</tbody>
</table>

Table 2

<table>
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<th>Severity</th>
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Table 3

• The present study suggests that older adults reporting greater severity of sleep disturbance may experience an earlier onset of cognitive decline.

• Sleep difficulties among older adult populations vary in quality and may be related to a variety of psychological, medical, or lifestyle factors that need further exploration within the literature.

• Future research should examine the specific kinds of cognitive deficits experienced by earlier declining older adults in order to develop more effective methods of interviewing and objectively screening for sleep-related cognitive impairment.

References