Self-Reported Cognitive Decline, Emotional Symptoms and Daytime Sleep After Ischemic Stroke

Elisabeth Kliem1,2, Angela S. Labberton3, Mathias Barra2,4, Elise Gjestad1,5, Bent Indredavik6,7, and Ramune Grambaite1,2

Background

After stroke, emotional symptoms (such as depression or anxiety), cognitive decline and increased daytime sleep are common. However, the relationship between these sequelae remains unclear. We aimed to study:
1. If self-reported cognitive decline and emotional symptoms 3 months after hospital discharge are associated with increased self-reported daytime sleep at 1 year.
2. If increased self-reported daytime sleep at 3 months is associated with self-reported emotional symptoms and cognitive decline at 1 year.

Patient characteristics (N=140)

- Sex: 57.1% male
- Age (M±SD): 73.2 ± 10.9 years
- Education: 21.4% Primary school
  41.0% Secondary school
  37.5% 3-5 year university education
- Mini-Mental State Examination score during hospital stay (M±SD): 25.2 ± 4.9
- NIHSS score within 24 hours after stroke (M±SD): 3.6 ± 4.3
- Barthel Activities of Daily Living index score:
  3 months (M±SD) = 89.4 ± 24.8
  1 year (M±SD) = 93.9 ± 17.6

Table 1. Relationship of self-reported emotional symptoms and cognitive decline (3 months) with daytime sleep (1 year).

<table>
<thead>
<tr>
<th>1 year</th>
<th>Increased daytime sleep</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months</td>
<td>OR</td>
<td>Lower</td>
</tr>
<tr>
<td>Worse concentration*</td>
<td>4.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Worse memory*</td>
<td>4.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Higher HADS-D score*</td>
<td>1.2</td>
<td>1.0</td>
</tr>
<tr>
<td>Higher HADS-A score*</td>
<td>1.2</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Note: *Significant at p<.00625 (Bonferroni correction). Controlled for age, sex, and NIHSS.

Method

Ischemic stroke patients without recorded previous history of dementia or depression were included in this study. Data from patients’ medical journals were used, and the following symptoms were assessed 3 months and 1 year after hospital discharge using postal surveys:
1. Self-reported symptoms of anxiety and depression were assessed using the Hospital Anxiety and Depression Scale (HADS).
2. Self-reported increase in daytime sleep and decline in concentration and memory were each assessed with one dichotomous item. Multiple linear and binary logistic regression controlling for age, sex and stroke severity (NIH Stroke Scale, NIHSS) were used.

Results

Figure 1. Percentage of self-reported symptoms.

Table 2. Relationship of self-reported daytime sleep (3 months) with emotional symptoms and cognitive decline (1 year).

<table>
<thead>
<tr>
<th>1 year</th>
<th>Worst concentration</th>
<th>Worse memory</th>
<th>Higher HADS-D score</th>
<th>Higher HADS-A score</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

Note: ns=non-significant result (p>.00625, Bonferroni correction); Green circle= positive beta/OR>1. Controlled for age, sex, and NIHSS.

Conclusion

Patients with self-reported higher levels of depression and anxiety and with decline in concentration and memory 3 months after hospital discharge, may be at a higher risk for increased daytime sleep at 1 year. Interventions targeting emotional symptoms and cognitive decline in the subacute phase may prevent excessive daytime sleep and may thereby secure patients’ engagement in rehabilitation and successful recovery.