**RESULTS**

The risk of developing Alzheimer’s disease was significantly higher in participants who were either 25(OH)D deficient or severely deficient in multivariate adjusted Cox proportional hazards models:

<table>
<thead>
<tr>
<th>Serum 25(OH)D, nmol/L</th>
<th>Model A (Reference)</th>
<th>Model B (Reference)</th>
<th>p-value for linear trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥50</td>
<td>1.67 (1.06-2.62)</td>
<td>1.64 (1.03-2.60)</td>
<td>0.005</td>
</tr>
<tr>
<td>≥25 to &lt;50</td>
<td>2.29 (1.07-4.88)</td>
<td>2.23 (1.03-4.82)</td>
<td>0.009</td>
</tr>
<tr>
<td>&lt;25</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: HR, Hazard Ratio; CI, Confidence Interval
Model A adjusted for age and season of vitamin D collection
Model B adjusted for Model A and education, gender, BMI, alcohol consumption and depressive symptoms

**Monotonic relationship**

The multivariate adjusted hazard ratio (95% confidence interval [CI]) of incident Alzheimer’s disease by standardised log-transformed 25(OH)D was 0.81 (95% CI 0.65-0.99, p=0.04). This corresponds to a decreased risk of Alzheimer’s disease by around 19% for each SD unit increase of log-transformed 25(OH)D suggesting a monotonic relationship.

**Hypertension or diabetes unlikely to mediate observed associations**

The same pattern of results was observed when adjusting for either hypertension or diabetes or both in mediation models.

**Potential threshold for increased risk below 50 nmol/L**

A similar pattern of results was also observed when 25(OH)D concentrations were grouped into four clinically relevant categories instead of three. However, there was no difference in risk between those with 25(OH)D concentrations ≥50 to <75 and ≥75 nmol/L, suggesting a potential threshold for the increase in risk below 50 nmol/L.

**REFERENCES**


**CONCLUSIONS**

The risk of incident Alzheimer’s disease is more than doubled in elderly US adults with severe vitamin D deficiency, and more than 60% higher in those deficient over a mean follow-up of 5.6 years.

Clinical trials are warranted to investigate the possible efficacy of vitamin D supplements for the primary or secondary prevention of AD in elders with low vitamin D levels.

**COMMENTS**

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