



Memory performance mediates subjective sleep quality associations with cerebrospinal fluid Alzheimer's disease biomarker levels and hippocampal volume among individuals with mild cognitive symptoms

Laura Stankeviciute, Jonathan Blackman, Núria Tort-Colet, Ana Fernández-Arcos, Gonzalo Sánchez-Benavides, Marc Suárez-Calvet, Álex Iranzo, José Luis Molinuevo, Juan Domingo Gispert, Elizabeth Coulthard, Oriol Grau-Rivera

Sleep disturbances are prevalent in Alzheimer's disease (AD), affecting individuals during its early stages. We investigated associations between subjective sleep measures and cerebrospinal fluid (CSF) biomarkers of AD in adults with mild cognitive symptoms from the European Prevention of Alzheimer's Dementia Longitudinal Cohort Study, considering the influence of memory performance. A total of 442 participants aged >50 years with a Clinical Dementia Rating (CDR) score of 0.5 completed the Pittsburgh Sleep Quality Index questionnaire and underwent neuropsychological assessment, magnetic resonance imaging acquisition, and CSF sampling. We analysed the relationship of sleep quality with CSF AD biomarkers and cognitive performance in separated multivariate linear regression models, adjusting for covariates. Poorer cross-sectional sleep quality was associated with lower CSF levels of phosphorylated tau and total tau alongside better immediate and delayed memory performance. After adjustment for delayed memory scores, associations between CSF biomarkers and sleep quality became non-significant, and further analysis revealed that memory performance mediated this relationship. In post hoc analyses, poorer subjective sleep quality was associated with lesser hippocampal atrophy, with memory performance also mediating this association. In conclusion, worse subjective sleep quality is associated with less altered AD biomarkers in adults with mild cognitive symptoms (CDR score 0.5). These results could be explained by a systematic recall bias affecting subjective sleep assessment in individuals with incipient memory impairment. Caution should therefore be exercised when interpreting subjective sleep quality measures in memory-impaired populations, emphasising the importance of complementing subjective measures with objective assessments.

Journal of Sleep Research

Published **Online**

November 30, 2023

<https://doi.org/10.1111/jsr.14108>

