

Embargoed until Thursday, November 3, at 9:00 CET

New data indicate an association between poor sleep quality and an increased risk of developing Alzheimer's

- **The study analyzed data from more than 1,100 adults, the largest cohort of participants to date, from the European Prevention of Alzheimer's Dementia (EPAD) consortium.**
- **The research is headed by the Barcelonaβeta Brain Research Center (BBRC), a research center of the Pasqual Maragall Foundation, together with the University of Bristol**

Barcelona, November 3, 2022. An international team led by researchers Laura Stankeviciute and Oriol Grau, from the Pasqual Maragall Foundation research center, the [Barcelonaβeta Brain Research Center](#) (BBRC), together with Jonathan Blackman, from the North Bristol NHS hospital Trust and the University of Bristol, has shown an association between sleep quality and Alzheimer's disease-related pathology in people without cognitive impairment.

The results of the analysis, which is part of the *European Prevention of Alzheimer's Dementia Longitudinal Cohort Study* ([EPAD LCS](#)), have been [published](#) in the scientific journal *Brain Communications*, and indicate that poor sleep quality is related to an increase in pathology of Alzheimer's disease. This finding is relevant to help define future therapies, so that they can be targeted at the appropriate phase of the disease.

A cross-sectional analysis of sleep quality

Sleep abnormalities are common in Alzheimer's disease, and sleep quality can be affected early in the preclinical stage of the disease, even when no other symptoms are experienced. Understanding how and when sleep deprivation contributes to Alzheimer's disease progression is important for the design and implementation of future therapies.

"The epidemiological and experimental data available to date already suggested that sleep abnormalities contribute to the risk of Alzheimer's disease", explains Laura Stankeviciute, a predoctoral researcher at the BBRC and one of the main authors of the study. *"However, previous studies had limitations due to the lack of biomarkers of Alzheimer's disease, because they had a non-cross-sectional design, or because of the small size of the sample of participants",* she clarifies. **This is the first study to include all of these factors.**

The largest cohort to date for an analysis of sleep quality and efficiency

Using data from the largest cohort to date, the *European Prevention of Alzheimer's Dementia Longitudinal Cohort Study* (EPAD LCS), researchers have been able to validate the hypothesis that sleep deprivation is associated with cerebrospinal fluid (CSF) biomarkers of Alzheimer's disease cross-sectionally, and which predicts future increases in disease in people without identifiable symptoms of Alzheimer's disease at baseline.

The BBRC team, in collaboration with researchers from the University of Bristol, has analyzed data from **1,168 adults over 50 years of age**, including biomarkers of Alzheimer's disease in cerebrospinal fluid, cognitive performance and sleep quality. To measure the latter, they have used the Pittsburgh Sleep Quality Index (PSQI) questionnaire.

"Through these analyses, we have been able to study associations between the main biomarkers of Alzheimer's disease and different measures of sleep quality, such as its total score, duration, efficiency and alteration", specifies **Dr. Oriol Grau, head of the Clinical Research Group and Risk Factors for Neurodegenerative Diseases of the BBRC**. By analyzing cerebrospinal fluid samples from 332 participants taken at baseline and after an average period of 1.5 years, researchers have been able to assess the effect of baseline sleep quality on change in biomarkers of Alzheimer's disease over time.

Preventive practices to improve sleep quality

Cross-sectional analyzes reveal that **poor sleep quality is significantly associated with increased t-tau protein in cerebrospinal fluid**. Among other findings, it has been shown that a short duration of sleep, less than seven hours, is associated with higher values of p-tau and t-tau, key biomarkers to measure Alzheimer's risk in the preclinical phase of the disease. Furthermore, longitudinal analyzes showed that greater sleep disturbances were associated with a decrease in the Aβ42 biomarker over time.

This study demonstrates that participant-reported poor sleep quality is associated with greater Alzheimer's disease-related pathology in individuals without cognitive impairment. *"Our results further strengthen the hypothesis that sleep disruption may represent a risk factor for Alzheimer's disease"*, says researcher Laura Stankeviciute. *"For this reason, future research is needed to test the efficacy of preventive practices, designed to improve sleep in the presymptomatic stages of the disease, in order to reduce the pathology of Alzheimer's disease"*, she concludes.

[European Prevention of Alzheimer's Dementia \(EPAD\)](#) is a European collaborative research to expand knowledge about the preclinical phase of Alzheimer's in order to prevent dementia before symptoms appear. The project, in which 38 European institutions are participating, is funded by grant no. 115736 from the Innovative Medicines Initiative, a joint initiative of the

European Commission's Horizon 2020 research and innovation program and the European Federation of Pharmaceutical Industries and Associations (EFPIA).

Bibliographic reference

Blackman, Jonathan; Stankeviciute, Laura *et al.* 'Cross-sectional and Longitudinal Association of Sleep and Alzheimer Biomarkers in Cognitively Unimpaired Adults', *Brain Communications*, <https://doi.org/10.1093/braincomms/FCAC257>

About Alzheimer's disease

Every 3 seconds a new case of dementia is diagnosed in the world, and it is estimated that currently 50 million people suffer from it, in most cases due to Alzheimer's. This figure translates in Spain into more than 900,000 people affected. With life expectancy increasing, if no treatment is found to prevent or slow down the course of the disease, the number of cases could triple by 2050, reaching epidemic dimensions, as pointed out in the latest *World Alzheimer Report 2018 published by Alzheimer's Disease International*.

About the Barcelona βeta Brain Research Center and the Pasqual Maragall Foundation

The Barcelona βeta Brain Research Center (BBRC) is the research center of the Pasqual Maragall Foundation, promoted by the "la Caixa" Foundation since its creation, dedicated to the prevention of Alzheimer's disease and the study of cognitive functions affected in healthy and pathological aging.

The Pasqual Maragall Foundation is a non-profit organization that was created in April 2008, in response to the commitment made by Pasqual Maragall, former mayor of Barcelona and former president of the Generalitat de Catalunya, when he publicly announced that he had been diagnosed with Alzheimer's disease. The Foundation's mission is to promote research to prevent Alzheimer's and offer solutions that improve the quality of life of affected people and their caregivers.

Communication Department of the Pasqual Maragall Foundation:

Barcelonaβeta Brain Research Center

Paula Talero / Jaume Aguilar

ptalero@fpmaragall.org

jaguilar@fpmaragall.org

93 316 09 90

Press Office (ATREVIA)

Andrea Gutiérrez / Laura Puig

agutierrez@atrevia.com

lpuig@atrevia.com

683 16 20 28 / 619 64 93 62