

Occupations that are cognitively stimulating may be protective against later-life dementia

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People with a history of cognitively stimulating occupations during their 30s, 40s, 50s, and 60s had a lower risk of mild cognitive impairment (MCI) and dementia after age 70, according to a new study from

Columbia University Mailman School of Public Health, the Columbia Aging Center, and the Norwegian Institute of Public Health. The findings highlight the importance of cognitive stimulation during midlife for maintaining cognitive function in old age.

This is the first study to fully advance this association with objective assessments rather than subjective evaluations. The results are [published](#) in *Neurology*.

"Our study highlights the importance of mentally challenging job tasks to maintain cognitive functioning in later life, says Vegard Skirbekk, Ph.D., professor of Epidemiology at Columbia Mailman School of Public Health and Columbia Aging Center who initiated the project. According to first author Trine Holt Edwin from Oslo University Hospital, "This study shows the importance of education and cognitively stimulating [work life](#) for cognitive health in older age."

The researchers collected data from the Norwegian administrative registry and coupled it with occupational attributes of more than 300 jobs from the Occupational Information Network (O*NET) database 17 of the U.S. Department of Labor, Employment & Training Administration. Routine task intensity (RTI) index was computed as a measure of occupational cognitive demands based on measures from O*NET. A lower RTI index indicates more cognitively demanding occupations. This research builds upon previous findings showing trajectories of occupational physical activity.

Group-based trajectory modeling identified four groups of distinct occupational cognitive demands according to the degree of routine tasks in the participants occupations during their 30s, 40s, 50s and 60s. The researchers analyzed the link between these trajectory groups and clinically diagnosed MCI and dementia in participants in the HUNT4 70+ Study (2017-19). Additionally, the researchers accounted for

important dementia risk factors such as age, gender, educational level, income, overall health, and lifestyle habits from assessments made in 1984–86 and 1995–97.

After adjusting for age, sex, and education, the group with low occupational cognitive demands (the high RTI group) had a 37% higher risk of dementia compared to the group with high occupational cognitive demands.

"Education confounded most, but not all, of the association between occupational cognitive demands and MCI and dementia, suggesting that both education and occupational complexity matter for MCI and dementia risk," says Edwin.

The findings advance the field in several ways, according to the authors. "First, occupational cognitive demands have often been assessed via retrospective, subjective evaluations. Additionally, our utilization of registry data on occupational histories strengthens the existing evidence," says Yaakov Stern, who is a principal investigator of the project at Columbia University.

"Overall, our study demonstrates that high occupational cognitive demands are related to lower risks of MCI and dementia in later life," noted Skirbekk, indicating that both education and occupational cognitive demands play a crucial role in lowering the risk of later-life cognitive impairment. "However, we recommend the commissioning of further research to validate these findings to pinpoint the specific occupational cognitive demands that are most advantageous for maintaining cognitive health in old age."

It is important to note that this study identifies associations rather than direct causation of [dementia](#). Moreover, the study did not distinguish between different cognitive requirements within the same occupational

category, nor did it consider the evolution of job responsibilities over the years.

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More information: Trine H. Edwin et al, Trajectories of Occupational Cognitive Demands and Risk of Mild Cognitive Impairment and Dementia in Later Life, *Neurology* (2024). [DOI: 10.1212/WNL.0000000000209353](https://doi.org/10.1212/WNL.0000000000209353)

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