

Identifying dementia risk in the community: the value of olfactory function in addition to blood biomarkers of Alzheimer's disease

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Conclusions

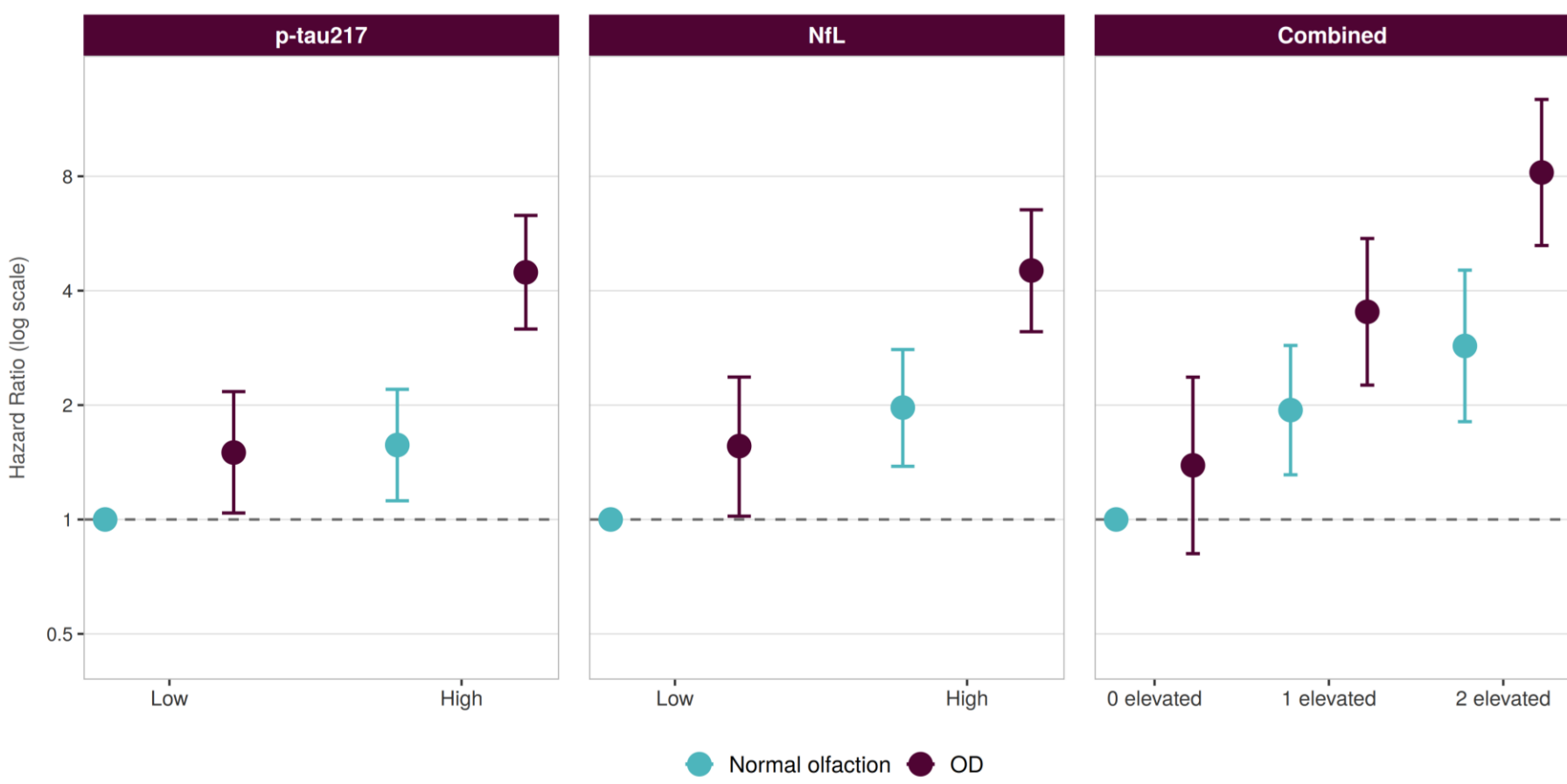
- In this longitudinal study we found that those with elevated **blood biomarkers (BB)** of Alzheimer's disease and neurodegeneration as well as **olfactory dysfunction (OD)** have a larger hazard of dementia, than those with normal olfaction.
- Our findings **highlight the value of combining blood biomarkers with OD** for early detection of dementia-related pathology in cognitively intact, community-dwelling adults.

Background

There is an established association between OD and future dementia, as well as between blood p-tau217 and neurofilament light (NfL) and dementia. However, **no previous study has combined olfaction and blood biomarkers** for the purpose of estimating incident dementia hazard in cognitively intact adults.

- **Aim.** To investigate if OD can help identify individuals with higher and lower hazards of dementia among those with elevated levels of p-tau217 and NfL.

Results



Hazard ratios and 95% CI for individual blood biomarkers in combination with olfactory function, as well as the combination model with groups of 0, 1, and 2 elevated blood biomarkers, with and without OD.

- All three markers were associated with an increased hazard of dementia, with an HR around 2.
- Significant interaction between OD and p-tau217 (HR: 1.90, 95% CI: 1.19 to 3.05). The interaction between OD and NfL was not significant ($p>0.05$).
- Adding olfactory dysfunction to the model containing blood biomarkers significantly improved model fit (LR chi2(1) = 34.61, $p<0.001$).
- Those with OD and elevated blood biomarkers had the highest HR.

Method

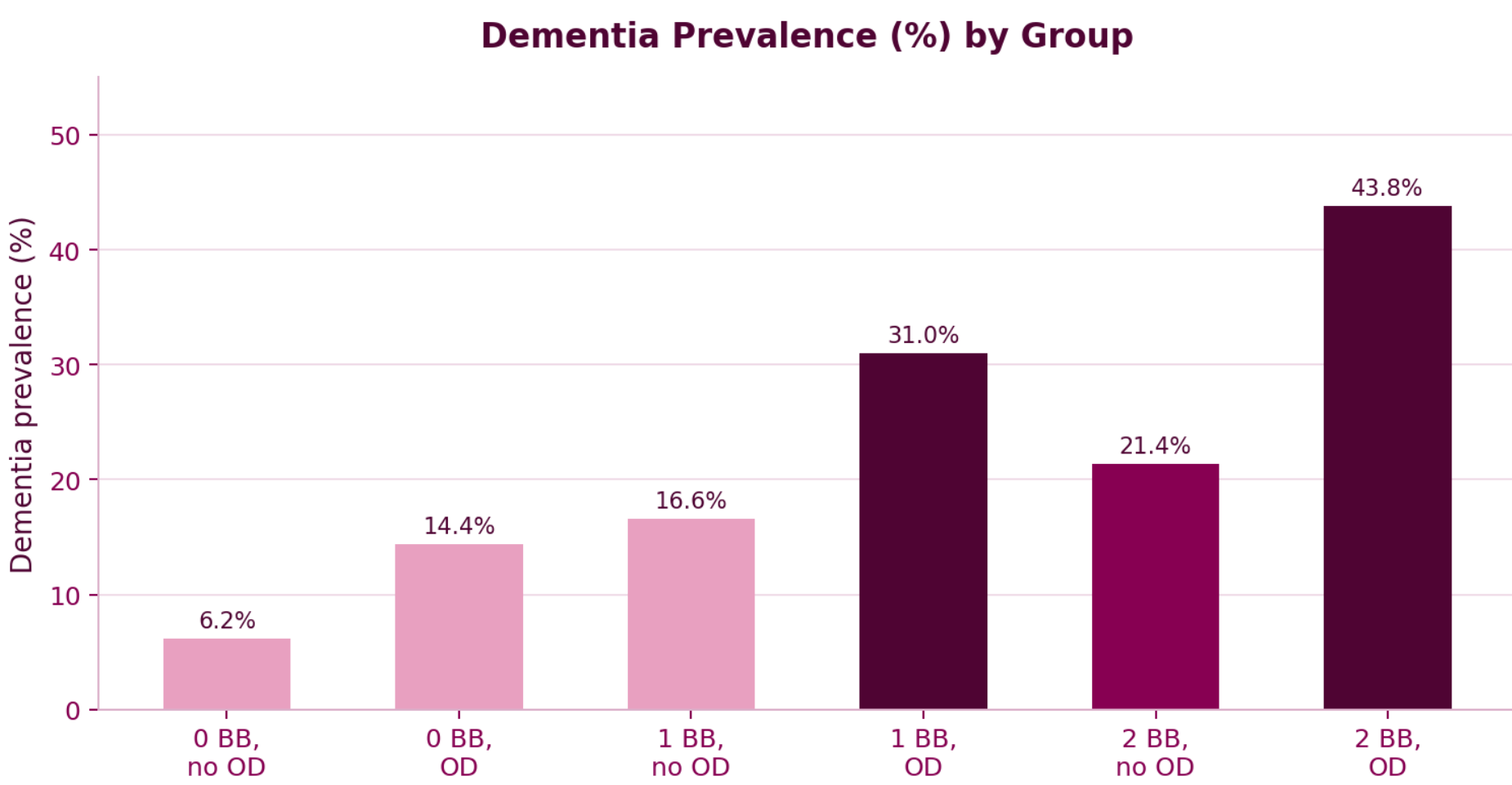
Participants: Swedish National Study on Aging and Care in Kungsholmen (SNAC-K).
Sample n : 1877, 60% females, mean age: 71.4 years.

Blood biomarkers:
p-tau217 and NfL
Olfactory test:
16-item Sniffin' Sticks test

15 years follow-up:
All-cause dementia, N : 315
Alzheimer's dementia, N : 150
Death without dementia, N : 515

Baseline 2001-2004 2004-2007 2007-2010 2010-2013 2013-2016 **End of follow-up** 2016-2019

Follow-up: incident all-cause dementia and Alzheimer's dementia



Prevalence of dementia incidence during follow-up for groups of 0, 1, and 2 elevated blood biomarkers, with and without OD.



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