

Depressive Symptoms and Olfactory Impairment in Later Life: Evidence from Two Swedish Population-Based Cohorts

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Conclusions

- We found **no robust** cross-sectional association between **olfactory impairment** and clinically significant **depressive symptoms**, indicating that they may represent **largely distinct clinical manifestations** in older age.
- Given that each has been associated with dementia risk, future longitudinal studies may examine whether their **combined occurrence** nonetheless carries prognostic relevance for dementia-related outcomes.

Table 1. Sample characteristics

Characteristic	Value
Participants, n	4,764
SNAC-K	2,444
Betula	2,320
Age, mean (SD), years	71.2 (9.5)
Women	2,745 (57.6%)
Depressive symptoms	509 (10.7%)
Normosmia	2,544 (53%)
Hyposmia	1,586 (33%)
Anosmia	634 (13%)

Definitions: Normosmia = normal sense of smell; hyposmia = reduced sense of smell; anosmia = complete loss of smell.

Background

Depressive symptoms and **olfactory impairment** are common in older adults and have both been linked to **dementia risk**. However, previous studies have reported inconsistent findings regarding their association, and the potential influence of prodromal dementia remains unclear.

- **Aim:** To examine the association between olfactory impairment and depressive symptoms among older adults and to test the potential confounding effect of prodromal dementia

Method

Participants: Swedish National Study on Aging and Care–Kungsholmen and the Betula study, part of the **National E-infrastructure for Aging Research (NEAR)**.

Depression: the Montgomery–Åsberg Depression Rating Scale (SNAC-K) and the Center for Epidemiologic Studies Depression Scale (Betula). Clinically significant depressive symptoms were defined as MADRS ≥ 7 (SNAC-K) or CES-D ≥ 16 (Betula).

Olfaction: Sniffin’ Sticks Odor Identification Test (SNAC-K) and the Scandinavian Odor Identification Test (Betula).

Results

Table 2. Association between olfactory impairment and depressive symptoms

	Unadjusted OR (95% CI)	Fully adjusted OR (95% CI)
Normosmia	Reference	Reference
Hyposmia	1.27 (1.03–1.56)	1.04 (0.81–1.32)
Anosmia	1.59 (1.22–2.06)	1.26 (0.91–1.73)

- In unadjusted analyses, participants with olfactory impairment had higher odds of clinically significant depressive symptoms than those with normal olfactory function.
- Participants with complete smell loss (anosmia) had 59% higher odds of clinically significant depressive symptoms.
- **Adjustment for age substantially attenuated these associations.**
- After additional adjustment for sex, study cohort, smoking status, BMI, comorbidity burden (CPS), cognition (MMSE), verbal ability (SRB), education, and loneliness, olfactory impairment was **no longer associated** with depressive symptoms.
- Sensitivity analyses excluding participants who developed dementia during follow-up (15 years) yielded similar findings.



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