Background

- Smell loss could be a temporary condition or a permanent condition. [1]
- Aging and the use of certain medications may lead to impairment of olfactory pathways. [1]
- There is a growing research interest in examining the relationship between smell and cognition. [2]
- Learning how olfactory impairment might impact cognition will help healthcare professionals detect early signs of cognitive decline and develop practical interventions.

Purpose

- The purpose of the current study is to review the current literature examining the relationship between olfactory dysfunction and the risk of cognitive decline among older adults.
- The present literature review will help guide a future population-based longitudinal study on a similar research topic currently under planning.

Methods

- Pubmed, Google Scholar, and Sacred Heart University Library were searched for peer-reviewed articles published between the past 5 years.
- All peer-reviewed articles met the following criteria:
  - Written in English
  - Older adults ranged from 57 to 89 years old
  - Published within the last five years
- Our literature review included research studies with the following characteristics:
  - Exposure = Olfactory dysfunction, assessed using:
    - Odor identification was assessed at baseline using a validated five-item test, the Brief Smell Identification Test (B-SIT) Version A [4]
    - Sniffin’ Sticks Screening Test 12 Test [5, 6]
  - Outcome =
    - Dementia (physician diagnosis) [4]
    - Mild cognitive impairment (MCI) and Alzheimer disease [5]
    - Parkinson’s Disease dementia (PDD) [6]
    - Dementia, MCI, Alzheimer Dementia, and PDD were measured based on physician diagnosis. [4, 5, 6]

Results

- Greater odor identification errors were associated with higher chance of developing dementia five years later ($P_{Bonf}=0.04$). [4]
- After controlling for covariates (age, sex, race, ethnicity, comorbidities, and baseline cognitive function), older adults with olfactory dysfunction still had more than twice the odds of developing dementia five years later (Odds Ratio [OR] = 2.13, 95% Confidence Interval [CI] = 1.32-3.43). [4]

Conclusions

- Older adults with difficulty identifying odors have greater odds of developing dementia five years later. [4]
- A recent meta-analysis reported a strong association between olfactory impairment and the risks of cognitive decline and dementia in older adults. [7]
- Impaired olfaction is associated with MCI and progression from MCI to Alzheimer Dementia (AD dementia). [5]
- People with Parkinson’s disease have higher prevalence of cognitive and olfactory deficits other healthy older adults. [6]
- Researchers suggested that there might be a correlation between frontal lobe dysfunction and olfactory dysfunction. [6]

Implications

- Impaired olfaction can be used to detect a person’s risk for having a MCI or AD dementia. [5]
- Olfactory identifications are easy, safe and cost-effective tests [7], and may be helpful to be integrated as a part of primary preventive care.
- The validated five-item test can potentially be included in the physical examination to serve as an efficient and low-cost tool to assess older adults’ risks of developing dementia. [4]

References

2. The Harvard Gazette. (n.a.). What the nose knows.
3. The Peak Performance Center. (n.a.). Cognition and learning.