

Sniff out Dementia

How Olfactory Health Impacts Dementia and Quality of Life



CIHR IRSC

 Canadian Institutes of Health Research / Instituts de recherche en santé du Canada



Canada's technology and aging network



University of Victoria

Presented by: Jamie Knight, MSc.
PhD Candidate, University of Victoria
March 2019

Email: jknight@uvic.ca
Phone: 250-472-4863
Web: olfactoryhealth.org

This report was supported by CIHR, AGE-WELL, and the University of Victoria. The content is solely the responsibility of the author and does not necessarily represent the official views of the granting bodies.

SNIFF OUT DEMENTIA

SECTION 1: ISSUE

Standardized smell testing can detect individuals who are at high risk for developing dementia and related illnesses before any memory symptoms are noticeable, yet Canadians are not routinely screened for a faltering sense of smell.

SECTION 2: BACKGROUND

The economic burden of dementia and related illnesses in Canada is estimated at \$10 billion per year, with nine seniors being diagnosed with dementia every hour. Alzheimer's is the most common form of dementia and no long-term effective solutions exist today. As the Canadian population ages and mortality rates from dementia increase, dementia is fast becoming one of the most feared diseases.

Preventative measures and early detection are key for both healthy populations and advancing research towards finding a cure. One of the earliest symptoms of dementia and related cognitive impairment is a declining sense of smell. Impairment in smell precedes the onset of motor symptoms in Parkinson's disease and cognitive symptoms in dementia by 5-15 years and can easily be tested with currently available standardized smell test kits.

SECTION 3: CURRENT STATUS

Smelling is our ability to detect airborne volatile chemicals. If the ability to smell declines, it can affect everyday safety (e.g., food spoilage, gas), diet and nutrition (e.g., less nutritious choices of higher salt and sugar which lead to other medical conditions, such as high blood pressure, kidney disease, or diabetes), and physical well-being, and relationships: Odors can influence many aspects of our lives, such as memory, mood, and emotions. You smell hormones and can even detect genetic complexity and these molecules we smell support sustained intimacy and relationships. Smell is needed in order to form close personal bonds.

This means that smell is a very important and often overlooked part of everyone's lives. Most importantly, smell is a measure of brain health and can be used to screen for risk of neurodegenerative diseases like Alzheimer's and Parkinson's long before other symptoms show up.

Smell testing is currently used in the medical system by both general practitioners and ear, nose, and throat specialists to diagnose a loss of smell. However, it is generally only used when patients initiate testing with complaints that are severe enough to warrant a doctor visit. Smell testing is not currently used to routinely screen for smell loss nor the early detection of cognitive decline. Further, current diagnosis of dementia relies on documenting a slow progression of cognitive decline, at which point, severe brain damage has already occurred.

SECTION 4: KEY FINDINGS

100% of people with Alzheimer's disease have no sense of smell. This is not surprising considering the olfactory bulb, the cranial nerve that projects into the nose and detects scents, is the first location where Alzheimer's pathology (tau and amyloid) can be seen.

After compiling evidence from research over the past two decades, a connection between olfactory and cognitive abilities is evident:

- Smell declines before memory problems occur in Alzheimer's disease and before motor problems in Parkinson's.
- Poor sense of smell predicts future development of mild cognitive impairment as well as conversion from mild impairment to dementia.
- Autopsy studies reveal that a worse sense of smell indicates a larger build-up of Alzheimer's pathology in the brain.
 - The degree of smell impairment is reflected in pathology severity.

Smell testing offers a quick, easy, and inexpensive way to give patients some reassurance, by telling them whether they are in a low- or high-risk category, potentially sparing some patients from getting more invasive and expensive workups as well as allowing time for lifestyle interventions should they be at high-risk.

Research has also found that individuals cannot accurately detect subtle losses in their sense of smell and therefore routine screening is needed for accurate determination of sensory loss. Annual smell testing could also make it easier and less expensive for clinical trials to develop new Alzheimer's drugs by determining who should get more expensive biomarker screening (e.g., PET and fMRI scans) to look for pathology as well as identifying potential participants for research trials before extensive brain damage has occurred.

SECTION 5: POLICY RECOMMENDATIONS

Implementing annual testing will detect individuals who are at risk for later cognitive decline and dementia years before other symptoms emerge, improve quality of life and nutritional choices, and allow time for individuals to implement lifestyle changes should they be at risk.

1. Implement guidelines that include regular sensory functioning testing at annual doctor checkups.

With respect to Canada's National Dementia Strategy, the 2019 budget recommends "developing treatment guidelines and best practices for early diagnosis." Within this aim, annual smell testing, included within annual check-up visits with family doctors, will provide early detection for individuals who are at high-risk for developing dementia.

To accomplish this:

- add information on Health Canada's website for general practitioners to include smell testing in their annual physical examinations for people 45 years or older.
- add information on smell testing in the Diagnostic and Statistical Manual of Mental Disorders (DSM) for early detection of dementia.
- include smell testing within the development of new guidelines for the early detection of cognitive impairment within Canada's National Dementia Strategy.

Including olfactory (smell) health considerations for early diagnosis will bring Canada closer to the goals laid out in the 2019 Budget.

2. Include olfactory health in advertising campaigns to increase public awareness and encourage regular testing.

The 2019 budget also recommends "increasing awareness about dementia through targeted campaigns and activities that focus on prevention". Aligning with this goal, information about smell and how testing is an effective way to screen for risk of dementia should be included in upcoming campaigns.

Additional Resources

<http://www.olfactoryhealth.org>
<https://www.humanolfaction.org>
<http://www.fifthsense.org.uk>

Contact Details

Jamie Knight, MSc.
jknight@uvic.ca
250-472-4863

Recommendations



Include sensory functioning into treatment guidelines, best practices for early diagnosis, and annual check ups



Include olfactory health in advertising campaigns to increase public awareness and encourage testing