

# Eyes, ears and nose may aid Alzheimer's disease prevention and treatment

January 30 2015, by Louisa Frew

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The researchers analysed blood vessel patterns in retinal photographs to identify individuals with AD. Image: Olivier Martins

Detecting a decline in certain sensory functions may become the future of preventing Alzheimer's disease (AD), with research showing smell testing and retinal imaging to be strong predictors of dementia risk.

Edith Cowan University Centre of Excellence for Alzheimer's Disease

Research neuroscientist and clinical psychologist Dr Hamid Sohrabi says that easy and cost-effective tools for identification of subjects in the early stages of AD is critical to improve outcomes.

"We know that memory tests are very good at identifying people who already have dementia, but we need to recognise that they are at high risk well before memory decline commences because at the latter stage the brain would be irreversibly damaged," he says.

With clinical trials so far failing to effectively halt the progression of AD, Dr Sohrabi says scientists believe the main reason for failure is starting treatment too late when damage to the brain is too great to be reversible.

Along with work on blood biomarkers and neuropsychometric tests, Dr Sohrabi is developing a body of evidence supporting the use of smell and eye imaging assessment as predictors of future [cognitive decline](#).

In a group of 308 46-86 year olds, the group demonstrated that poor ability to discriminate different smells significantly predicted cognitive decline at a three year follow-up.

## **Retinal photos identify AD sufferers**

Similarly, analysis of blood vessel patterns in retinal photographs, taken as part of the Australian Imaging, Biomarkers and Lifestyle Flagship Study of Ageing, allowed them to correctly identify individuals with AD from healthy subjects with very high accuracy.

"There's evidence of beta amyloid [a protein involved in the brain disease of AD] depositing in the eye—if we can detect it in the eye before it starts accumulating in the brain that may be one way of predicting who is at higher risk," he says.

In collaboration with Dr Brett Robertson and Dr Dona Jayakody from the Ear Science Institute Australia, Dr Sohrabi will now investigate the role of hearing loss in AD prediction with the hope of a combined sensory deficit score of hearing, eye and olfactory function with strong clinical effectiveness.

"Combining the three senses may put us in the best position to predict who is at a higher risk of developing [dementia](#) due to AD," Dr Sohrabi says.

"The best way to prevent neuropathology happening is to start finding those at higher risk, early."

A comprehensive [review](#) of innovations in AD diagnosis was published in *Alzheimer's and Dementia*.

**More information:** "Olfactory discrimination predicts cognitive decline among community-dwelling older adults":

[ro.ecu.edu.au/cgi/viewcontent.cgi?context=ecuworks2012](http://ro.ecu.edu.au/cgi/viewcontent.cgi?context=ecuworks2012)

Provided by Science Network WA

Citation: Eyes, ears and nose may aid Alzheimer's disease prevention and treatment (2015, January 30) retrieved 21 September 2024 from <https://medicalxpress.com/news/2015-01-eyes-ears-nose-aid-alzheimer.html>

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