

- Senses and sensation

## OF SENSES, AND SENSE

### How hearing and vision loss increase the risk of dementia

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Adults older than 65 who experience vision loss have a nearly 50% increased risk of developing dementia. If those vision problems are corrected, that risk drops dramatically.



That's according to a report published this month by an international commission focused on dementia prevention, which added vision impairment to its list of 14 total modifiable risk factors for dementia. Other risk factors include smoking, diabetes, social isolation and hypertension.

Experts say the addition of vision loss is not a surprise, particularly given that another sensory impairment — hearing loss — has been linked to dementia and is also on the list. Here's what we know about how even mild to moderate vision and hearing impairment increase the risk for dementia, and what to do about it.

#### HOW SENSORY LOSS MAY CONTRIBUTE TO DEMENTIA

People with sensory loss have less input coming into their brains. Brain tissue is “use it or lose it”, so less stimulation could lead to more atrophy, said Gill Livingston, a professor of psychiatry at University College London, who led the dementia prevention commission. The area of the brain that processes auditory information is close to the region most affected by Alzheimer's disease, suggesting there may be an anatomical connection. Visual information is fed into another part of the brain, but how we use that information activates many different regions.

“As you've reduced activation of certain areas of the brain, you get faster rates of atrophy there to some degree,” said Dr Frank Lin, a professor of otolaryngology at the Johns Hopkins University School of Medicine. “Which you can imagine has cascading effects on other areas of brain function and structure as well.”

In addition, people who experience sensory loss in adulthood tend to withdraw and not engage as much socially. There's evidence to suggest that loneliness can physically change a person's brain, and it is a known risk factor for dementia.

"The vision loss keeps you from going out to the party," said Natalie Phillips, a professor of psychology at Concordia University in Montreal. "The hearing loss means you go to the party but you sit in the corner and you don't talk to anybody."

Hearing and vision loss could also accelerate symptoms in people who are in the earliest stages of dementia. It takes more brain power to make sense of blurry vision or garbled sounds, so fewer resources may be left for everyday memory and cognition. That can lead to people's dementia symptoms appearing faster if they were already developing the disorder, Livingston said.

#### WHY TREATING SENSORY LOSS IS SO CRUCIAL

Research from the past decade shows there are cognitive benefits to addressing age-related losses in vision and hearing.

##### Vision loss

Several studies have found that people with some of the most common causes of age-related vision loss, including cataracts, diabetic retinopathy and macular degeneration, have an increased risk for cognitive decline and dementia.

"We're talking about uncorrected visual loss, so how much you cannot see," Livingston said. The magnitude of the vision loss corresponds to how much the risk increases, she added.

While not all of these eye conditions can be reversed, when they are addressed and vision is restored, people's risk for dementia drops. Similarly, Livingston said that people who experience untreated near or farsightedness may also be at a heightened risk, but not those who wear glasses or contact lenses to correct their vision.

Backing this up, one of the studies referenced in the commission's report found that adults 65 and older who had cataract surgery to correct their vision had about a 30% lower risk of developing dementia compared with older adults with cataracts who did not receive the surgery.

Identifying a new risk factor for dementia is exciting, "but then we get even more excited if that risk is modifiable", said Dr Cecilia Lee, a professor of ophthalmology at the University of Washington School of Medicine, who led the cataract study.

##### Hearing loss

Uncorrected hearing loss also carries a significant risk for dementia. The commission's report, pooling multiple studies, found that people with hearing loss have a 37% increased risk for developing dementia. The more severe the hearing loss, the higher the risk. An estimated 63% of adults older than 70 have some degree of clinically significant hearing loss. "It's not like we're talking about a really small sliver of the population," Lin said. "This is almost the majority of older adults."

Everyone's hearing naturally deteriorates starting in early adulthood, though some people's declines faster than others' because of genetics or exposure to loud noises, Lin said. With mild hearing loss, people struggle to hear sounds below 26 decibels — about the

level of a whisper. Moderate hearing loss starts at 41 decibels and can make it difficult to hear normal conversations.

Hearing aids can help, and they appear to reduce the chance of developing dementia. People with corrected hearing loss have nearly a 20% lower risk of cognitive decline than people with uncorrected hearing loss. And a clinical trial published last year found that, among people who had the highest risk for cognitive decline because of age or other health conditions, those who wore hearing aids for three years had significantly less cognitive decline compared with those who didn't wear them.

"You're not seeing an improvement, per se, but you're seeing a reduction of decline," said James Russell Pike, a research scientist at NYU Langone Health who collaborated with Lin on the study.

#### WHAT TO DO IF YOU'RE CONCERNED

The first step is to get tested.

To evaluate your eye health, schedule an appointment with an ophthalmologist and get a dilated eye exam once a year, Lee advised.

For a hearing test, you can see an audiologist or an ear, nose and throat specialist. Or if you want to do it at home, Lin said that free hearing test apps, such as Mimi, tend to provide accurate results.

If you have hearing or vision loss, get it treated as soon as possible. Some eye conditions, like cataracts, may require surgery, but the procedure is relatively quick and non-invasive. Correcting hearing loss is even easier since hearing aids have become available over the counter.

Fixing these problems will not only reduce your risk for dementia but will also improve your daily life, Phillips said. "The benefit of addressing it for quality of life and engagement, you know, there's nothing to lose."