

"When hearing loss is left unaddressed, it can significantly compound the challenges that people with Alzheimer's and their caregivers already face," says Sergei Kochkin, BHI's Executive Director. "But in many cases, the appropriate use of hearing aids can benefit people with Alzheimer's."

There is strong evidence that hearing impairment contributes to the progression of cognitive dysfunction in older adults. Unmanaged hearing loss can interrupt the cognitive processing of spoken language and sound, regardless of other coexisting conditions. But when an individual has both Alzheimer's and hearing loss, many of the symptoms of hearing loss can interact with those common to Alzheimer's, making the disease more difficult than it might be if the hearing loss had been addressed.

Numerous studies have linked untreated hearing loss to a wide range of physical and emotional conditions, including impaired memory and ability to learn new tasks, reduced alertness, increased risk to personal safety, irritability, negativism, anger, fatigue, tension, stress, depression, and diminished psychological and overall health.

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Research has shown that the use of hearing aids, especially in combination with appropriate aural rehabilitation in a multidisciplinary setting, has helped to reduce symptoms of depression, passivity, negativism, disorientation, anxiety, social isolation, feelings of helplessness, loss of independence and general cognitive decline in people with Alzheimer's.

"A comprehensive hearing assessment should be part of any Alzheimer's diagnosis and any hearing loss should be addressed," says Kochkin. "By addressing hearing loss, we can help improve quality-of-life for people with Alzheimer's so they can live as fully as possible."

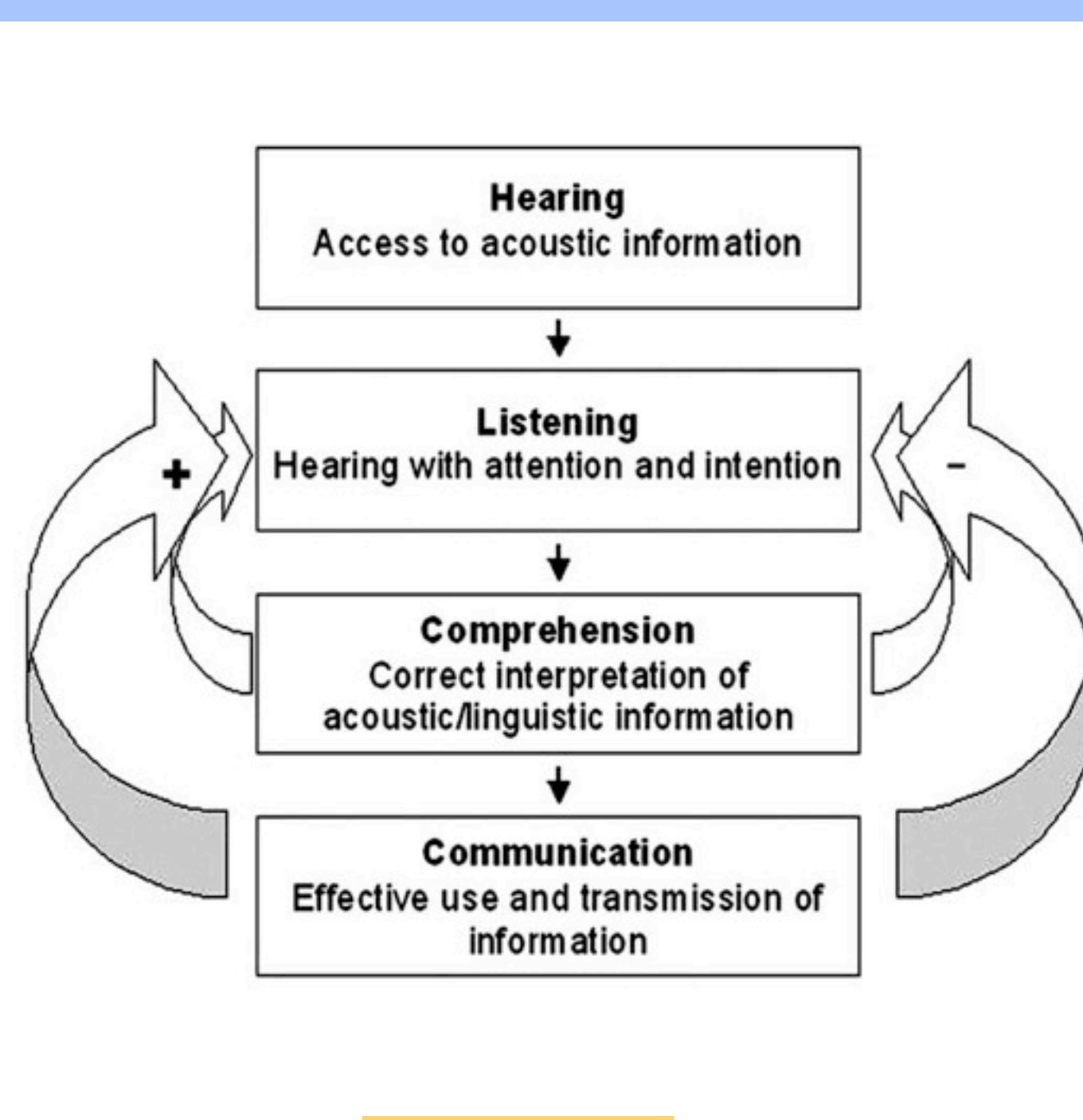


1. Although hearing impairment was first linked in major medical journals to dementia and cognitive dysfunction more than two decades ago, not until last year did researchers demonstrate an independent association with dementia over time.

2. By following 639 people ages 36 to 90 for nearly 12 years, Dr. Frank R. Lin, an otolaryngologist at Johns Hopkins Medicine, and his colleagues there and at the National Institute on Aging showed a direct relationship between the participants' degree of hearing loss and their risk of later developing dementia or Alzheimer's disease.

3. For each 10-decibel loss in hearing, the risk of dementia rose about 20 percent among the participants. Compared with those who could hear normally when first examined, the risk of dementia doubled among those with mild hearing loss, tripled among those with moderate hearing loss and increased fivefold among those with severe hearing loss.

4. The relationship between hearing loss and dementia persisted even when other factors linked to cognitive disease, like hypertension, diabetes and smoking, were taken into account.



5. "People are most likely to notice communication problems when their hearing loss exceeds 25 decibels," Dr. Lin said in an interview. "It's not that they can't hear, but they can't understand. Hearing loss at this level affects the clarity of words."

6. How, then, might this lead to cognitive deficits?

7. "The brain dedicates a lot of resources to hearing," Dr. Lin said. "When the clarity of words is garbled, the brain gets a garbled message. It has to reallocate resources to hear at the expense of other brain functions."

8. Thus, the overworked brain may lose "cognitive reserve," the ability of healthy parts of the brain to take over functions lost by other parts.

9. Another mechanism may be the effects of social isolation. "A decline in social engagement and resulting loneliness is one of the most important determinants of health outcomes in older adults," Dr. Lin said. Isolation has been linked to an increase in inflammation throughout the body, which in turn can result in age-related disorders like heart disease and dementia, Dr. Lin said.

### Hearing Loss and Incident Dementia

Frank R. Lin, MD, PhD; E. Jeffrey Metter, MD; Richard J. O'Brien, MD, PhD; Susan M. Resnick, PhD; Alan B. Zonderman, PhD; Luigi Ferrucci, MD, PhD  
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**Objective** To determine whether hearing loss is associated with incident all-cause dementia and Alzheimer disease (AD).

**Design** Prospective study of 639 individuals who underwent audiometric testing and were dementia free in 1990 to 1994. Hearing loss was defined by a pure-tone average of hearing thresholds at 0.5, 1, 2, and 4 kHz in the better-hearing ear (normal, <25 dB [n = 455]; mild loss, 25-40 dB [n = 125]; moderate loss, 41-70 dB [n = 53]; and severe loss, >70 dB [n = 6]). Diagnosis of incident dementia was made by consensus diagnostic conference. Cox proportional hazards models were used to model time to incident dementia according to severity of hearing loss and were adjusted for age, sex, race, education, diabetes mellitus, smoking, and hypertension.

**Setting** Baltimore Longitudinal Study of Aging.

**Participants** Six hundred thirty-nine individuals aged 36 to 90 years.

**Main Outcome Measure** Incident cases of all-cause dementia and AD until May 31, 2008.

**Results** During a median follow-up of 11.9 years, 58 cases of incident all-cause dementia were diagnosed, of which 37 cases were AD. The risk of incident all-cause dementia increased log linearly with the severity of baseline hearing loss (1.27 per 10-dB loss; 95% confidence interval, 1.06-1.50). Compared with normal hearing, the hazard ratio (95% confidence interval) for incident all-cause dementia was 1.89 (1.00-3.58) for mild hearing loss, 3.00 (1.43-6.30) for moderate hearing loss, and 4.94 (1.09-22.40) for severe hearing loss. The risk of incident AD also increased with baseline hearing loss (1.20 per 10 dB of hearing loss) but with a wider confidence interval (0.94-1.53).

**Conclusions** Hearing loss is independently associated with incident all-cause dementia. Whether hearing loss is a marker for early-stage dementia or is actually a modifiable risk factor for dementia deserves further study.

**Author Affiliations:** Department of Otolaryngology-Head and Neck Surgery, The Johns Hopkins School of Medicine (Dr Lin), Center on Aging and Health, Johns Hopkins Medical Institutions (Dr Lin), Longitudinal Studies Section, Clinical Research Branch, National Institute on Aging (Drs Metter and Ferrucci), and Departments of Neurology and Medicine, Johns Hopkins Bayview Medical Center (Dr O'Brien), Baltimore, Maryland; and Laboratory of Behavioral Neuroscience, Intramural Research Program, National Institute on Aging, Bethesda, Maryland (Drs Resnick and Zonderman).