Revealed: Hearing Loss

The #1 Most Modifiable Risk Factor of Dementia

By Dr. Keith Darrow, PhD
Harvard and MIT Trained Neuroscientist

Coastal Hearing Aid Center

THE HOUSE OF HEARING

INTRODUCTORY LETTER FROM DR. DARROW

Dr. Keith Darrow, PhD, CCC-A

"Everyone knows someone who is a cancer survivor, but no one knows an Alzheimer's survivor." – Dr. Bredesen

Thank you for taking the time to read this **updated** report detailing the links of **Hearing Loss** and **Dementia**. There are always new reports coming out helping us to better understand the science of Dementia and ways to help us avoid the devastating fate of a Dementia diagnosis. Perhaps the most impressive report I recently read was from a European Dementia commission titled: **Dementia Prevention, Intervention, and Care** published in the Lancet Journal.

Let's start by reviewing some of the facts about Dementia. Nearly every 3-4 seconds another individual is diagnosed with Dementia. The average annual cost to care for a loved one with Dementia is approximately ~$57,000 per year. Nearly 50% of all cases of Dementia are Alzheimer's related. **And, there is not a SINGLE drug available on the market approved to treat Alzheimer's.**

Perhaps even more troubling, is that the government spends nearly 13 times less on Dementia research than on Cancer research. And in case you missed the recent headlines, Pfizer, one of the world's largest pharmaceutical companies, has decided to close its Dementia r=esearch center.

But, not all news is bad news. In fact, the Lancet report highlighted that nearly **35% of all Dementia cases are considered preventable.** Phew! The report even laid out the most important modifiable lifestyle factors that can help each of us prevent Dementia.

And (not surprisingly), the #1, single most modifiable factor for preventing Dementia is the treatment of hearing loss. Yes, reducing obesity, diabetes, and/or cardiovascular disease are important. It is also important to increase social activity, enhance our education and supplement our nutrition. These can all play a part in helping us to prevent Dementia; but none, even when combined, are nearly as effective as the treatment of hearing loss. I think Dr. Doraiswamy, a Neuropsychologist from Duke University said it best:

"The benefits of correcting hearing loss on cognition are twice as large as the benefits from any cognitive-enhancing drugs now on the market. It should be the first thing we focus on."

I believe you will find the information in this report helpful when wanting to learn more about your cognitive health and when it comes to choosing the right treatment plan for you. I encourage you to take advantage of our courteous offer to provide a hearing evaluation and cognitive assessment for all new patients at no-charge. Feel free to call the office to schedule your appointment.

Sincerely,

Dr. Keith Darrow

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M.I.T. and Harvard Medical Trained
Neuroscientist and Clinical Audiologist

President, Excellence In Audiology
Expert in Speech and Hearing Bioscience and Technology
Director of Audiology Research at Intermountain Audiology
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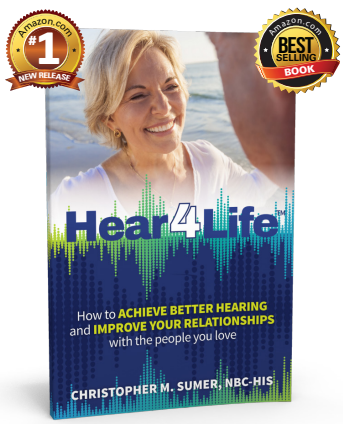
Nationally Recognized Speaker, Trainer, and Researcher
Research Associate at Massachusetts Eye and Ear Infirmary
His publications and research cited over 900 times

HST Harvard–MIT Health Sciences & Technology
Northeastern University
Massachusetts Eye and Ear
BWH BRIGHAM AND WOMEN'S HOSPITAL
Worcester State University 1874



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Research Report: Summary

Hearing Loss & Dementia

HEARING LOSS AND COGNITIVE DECLINE.

What is the Relationship? And is Dementia Avoidable?

Hearing Loss impacts over 48 Million people in the U.S. and is listed by the Department of Health and Human Services as the 3rd most common chronic disorder affecting today's seniors. Unfortunately, for most of us, age-related hearing loss is inevitable; impacting nearly 50% of seniors between the ages of 60-70, almost 2/3 of people between the age of 70-80 and nearly 80% of individuals over the age of 80. Age-related hearing loss is characterized by the progressive loss of receptor (hair) cells in the ear that consequently reduces the quantity and quality of neural connections from the ear to the brain. This slow-onset disease can have a significant impact on several key brain areas, including the memory, hearing, speech and language portions of cognition. Several key research studies have pointed to the potential links of hearing loss and Dementia that indicate hearing loss can increase the risk of Dementia by 200-500%, including the groundbreaking work from Dr. Frank Lin and his colleagues at Johns Hopkins Medical Center (see summary data in Figure 1).

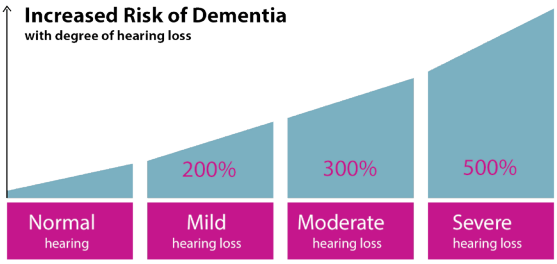


Figure 1: Summary of Data from Lin et al., 2011
Johns Hopkins Medical Center

Every 3-4 seconds another patient is diagnosed with Dementia. Rates of Dementia are estimated to triple in the next 30 years. Unlike some other diseases, with Dementia the physical body is estimated to outlive the individual's mental capabilities by 10 or more years. There is no cure for this catastrophic disease, but there are treatments available, including several ways to decrease your risk of developing Dementia.

> ***"It (hearing loss) not only increases age-related memory loss, it increases the incidents of Alzheimer's disease so if you can prevent the onset of Alzheimer's disease or delay it with good hearing devices that's a major public health advance."***
>
> Quote by Erik Kandel, Recipient of the Nobel Prize in Physiology or Medicine

This report, from researchers at Johns Hopkins Medical Center and the National Institute on Aging found that individuals with hearing loss (when compared to participants with normal hearing) are at a significantly higher risk of developing Dementia over time. The more hearing loss they had, the higher their likelihood of developing the memory-robbing disease. "A lot of people ignore hearing loss because it's such a slow and insidious process as we age," Dr. Frank Lin (of Johns Hopkins Medical Center) says. "Even if people feel as if they are not affected, we're showing that it may well be a more serious problem."

Three risk factors associated with hearing loss and Dementia include Social Isolation, Cerebral Atrophy and Cognitive Overload.

1. SOCIAL ISOLATION

Social Isolation – the impact of reduced social and physical activity. Withdrawal from social situations is common in individuals with hearing loss. Many studies cite feelings of embarrassment, fear of making mistakes in conversations, and feeling like you are not part of the conversation as the common rational for individuals with hearing impairment to separate themselves from family, friends and community. This retreat from social activity has even been found in individuals with a mild degree of hearing loss. In addition, individuals with hearing loss are less likely to engage in physical activity. Both increased social isolation and reduced physical activity are strong risk factors for the development of Dementia.

Active Aging: How to Reduce Social Isolation

Active Aging – the process of optimizing opportunities for better health, continuing development of knowledge, and increased security in order to maximize quality of life as you age. The word 'active' is used to describe a person's involvement with social, physical, economic, spiritual and civic affairs. We all share the same goal to maintain autonomy and independence as we age, and thus we must rely on preserving the tenants of interdependence (socialization and reliance on family and loved ones) and intergenerational solidarity (maintaining companionship with age-matched peers) to ensure active aging.

> ***"Blindness Separates You From Things. . . Deafness Separates You From People."***
>
> Quote by Helen Keller

Both Social Isolation and Depression are major risk factors for the development of Dementia, and both increase as we age. Being a lifelong learner and staying active is important to maintain a healthy, active brain and can also reduce your risk of cognitive decline and dementia. Some studies have shown that social activities, larger social networks and a history of social contact are associated with better cognitive function and reduced risk for cognitive decline.

TIPS!

Tips for Active Aging include:

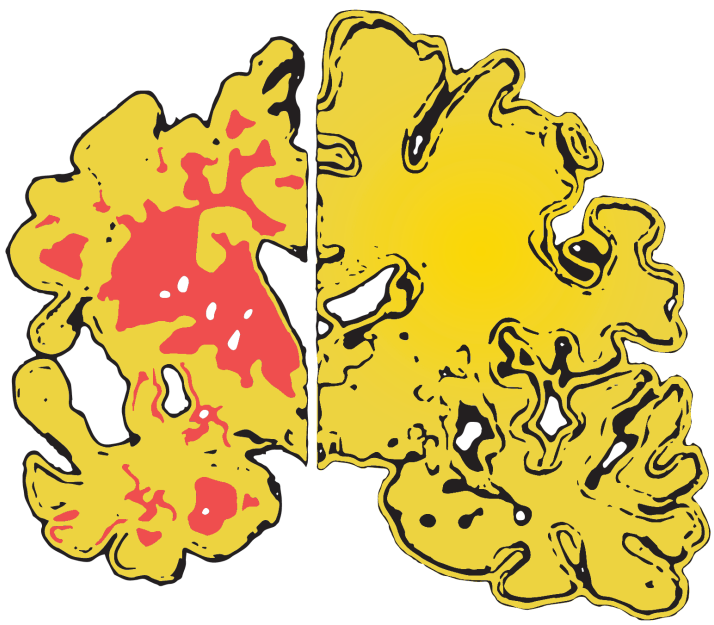
- Share a meal with family and friends 3-5 times per week
- Commit to an aerobics / exercise regimen
- Learn a new hobby each year
- Play an instrument (or learn a new instrument)
- If you love to read…. Keep reading (try to mix up the topics!)
- If you don't read much – try to read a book every other month
- Participate in classes at your local senior center
- Volunteer at a local hospital, shelter, etc.
- Go back to school. Many local Universities offer free tuition to people over 65!

2. CEREBRAL ATROPHY (AKA BRAIN SHRINKAGE)

The association of a shrinking brain, resulting from the loss of neurons, with Dementia has been long documented. Even people with MCI (Mild Cognitive Impairment) show signs of cerebral atrophy. In recent years, scientific studies using advanced brain imaging techniques (including fMRI - Functional Magnetic Resonance Imaging) have demonstrated that hearing impairment is associated with accelerated brain atrophy in both the overall brain as well as even more advanced reductions in volume associated with the memory, hearing, speech and language portions of the brain.

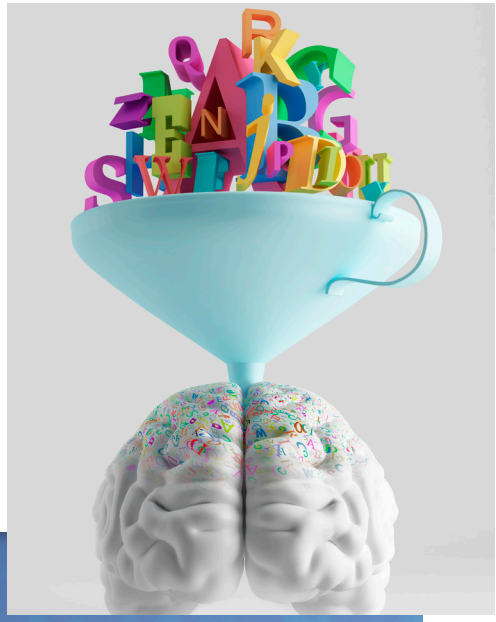
Individuals with Hearing Loss can experience signif cerebral atrophy. The most significant reduction in volume occurs in areas involved in:

- Memory
- Hearing
- Speech
- Language

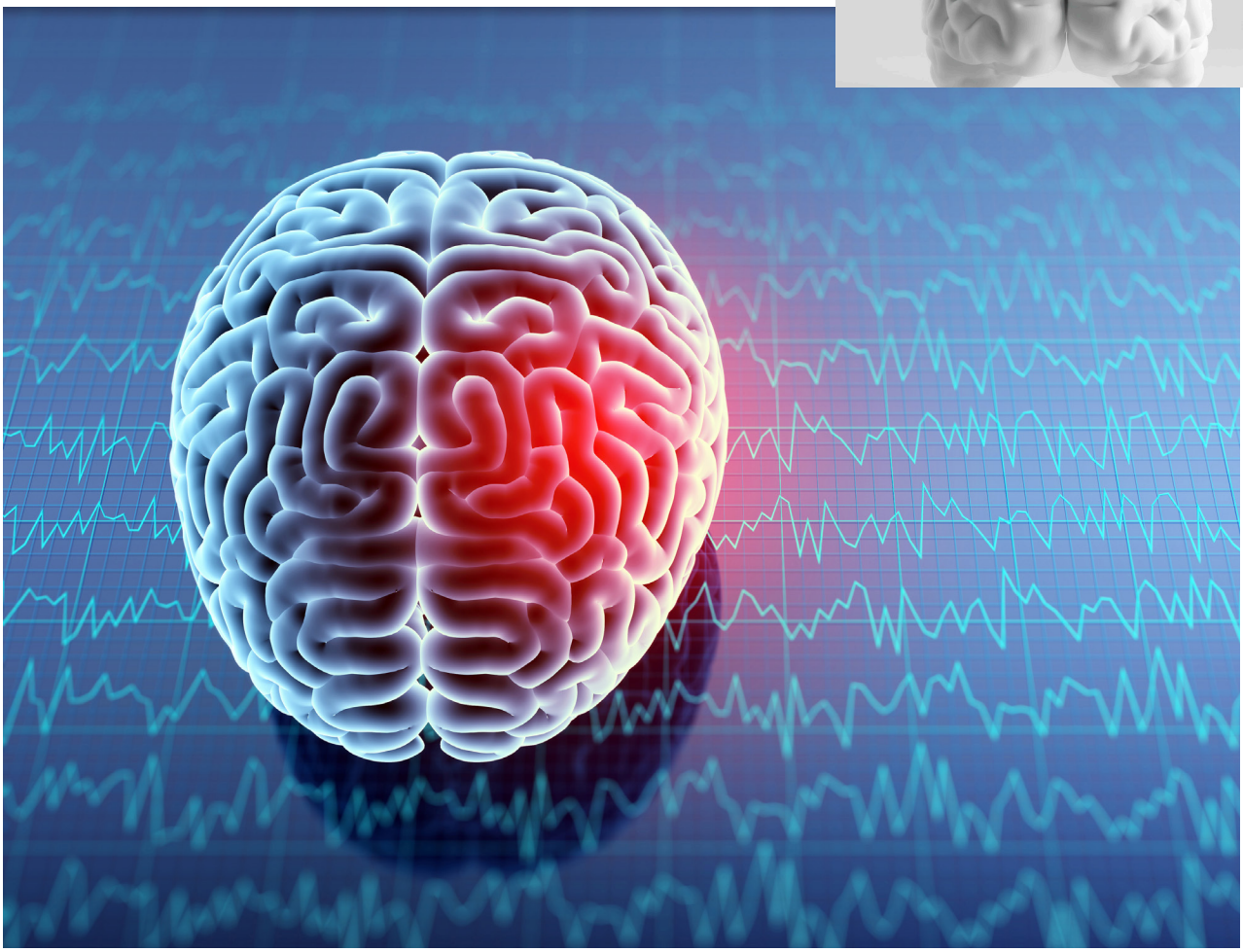


Brain With Hearing Loss Brain With Normal Hearing

3. COGNITIVE OVERLOAD (I.E. WORKING YOUR BRAIN TOO HARD TO HEAR)



Hearing loss is not normal and neither is the excess strain that it puts on your brain. While hearing loss may be more common as we age, it is critical that hearing loss be treated. With hearing loss, the brain is constantly on 'overload' trying to fill in the missing pieces and follow the conversation. Increased cognitive load is considered a risk factor for developing Dementia. Cognitive load, as measured by pupillometry, is a measurement of how hard your brain is working to follow a conversation. Recent research has found that individuals who treat their hearing loss do not work as hard to listen (i.e. have a reduced cognitive load) and have as much as a 20% increase in memory recall when following a conversation.

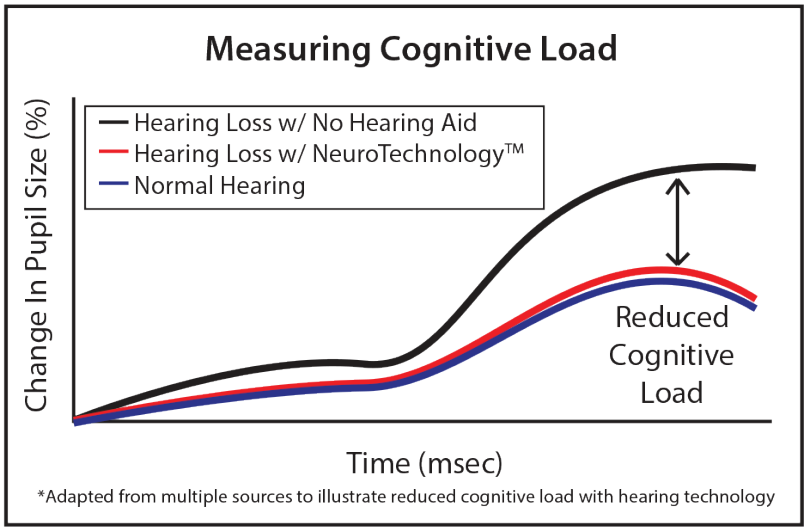


Research Report: Summary

Hearing Loss & Dementia

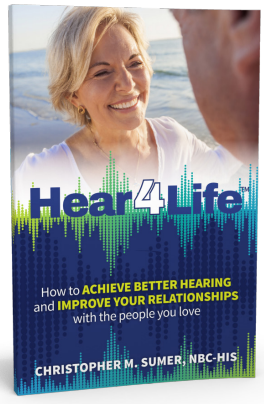
NEUROTECHNOLOGY™:
REDUCE YOUR RISK OF DEVELOPING DEMENTIA

Improvements in Cognitive Function: In a recent study, Dr. Jamie Desjardins, PhD (University of Texas at El Paso) demonstrated that today's current hearing loss treatment options can improve brain function in people with hearing loss. It is known that hearing loss, if left untreated, can lead to emotional and social consequences, reduced job performance and diminished quality of life. Recently, research has shown that untreated hearing loss can also can interfere with cognitive abilities because so much mental effort is diverted toward understanding speech.



*Adapted from multiple sources to illustrate reduced cognitive load with hearing technology

The research was aimed at measuring core cognitive functions that were beginning hearing loss treatment with NeuroTechnology™. After only two weeks of hearing loss treatment, cognitive testing revealed a significant increase in percent scores for recalling words in working memory and selective attention tests, and the processing speed at which participants selected the correct response was faster. By the end of the study, participants had exhibited significant improvement in their cognitive function. Since 2011, multiple long-term studies have provided strong evidence that treating hearing loss may eliminate the risk of developing Dementia. Dr. Lalwani at Columbia University noted that treating hearing loss "**may offer a simple, yet important, way to prevent or slow the development of dementia by keeping adults with hearing loss engaged in conversation and communication.**"



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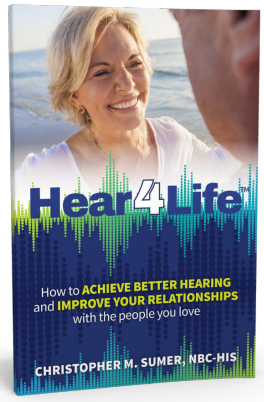

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