CONTACT: Alzheimer's Association Media Line, 312.335.4078, media@alz.org
AAIC 2023 Press Office, aaicmedia@alz.org

FROM THE ALZHEIMER'S ASSOCIATION INTERNATIONAL CONFERENCE 2023

HEARING AIDS SLOW COGNITIVE DECLINE IN OLDER ADULTS WITH HEARING LOSS AND AT RISK FOR COGNITIVE DECLINE

Key Takeaways:

- **Largest clinical trial to investigate whether a hearing loss treatment intervention can reduce risk of cognitive decline.**
- **In the study, in a subgroup of older adults with hearing loss who were at higher risk of cognitive decline, using hearing aids for three years cut cognitive decline in half.**

AMSTERDAM, JULY 18, 2023 — Results from the Aging and Cognitive Health Evaluation in Elders (ACHIEVE) study, the largest randomized, controlled clinical trial of hearing aids for reducing long-term cognitive decline in older adults, were reported for the first time at the Alzheimer's Association International Conference® (AAIC®) 2023, in Amsterdam, Netherlands, and online.

While the results were negative in the total study population, the hearing intervention slowed cognitive decline in older adults with mild to moderate hearing loss by 48% in a pre-specified segment of the study population consisting of the 238 people participating in an ongoing observational study of heart health. The findings from the ACHIEVE study were simultaneously published in *The Lancet*.

The ACHIEVE study is a randomized trial of older adults aged 70-84 with untreated hearing loss who were free from substantial cognitive impairment, conducted at four U.S. sites. 977 total participants were recruited from two study populations: 238 adults participating in the Atherosclerosis Risk in Communities (ARIC) study, and 739 healthy community volunteers newly recruited to the study.

According to the researchers, at the start of the trial, all study participants generally had mild to moderate hearing loss very typical of older adults, but no substantial cognitive impairment.

The three-year intervention included use of hearing aids, a hearing "toolkit" to assist with self-management, and ongoing instruction and counseling with an audiologist. The comparison group health education control group had talk sessions with a health educator about chronic disease prevention. The total study population was analyzed, hearing intervention versus health education control; the ARIC and community subgroups were also analyzed in this manner. The primary endpoint was three-year change in a comprehensive neurocognitive testing battery, which included procedures to help ensure that hearing loss would not affect the results.

The results of the comparison of hearing intervention versus control in the total study population were negative, as was the community population comparison of hearing intervention versus control. The most interesting result was the comparison of the ARIC subgroup hearing intervention versus control, in which a 48% slowing of cognitive decline was observed.

The researchers noted that the participants from the ARIC study had more risk factors for cognitive decline, lower baseline cognitive scores, and a faster rate of three-year cognitive decline during the study than the others.

"The positive results with the hearing intervention in the ARIC subgroup analysis are encouraging and warrant further investigation," said Maria C. Carrillo, Ph.D., Alzheimer's Association chief science officer. "Previous research has identified hearing loss as potentially the single largest dementia risk factor that can be addressed or modified with existing tools that remain underutilized."

The ACHIEVE researchers cite hearing loss as present in 65% of adults over age 60. Identifying dementia prevention strategies that can be implemented globally is an urgent priority.

"The hearing intervention had a significant effect on reducing cognitive change within three years in the population of older adults in the study who are at increased risk for cognitive decline," said Frank Lin, M.D., Ph.D., of Johns Hopkins University School of Medicine and Bloomberg School of Public Health, and co-primary investigator of the ACHIEVE study. "Hearing loss is very treatable in later life, which makes it an important public health target to reduce risk of cognitive decline and dementia, along with other dementia risk factors such as less education in early life, high blood pressure, social isolation and physical inactivity."

"The encouraging subgroup results are consistent with our understanding that strategies to reduce cognitive decline and dementia risk will likely need to affect more than one pathway to be successful. The Alzheimer's Association's ongoing U.S. POINTER Study is taking that approach through targeting multiple risk factors at the same time in a diverse, representative study population," Carrillo said.

Findings from the ACHIEVE study suggest that older adults at increased risk for cognitive decline and dementia who also have hearing loss may benefit the most from this hearing intervention within three years. According to the ACHIEVE researchers, the hearing intervention may slow down decline in thinking and memory by making listening easier for the brain, or by helping people remain more socially and physically active.

"In both the ARIC group and the new group of community volunteers, we also found that the hearing intervention improved communication abilities, social functioning and loneliness," Lin said. "Until we know more, we recommend for general health and well-being that older adults have their hearing checked regularly and any hearing issues properly addressed."

More research is needed to investigate how the hearing aids and counseling provided the cognitive benefit, and to understand the longer-term benefits of the hearing intervention.

About the Alzheimer's Association International Conference® (AAIC®)
The Alzheimer's Association International Conference (AAIC) is the world's largest gathering of researchers from around the world focused on Alzheimer's and other dementias. As a part of the Alzheimer's Association's research program, AAIC serves as a catalyst for generating new knowledge about dementia and fostering a vital, collegial research community.
AAIC 2023 home page: www.alz.org/aaic/
AAIC 2023 newsroom: www.alz.org/aaic/pressroom.asp
AAIC 2023 hashtag: #AAIC23

About the Alzheimer's Association®
The Alzheimer's Association is a worldwide voluntary health organization dedicated to Alzheimer's care, support and research. Our mission is to lead the way to end Alzheimer's and all other dementia — by accelerating global research, driving risk reduction and early detection, and maximizing quality care and support. Our vision is a world without Alzheimer's and all other dementia®. Visit alz.org or call 800.272.3900.

# # #

- Lin, et al. Effects of hearing intervention on cognitive decline: Results of the Aging and Cognitive Health Evaluation in Elders (ACHIEVE) randomized trial. (Funders: R01AG055426, R01AG060502, and R34AG046548 from the U.S. National Institute on Aging, part of the National Institutes of Health (ClinicalTrials.gov identifier: NCT03243422))

*** AAIC 2023 news releases may contain updated data that does not match what is reported in the following abstracts.

Abstract/Proposal #83084

Effects of hearing intervention on cognitive decline: Results of the Aging and Cognitive Health Evaluation in Elders (ACHIEVE) randomized trial

Background: Hearing loss is associated with greater cognitive decline and incident dementia. Whether hearing intervention could reduce cognitive decline in older adults with hearing loss is unknown.

Method: The ACHIEVE study is a randomized trial (NCT03243422) of 70-84 year-old adults with untreated hearing loss and free from substantial cognitive impairment that took place at four U.S. sites. Participants were recruited from two study populations: 1) a group of adults participating in a longstanding observational study of cardiovascular health (Atherosclerosis Risk in Communities [ARIC] study), and 2) a group of healthy de novo community volunteers. Participants were randomised (1:1) to hearing intervention (HI; audiological counseling and provision of hearing aids) or a successful aging health education control intervention (SA; sessions with a health educator on chronic disease prevention). The primary intention-to-treat endpoint was 3-year change in a global cognition standardized factor score from a comprehensive neurocognitive battery.

Result: 977 participants (238 ARIC, 739 de novo) underwent randomisation; 490 were assigned to HI and 487 to SA control. Participants from ARIC were older, had more risk factors for cognitive decline, and had lower baseline cognitive scores than the de novo group. In the primary analysis combining the ARIC and de novo groups, 3-year cognitive change (in S.D. units) was not significantly different between HI and SA control (HI: -0·200 [95% CI: -0·256,-0·144]; SA: -0·202 [-0·258,-0·145]; Difference 0·002 [-0·077,0·081],p=0·96). However, prespecified analyses demonstrated significant differences in the effect of HI on cognitive change between the ARIC and de novo group (p interaction=0·010). In the ARIC group, HI was associated with a 48% reduction in 3-year cognitive change compared to SA control (HI: -0·211 [-0·349,-0·073]; SA: -0·402 [-0·536, -0·267]; Difference 0·191 [0·022,0·360,p=0·027]). In the de novo group, cognitive change was not significantly different between HI and SA control (HI: -0·213 [-0·277,-0·148]; SA: -0·151 [-0·215,-0·087]; Difference -0·061 [-0·151,0·028,p=0·18]). The rate of cognitive change among control participants was observed to be 2.7-fold faster in the ARIC versus de novo group.

Conclusion: Hearing intervention may have a significant effect on reducing cognitive change over 3 years in populations of older adults at increased risk for cognitive decline.

Presenting Author:
Frank Lin, M.D., Ph.D. flin1@jhmi.edu
Johns Hopkins Bloomberg School of Public Health, Baltimore MD 21287

Tables and Figures: ACHIEVE CONSORT Figure.jpg (215.6KB)