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**Depression, Disability, and Dementia Associated  
With Self-reported Hearing Problems**

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**Abstract:**

Hearing loss is the third most common chronic health condition affecting older adults. Hearing loss may result from many causes include genetic and other factors. Individuals with hearing loss frequently experience depressive symptoms and social isolation. There is also evidence that older adults with hearing loss have worse cognitive performance.

The aim of this report is to discuss two longitudinal studies to know if there is a relation between hearing loss and depression, disability, and dementia.

As a result we found an increased risk of disability and dementia in individuals with hearing loss. Early intervention could have good implications, as treatment of HL earlier in the process of cognitive decline may provide more potential for disease reversal. By restoring communication abilities, hearing aids may help improve mood, increase social interactions, and enable participation in cognitively stimulating activities and consequently could slow cognitive decline.

To sum up there is a strong link between hearing status and the risk of disability, dementia, and also depression. Because hearing impairment in older adults is highly prevalent and treatable, these results emphasize the importance of formally assessing the consequences of treating hearing loss in elders in further studies.

**Introduction:**

Hearing loss is the third most common chronic health condition affecting older adults. Approximately 30% of individuals aged 65 and older have some degree of hearing loss, with estimates ranging from 70% to 90% of those aged 85 and older.<sup>1</sup>

A person who is not able to hear as well as someone with normal hearing – hearing thresholds of 25 dB or better in both ears – is said to have hearing loss. Hearing loss may be mild, moderate, severe, or profound. It can affect one ear or both ears, and leads to difficulty in hearing conversational speech or loud sounds.<sup>2</sup>

Around 466 million people worldwide have disabling hearing loss, and 34 million of these are children. It is estimated that by 2050 over 900 million people will have disabling hearing loss.<sup>3</sup>

Hearing loss may result from genetic causes, complications at birth, certain infectious diseases, chronic ear infections, the use of particular drugs, exposure to excessive noise, and ageing. 60% of childhood hearing loss is due to preventable causes.<sup>2</sup>

1.1 billion young people (aged between 12–35 years) are at risk of hearing loss due to exposure to noise in recreational settings. Interventions to prevent, identify and address hearing loss are cost-effective and can bring great benefit to individuals. People with hearing loss benefit from early identification; use of hearing aids, cochlear implants and other assistive devices; captioning and sign language; and other forms of educational and social support. Individuals with hearing loss often experience depressive symptoms and social isolation. There is also evidence that older adults with hearing loss have poorer cognitive performance. Brain “shrinkage” occurs as a natural part of aging, but older adults with hearing loss appear to lose brain mass at a faster rate than individuals with normal hearing.<sup>2</sup>

**Discussion:**

Understanding the relationship between the two distinct neurological conditions of hearing loss (HL) and cognitive impairment is important, as caring for older adults means focusing on improving and maintaining function. A recent report reported that cognition is significantly poorer in individuals with untreated HL and remains poorer in those whose HL is treated compared to individuals with normal hearing.<sup>4</sup>

HL is consistently shown to be associated with increased risk of developing dementia in older persons of Western populations. There has been little work investigating the

relationship between HL and the risk of mild cognitive impairment (MCI), representing a transitional stage between normal healthy ageing and the development of dementia. Hearing loss is associated with prevalent dementia and incident MCI or dementia. In this longitudinal study of ageing Singaporeans, they investigated the association between HL and prevalent MCI and dementia; and (b) among those free of MCI or dementia, the association between HL and incident MCI and dementia from a median of 3.8 years of follow-up in the Singapore Longitudinal Ageing Study (SLAS). This population-based Asian cohort study showed that HL was associated with a higher prevalence of dementia but not MCI. On the other hand, they found that cognitively normal participants with HL were twice as likely to develop incident cases of neurocognitive disorders, which were predominantly MCI, independently of other factors that predict MCI and dementia.<sup>4</sup>

As MCI may be identified earlier in the course of dementia pathology, it is widely regarded to be a critical new focus for early intervention. This could have implications as far as HL is concerned, as treatment of HL earlier in the process of cognitive decline may provide more potential for disease reversal. Lack of awareness, stigma, persistently high cost, and lack of reimbursement by insurance companies all contribute to the poor uptake of hearing rehabilitation. If hearing rehabilitation can slow or reverse cognitive decline by even a small amount, then it should be promoted aggressively; any intervention that could delay the onset of dementia by just 1 year would result in a more than 10% decrease in the global prevalence of dementia in 2050.<sup>4</sup>

Despite its high prevalence and consequences for health outcomes, hearing loss is largely under diagnosed and thus undertreated. Almost two-thirds of older adults with hearing impairment do not use hearing aids.<sup>1,4</sup>

Study showed that self-reported hearing loss is independently associated with accelerated cognitive decline in community-dwelling older adults. 25-year follow-up period independently of age, gender and educational level. Prior research has found an association between self-reported hearing loss and cognitive decline. With a larger sample and a longer follow-up period than prior studies, the current study strongly reinforces the plausibility of such association. Hearing loss has often been associated with depressive symptoms and social isolation, which supports the hypothesis that social isolation and depressive symptomatology may mediate the association between hearing loss and cognitive decline. After controlling for numerous psychosocial variables such as depression, social network, and psychotropic consumption, cognitive decline in individuals with hearing impairment was no longer significantly different. This suggests that there is no direct effect of hearing loss on cognitive decline but rather that depressive symptoms and social isolation mediate the association.<sup>1</sup>

Therefore, by at least partially restoring communication abilities, hearing aids may help improve mood, increase social interactions, and enable participation in cognitively stimulating activities and consequently could slow cognitive decline. In addition, numerous studies have shown that self-reported hearing loss is highly correlated with audiometric measures in older adults. Nonetheless, such correlation is still under debate, in particular for minimal degrees of hearing loss.<sup>1</sup>

### **Conclusion:**

In conclusion, hearing loss is associated with accelerated cognitive decline in older adults. It was also found that hearing aid use attenuates such cognitive decline, which had never been reported. Taken together, these results underline the importance of addressing the problem of underdiagnosis and undertreatment of hearing loss in

elderly adults. Hearing rehabilitative treatment is complex and does not simply consist of using a hearing aid, so a well-designed interventional trial is necessary to demonstrate the effect of a comprehensive auditory rehabilitation program on cognitive aging.

**References:**

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