

POSITION STATEMENT:

Hearing Health and Dementia

OCTOBER 2020

SUMMARY

Audiology Australia acknowledges current evidence regarding the association between hearing loss and cognitive decline and/or dementia. Audiology Australia encourages members to be aware of, and review the linkage between, cognitive decline/dementia and hearing health, and considers that audiologists have an important professional role in this context, including by providing clinical services related to hearing loss (assessment, diagnosis, planning, and treatment), prevention and advocacy, and education and research.

In recent years, a growing number of studies have identified an association between age-related hearing loss and dementia (Lamb & Archbold 2019). Hearing loss is no longer perceived as an inconsequential part of ageing and is now understood to be independently associated with a risk of accelerated cognitive decline and an increased risk of dementia (Lin & Albert 2014). In the 2017 *Lancet* Commission report, untreated hearing loss was named as the greatest single modifiable mid-life risk factor to reduce the risk of dementia (Livingston et al. 2017, Livingston et al. 2020).

Recent studies outlined in the 2020 *Lancet* Commission report suggest that the use of hearing aids can potentially act as a protective factor and decrease the rate of cognitive decline and dementia for people with mid-life hearing loss. Livingston states that hearing loss might result in cognitive decline through reduced cognitive stimulation. However, although results from epidemiological studies have demonstrated trends which support the protective effect of hearing aid use, the results remain difficult to interpret (Lin & Albert 2014).

Despite the identified association between hearing loss and dementia, and the growing body of research in this area, researchers have cautioned that the evidence

for either hearing loss causing dementia, or hearing interventions delaying cognitive decline and/or dementia, are not sufficiently robust at this point in time (Livingston et al. 2017, Deloitte 2017). In 2019, the World Health Organization (WHO) released the *Risk reduction of cognitive decline and dementia: WHO guidelines* and considered that there was insufficient evidence to recommend the use of hearing aids to reduce the risk of cognitive decline and/or dementia (WHO 2019). As of September 2020, the WHO's consideration on this matter remains unchanged.

Audiology Australia acknowledges that there is a growing body of evidence which identifies age-related hearing loss as a potential modifiable risk factor for cognitive decline and/or dementia, and hearing aid use as a potential protective factor for these conditions. At this stage, Audiology Australia considers that stronger evidence is needed to clearly indicate that either hearing loss causes dementia, or that hearing interventions can delay or reverse the symptoms of cognitive decline and/or dementia.

Audiology Australia therefore does not advise audiologists to use or to be seen to use the potential association of untreated hearing loss to cognitive decline and/or dementia to encourage the sale and fitting of hearing aids or other amplification devices until there is stronger evidence available to support this.

Audiologists can, however, encourage clients, including clients with dementia, to use hearing aids to treat hearing loss and to reduce the excess risk from hearing loss (Livingston et al. 2020). Numerous studies have highlighted the importance of treating hearing impairment to improve communication, social engagement, and the quality of life of people living with dementia (Bott et al. 2020).

BACKGROUND

Dementia is an overall term for several diseases that describes a group of symptoms associated with a decline in a person's memory or other thinking skills. Dementia is not normal age-related memory loss (e.g., forgetfulness) or mild cognitive impairment (i.e., a decline from previously attained cognitive level). Dementia results from a variety of diseases and injuries that affect the brain, such as Alzheimer's disease or stroke, and interferes significantly with a person's ability to maintain their activities of daily living (WHO 2017).

In 2016, dementia was listed as a cause of death in more than 25,000 cases in Australia and was the leading cause of death for women and the third leading cause of death for men (AIHW 2018).

There are some risk factors for dementia, such as genetic predisposition and ageing, that cannot be avoided or mitigated. The risk of getting dementia increases exponentially with age. Approximately 0.1 per cent of the population aged between 65 and 74 has dementia; this increases to around 1 per cent of those aged between 75 and 84 years. For those aged 85 years and over, the incidence of dementia increases again to around 1 in 4 people or 25 per cent of the population living with dementia (Dementia Australia 2018).

Older Australians are a growing proportion of the total population and the prevalence of dementia will therefore increase over time. Dementia Australia (2020) states that there are more than 459,000 Australians presently living with dementia and an estimated 1.6 million Australians involved in their care. Without a medical breakthrough, the number of people living with dementia is expected to increase to 589,807 by 2028 and to 1,076,129 by 2058 (Dementia Australia 2020).

Livingston et al. (2017) identifies dementia as the greatest global challenge for health and social care in the twenty-first century. In research commissioned by Dementia Australia in 2016, the National Centre for Social and Economic Modelling forecast that by 2025, dementia **is predicted to cost Australia more than \$18.7 billion** and by 2056, this cost is set to rise to more than \$36.8 billion (Dementia Australia 2018). Importantly, Livingston asserts that it is never too early and never too late in the life course for dementia prevention (Livingston et al. 2020).

MODIFIABLE RISK FACTORS FOR DEMENTIA

Although ageing is the strongest known risk factor for dementia, dementia is not a normal part of ageing and as a person ages, dementia is not inevitable. There are potentially modifiable risk factors that may prevent, delay or slow cognitive decline or dementia. The World Health Organization (WHO) developed *Risk Reduction of Cognitive Decline and Dementia* (2019) guidelines to provide evidence-based recommendations on (1) lifestyle behaviours and interventions and (2) management of specific physical and mental health conditions to delay or prevent cognitive decline and dementia in the general population.

Lifestyle related risk factors include physical inactivity, tobacco use, unhealthy diet and harmful use of alcohol (WHO 2019). Certain medical conditions associated with an increased risk of developing dementia include hypertension, diabetes, hypercholesterolemia, obesity and depression. Other potentially modifiable risk factors include social isolation, cognitive inactivity and hearing loss (WHO 2019).

HEARING LOSS AND DEMENTIA

Livingston and colleagues in the *Lancet* Commission's paper *Dementia prevention, intervention, and care* (2017) sought to estimate a combined population attributable factor (PAF) for known modifiable risk factors for dementia. PAF is the percentage reduction in new cases over a given period of time if a particular risk factor is completely eliminated. The modifiable risk factors to calculate a combined PAF were those identified in guidelines developed by the UK National Institute for Health Care and Excellence (NICE) and the US National Institutes of Health (NIH). In addition to the risk factors of diabetes, mid-life hypertension, mid-life obesity, physical inactivity, smoking, depression and low educational attainment, NICE and NIH identified peripheral hearing loss and social isolation as a potentially modifiable risk (Livingston et al. 2017). In 2020, Livingston added three more potentially modifiable risk factors for dementia; excessive alcohol consumption, traumatic brain injury and air pollution (Livingston et al. 2020).

In calculating a PAF for hearing loss, the researchers completed a meta-analysis of the data from three studies and concluded that the risk of hearing loss for dementia is higher than the risk from other individual risk factors. Livingston concluded that unmanaged hearing loss in mid-life (45-65 years) and late-life (older than 65 years) may account for up to nine per cent of preventable dementia cases worldwide and is one of the most potentially modifiable risk factors for dementia (Livingston et al. 2017). This is a result higher than any other modifiable risk factor in mid-life including hypertension and obesity. Evidence also suggests that mid-life hearing loss continues to increase dementia risk in later life.¹

However, Livingston cautioned that the mechanism underlying cognitive decline associated with peripheral hearing loss is not yet clear, nor is it established whether interventions, such as hearing aids, can prevent or delay the onset of dementia (Livingston et al. 2017). In the 2020 *Lancet* Commission report, Livingston indicated that hearing loss may result in cognitive decline through reduced cognitive stimulation. Treating hearing impairment may, therefore, help to increase and maintain cognitive reserve, which, in turn, may help to prevent dementia.

The 2020 *Lancet* Commission report cited recent studies which revealed that non-hearing aid users experienced worse cognition associated with a reduction in hearing when compared to hearing aid users (Ray et al. 2018, Maharani et al. 2018, Amieva et al. 2018). The findings from these studies suggested that hearing aid use was the largest factor protecting from cognitive decline, and supports the notion that hearing aid use is

¹ A summary of all research to date is published in The Ear Foundation UK briefing paper *Hearing Care, cognitive decline and dementia* (2019).

protective, rather than the possibility that those developing dementia are less likely to use hearing aids (Livingston et al. 2020).

However, further research on the potential protective effect of hearing aid use and cognitive decline is required. Lin and Albert (2014) report that individuals with hearing impairment who choose to use hearing aids and other technologies are likely to be healthier and of higher socioeconomic status (creating a positive bias of seeing a protective effect) but at the same time are also likely to have more severe hearing problems (leading to a negative bias) than individuals with hearing impairment who don't use hearing aids.

The 2020 *Lancet* Commission recommended strategies for dementia risk reduction, noting that the risks of dementia are particularly high in more socially disadvantaged populations. Recommendations related to hearing health include:

- **At the population level** - scrutinising the risks of hearing loss throughout the life course, to reduce the risk of exposure to this risk factor.
- **At the individual level** - using hearing aids for hearing loss; and helping people wear hearing aids, particularly those who find hearing aid use unacceptable, difficult or ineffective.

In 2019, the WHO reviewed the available evidence for adults with normal cognition and hearing loss to determine if the treatment of hearing loss is more effective than usual care, or no intervention, in reducing the risk of cognitive decline and/or dementia. At the time, the WHO concluded that there was insufficient evidence to recommend the use of hearing aids to reduce the risk of cognitive decline and/or dementia. This consideration has not currently changed.

However, the WHO has recommended that screening for hearing loss followed by provision of hearing aids should be offered to older people for the timely identification and management of hearing loss.

ABORIGINAL AND TORRES STRAIT ISLANDER HEALTH

Research to date indicates that Aboriginal and Torres Strait Islander people experience dementia at a rate three to five times higher than the general Australian population. The reasons for higher rates of dementia in the Aboriginal and Torres Strait Islander population are still being explored, however, Aboriginal and Torres Strait Islander people experience many risk factors for dementia (such as heart disease, diabetes and tobacco use) at higher rates than non-Indigenous people (Flicker & Holdsworth 2014) and these modifiable risk factors may account for these differences.

Radford and Lavrencic (2019) report that the Koori Growing Old Well Study (KGOWS) aims to characterise dementia in Aboriginal people aged 60 years and over and identify the factors associated with dementia and cognitive impairment promoting early detection and treatment of hearing loss by encouraging people experiencing hearing loss to quickly seek treatment. The findings from KGOWS contribute initial evidence of a link between hearing loss (and its social and biological determinants), cognitive decline and high rates of dementia in older Aboriginal and Torres Strait Islander Australians. Radford and Lavrencic identify this as an important area for future research and, possibly, dementia prevention in Aboriginal and Torres Strait Islander peoples.

ROLE OF AUDIOLOGISTS

Audiologists can assist in the timely identification and management of hearing loss in older people as recommended in the WHO *Guidelines on Integrated Care for Older People* (ICOPE) (WHO 2017). The ICOPE guidelines offer evidence-based direction on:

- Comprehensive assessment of health status in an older person;
- Delivery of an integrated health care that will enable an older person to maintain their physical and mental capacities, and/or to slow or reverse any declines in their physical and mental capacities; and
- Delivery of interventions to support caregivers.

The American Speech Language Hearing Association (ASHA) has identified appropriate roles for Audiologists. The roles identified by ASHA are strongly supported by Audiology Australia and include the following:

- Providing information to individuals and groups at risk for hearing loss and educating them on the link between hearing loss and dementia;
- Educating other professionals, third-party payers, and legislators on the needs of persons with dementia and hearing loss;
- Screening individuals with possible hearing loss and determining the need for further assessment;
- Conducting a comprehensive audiologic assessment and diagnosing hearing loss when present;
- Recognising behaviours (e.g., cognitive and memory changes) associated with dementia and helping to determine if these behaviours may be related to the individual's hearing loss;
- Screening for cognitive impairment (e.g., memory function) and determining the need for further assessment by other professionals as appropriate;
- Counselling persons with dementia and their families regarding the impact of hearing loss on communication;
- Providing audiologic treatment to individuals with dementia that optimises communication and social engagement throughout the course of the disease;

- Serving as an integral member of an interdisciplinary team to ensure comprehensive services and continuum of care for individuals with dementia and their families/caregivers;
- Providing indirect intervention through the individual's caregivers, and recommending environmental modifications and other techniques to facilitate communication; and
- Remaining informed of research in the area of hearing loss and dementia, and helping advance the knowledge base related to the nature and treatment of these conditions.

INFORMED CONSENT

Clients need sufficient information to make appropriate decisions about their own health care. Health professionals need to provide adequate information about the importance, benefits and risks of proposed health care in language that is tailored to the individual needs of a client (Audiology Australia 2013)

Guidelines to enable clients to make informed decisions about their hearing health care are available in the Audiology Australia *Professional Practice Standards*. The Professional Practice Standards outline best practice recommendations to audiologists about area of practice operations and clinical practice.

In general, a standard model for obtaining informed consent from a client includes the following sequential steps:

- The nature of the condition, its expected activity limitations and consequences and likely prognosis are outlined;
- Options for additional diagnostic procedures are explained;
- The risks and benefits of different options for intervention are presented;
- Warnings on possible adverse outcomes are provided;
- The likely outcome of intervention is estimated; and
- The likely duration and cost of the proposed episode of care is explained.

Consent should be obtained from the appropriate 'consent giver'. For a client with cognitive impairment, the client's carer/legal guardian should provide consent (Audiology Australia 2013).

Audiologists seeking more information on decision-making with cognitively impaired clients could refer to Dementia Australia guide *Dementia and Your Legal Rights*. The guide includes issues such as:

- What mental capacity means, and how it applies to decision-making; and
- Legal rights and decision-making with regard to health care and personal matters.

CONCLUSION

Hearing loss and dementia are more common in older adults, and there may be common factors causing both hearing loss and dementia, such as lifestyle related risk factors. Livingston and colleagues recommend keeping cognitively, physically, and socially active in mid-life and later life, although little evidence exists for any single specific activity protecting against dementia. However, hearing aid use should be encouraged for hearing loss, and the ears should be protected from excessive noise exposure to reduce the incidence of hearing loss (Livingston et al. 2020).

Audiology Australia acknowledges the growing body of evidence which identifies age-related hearing loss as a potential modifiable risk factor for cognitive decline and/or dementia, and hearing aid use as a potential protective factor for these conditions. At this stage, Audiology Australia considers that stronger evidence is needed to clearly indicate that either hearing loss causes dementia, or hearing interventions delay cognitive decline and/or dementia.

Therefore, Audiology Australia does not currently advise audiologists to use or to be seen to use the potential association of untreated hearing loss to cognitive decline and/or dementia to encourage the sale and fitting of hearing aids or other amplification devices.

Audiologists can encourage clients with dementia to use hearing aids to treat hearing loss and to reduce the excess risk from hearing loss. The treatment of hearing loss can significantly improve the communication, social engagement and quality of life of people living with dementia.