



**Integrated care for older people (ICOPE)** Guidelines on community-level interventions to manage declines in intrinsic capacity

# Evidence profile: hearing loss

Scoping question:

Does case finding and provision of hearing aids or assistive listening devices produce any benefit or harm for older people 60 years of age and over with hearing loss?

The full ICOPE guidelines and complete set of evidence profiles are available at: who.int/publications/i/item/9789241550109

Painting: "Wet in Wet" by Gusta van der Meer. At 75 years of age, Gusta has an artistic style that is fresh, distinctive and vibrant. A long-time lover of art, she finds that dementia is no barrier to her artistic expression. Appreciated not just for her art but also for the support and encouragement she gives to other artists with dementia, Gusta participates in a weekly art class. Copyright by Gusta van der Meer. All rights reserved

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## Background

With increasing age, deterioration in hearing sensitivity rises sharply. About one third of people 65 years of age and over live with some degree of hearing loss (1) and between 50% and 80% of older people over 80 years of age experience significant hearing loss. Hearing loss in older people is strongly associated with reduced functional ability, social isolation, depression, cognitive decline, poor quality of life, and need for care (2-5). In most countries, particularly in low- and middle-income countries, hearing loss in older people is largely undetected and undertreated. This is mainly due to the lack of community outreach and lack of systematic screening for hearing loss in older people.

The most common form of treatment for hearing loss in older people is the provision of a hearing aid. Effective management strategies for hearing loss includes use of technologies such as hearing aids, assistive listening devices or cochlear implants, health education, environmental modifications (reducing interfering

background noise, for example) and behavioural adaptations for the person and for their communication partners (simple communication techniques such as speaking clearly, for example) (6). Research evidence suggests that hearing aid use is strongly associated with improved communication in relationships, emotional stability, perception of mental functioning and physical health, and improved quality of life (8). Despite the increased availability of technology, however, the proportion of older people with hearing loss who use hearing aids is low (9). Moreover, evidence on effective case-finding and provision of care is mostly from high-income countries. The extent to which this evidence is generalizable to poorly resourced settings is unclear. This review has thus set out to answer two key questions: first, whether screening and provision of hearing aids are effective in improving hearing-related outcomes; and, second, whether education and educational interventions improve the uptake or adherence of hearing aid use among older people.

## **Part 1: Evidence review**

# Scoping question in PICO format (population, intervention, comparison, outcome)

### Population

• Older people 60 years of age and over (both male and female) with hearing loss

### Intervention

- Screening and provision of a hearing aid or assistive listening device
- Educational intervention to improve uptake or use of hearing aid

#### Comparison

• Referral, no service or delayed treatment

#### Outcome

- *Critical:* Improvement in communication, social function, hearing use
- *Important:* Depression, quality of life, use of verbal communication strategy, self-reported hearing handicap scale

### **Search strategy**

Details of the search strategy are given in Annex 1.

# List of systematic reviews and individual studies identified by the search process

### Included in GRADE tables (10–13)

— Barker F, Mackenzie E, Elliott L, Jones S, de Lusignan S. Interventions to improve hearing aid use in adult auditory rehabilitation. Cochrane Database Sys Rev. 2014(7):CD010342. doi:10.1002/14651858.CD010342.pub2. — Mulrow CD, Aguilar C, Endicott JE, Tuley MR, Velez R, Charlip WS, et al. Quality-of-life changes and hearing impairment: a randomized trial. Ann Intern Med. 1990;113(3):188–94. doi:10.7326/0003-4819-113-3-188.

— Yueh B, Collins MP, Souza PE, Boyko EJ, Loovis CF, Heagerty PJ, Liu C-F, Hedrick SC. Long-term effectiveness of screening for hearing loss: the screening for auditory impairment-which hearing assessment test (SAI-WHAT) randomized trial. J Am Geriatr Soc. 2010;58(3):427–34. doi:10.1111/j.1532-5415.2010.02738.x.

— Yueh B, Souza PE, McDowell JA, Collins MP, Loovis CF, Hedrick SC, et al. Randomized trial of amplification strategies. Arch Otolaryngol Head Neck Surg. 2001;127(10):1197–204. doi:10.1001/archotol.127.10.1197.

<sup>&</sup>lt;sup>3</sup> GRADE: Grading of Recommendations Assessment, Development and Evaluation. More information: http://gradeworkinggroup.org

# **PICO Table**

	Intervention/ comparison	Outcomes	Systematic reviews and individual studies used for GRADE tables	Explanation
1	Screening for hearing loss compared with no screening	<ul> <li>Use of hearing aid</li> <li>Improvement in Aural Rehabilitation scale</li> </ul>	Yueh B, Collins MP, Souza PE, Boyko EJ, Loovis CF, Heagerty PJ, Liu C-F, Hedrick SC. Long-term effectiveness of screening for hearing loss: the screening for auditory impairment-which hearing assessment test (SAI-WHAT) randomized trial. J Am Geriatr Soc. 2010;58(3):427–34. doi:10.1111/j.1532-5415.2010.02738.x. <i>(10)</i>	Individual study relevant to the area
2	Screening and provision of hearing aid or assistive listening device compared with no hearing aid or assistive listening device	<ul><li>Social function</li><li>Communication</li><li>Depression</li></ul>	Yueh B, Souza PE, McDowell JA, Collins MP, Loovis CF, Hedrick SC, et al. Randomized trial of amplification strategies. Arch Otolaryngol Head Neck Surg. 2001;127(10):1197–204. doi:10.1001/archotol.127.10.1197. <i>(11)</i>	Individual study relevant to the area
			Mulrow CD, Aguilar C, Endicott JE, Tuley MR, Velez R, Charlip WS, et al. Quality-of-life changes and hearing impairment: a randomized trial. Ann Intern Med. 1990;113(3):188–94. doi:10.7326/0003-4819-113-3-188. <i>(12)</i>	Individual study relevant to the area
3	Self-management support compared with control (alternative intervention)	<ul> <li>Quality of life</li> <li>Self-reported hearing handicap</li> <li>Use of verbal communication strategy</li> </ul>	Barker F, Mackenzie E, Elliott L, Jones S, de Lusignan S. Interventions to improve hearing aid use in adult auditory rehabilitation. Cochrane Database Sys Rev. 2014(7):CD010342. doi:10.1002/14651858.CD010342.pub2. <i>(13)</i>	Systematic review relevant to the area

# Narrative description of the studies that went were included into in the analysis

#### Screening for hearing loss versus no screening (GRADE table 1)

The larger of the two studies by Yueh et al. *(10)* was a randomized controlled trial on screening for hearing loss. It compared three different screening strategies (the AudioScope, based on inability to hear a 40dB tone at 2000 Hz in either ear; the Hearing Handicap Inventory for Elderly-Screening (HHIE-S), based on a score >10; or the AudioScope plus the HHIE-S versus usual care (no screening) in 2305 older veterans (94% males). The primary outcome of the study was hearing aid use at one year.

#### Screening and provision of hearing aids (GRADE table 2)

Two trials evaluated the benefits of amplification compared with no amplification for the treatment of screening-detected hearing loss. The study by Mulrow et al. (12) was a randomized controlled trial on treatment for hearing loss in older adults. It assessed whether hearing aids improved the quality of life of elderly people with hearing loss. The authors evaluated 194 older male veterans (mean age: 72 years) who were randomly assigned to immediate hearing aids or to a waiting list control for four months. Hearing-related quality of life outcomes were measured using the Hearing Handicap Inventory for the Elderly (HHIE) and the Quantified Denver Scale of Communication Function (QDS) at baseline, six weeks, and four months.

The randomized controlled trial by Yueh et al. *(11)* enrolled 64 veterans (mean age, 68 years). Those eligible in the United States of America for free Veterans Health Administration-issued hearing aids were randomly assigned to a standard non-directional or a

programmable-directional digital hearing aid (intervention group), while ineligible veterans were randomly assigned to an assistive listening device or no treatment. The main outcome measures were hearing-related quality of life, self-rated communication ability, adherence to use, and willingness to pay for the amplification devices (measured three months after fitting).

# Self-management support interventions compared with controls (GRADE table 3)

The Cochrane systematic review by Barker et al. (13) assessed the effectiveness of interventions to promote the use of hearing aids in adults with acquired hearing loss fitted with at least one hearing aid. The search for trials was conducted using the Cochrane Ear, Nose and Throat Disorders Group trial register and additional sources for both published and unpublished data. There were no language or date restrictions on the search. Experts in the field were contacted for additional information behind that included in the published report of the trials. Two review authors worked independently to extract data and assess the methodological quality of the trials. They included in their review randomized controlled trials of interventions to improve or promote hearing aid use in adults with acquired hearing loss, compared with usual care or another intervention. The authors classified these interventions according to Wagner's 'chronic care model' (14). Two studies addressed the effects of self-management support interventions on short- to medium-term daily hours of hearing aid use but they could not be combined in a meta-analysis and were not included in the GRADE tables of this review by WHO. Fitzpatrick (15)enrolled 24 participants ranging in age from 45 to 88 years (14 into the intervention group, and 10, the control group). She reported that

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eight participants (57%) in the auditory training intervention group wore their hearing aids all of the time before, after and during therapy, and six participants (43%) wore hearing aids in a larger number of listening situations after therapy. In the control group who received lectures on hearing loss, hearing aids and communication over the same time period, seven participants (70%) wore their hearing aids all of the time, and three (30%) wore their aids in limited situations before and after the lectures. Saunders et al. *(16)* recruited 60 participants (age range: 55 to 81 years; no control group) among first-time hearing aid users. They compared a pre-fitting demonstration of listening situations against a fitting without this demonstration and reported that four out of 20 participants in the intervention group, and one out of 20 in the control group wore their hearing aids for more than eight hours per day. The clinical significance of this result is unclear.

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