

## Interest in hearing loss in geriatric medicine: a survey of members of the *Società Italiana Geriatria Ospedale e Territorio* (SIGOT)

Andrea Fabbo,<sup>1</sup> Nicola Veronese,<sup>2</sup>  
Elisabetta Genovese,<sup>3</sup> Patrizia Mecocci,<sup>4</sup>  
Alberto Cella,<sup>5</sup> Carlo Custodero,<sup>6</sup>  
Vittorio Ferrero,<sup>7</sup>  
Francesco Saverio Ragusa,<sup>2</sup>  
Alberto Pilotto<sup>5,6</sup>

<sup>1</sup>Geriatric Service, Cognitive Disorders and Dementia Unit, Modena; <sup>2</sup>Geriatric Unit, Department of Internal Medicine and Geriatrics, University of Palermo, Palermo; <sup>3</sup>Audiology, Department of Diagnostic, Clinical and Public Health Medicine, University of Modena and Reggio Emilia, Modena; <sup>4</sup>Department of Medicine, Institute of Gerontology and Geriatrics, University of Perugia, Perugia; <sup>5</sup>Department Geriatric Care, Orthogeriatrics and Rehabilitation, E.O. Galliera Hospital, Genova; <sup>6</sup>Department of Interdisciplinary Medicine, University of Bari 'Aldo Moro', Bari; <sup>7</sup>SC Otorinolaringoiatria, Ospedale Mauriziano, Torino, Italy

### Abstract

Hearing loss is a common condition in older people. Increasing research has shown that this condition is associated with a higher risk of several health problems. The aim of this survey made among the members of the *Società Italiana Geriatria Ospedale e Territorio* (SIGOT) is to explore how far hearing loss is known in the Italian geriatric community and how to develop a collaboration with other services.

A short survey (taking approximately 5 min to complete) was freely available on the SIGOT website and disseminated using social channels. The questionnaire was available during the whole year of 2021. The questionnaire specifically addressed general characteristics/demographics, general attention to hearing loss problem in older people and relationships with the National Health System, and personal opinions regarding hearing loss.

A total of 122 participants (mainly females and aging between 61-70 years) from all Italian Regions were included. The SIGOT members answered that they consider hearing loss as clinically relevant is always important (55.7%). Unfortunately, many

members had not audiological centers or specialists available. Moreover, 38.5% of SIGOT members reported that the possibility of correction of hearing loss with prostheses or cochlear implants in older people is very good for older patients and that in 87.7% a significant improvement in quality of life was observed.

The interest in hearing loss problems in older people perceived by the SIGOT members is elevated, but some barriers, particularly in the availability of other specialists and in the services given by National Health System are still very limited.

### Introduction

It is estimated that more than 450 million people live in the world with some form of hearing impairment, defined as having a hearing threshold of >20db in either ear or both ears.<sup>1</sup> Major causes of hearing loss include congenital or early onset childhood hearing loss, chronic middle ear infections, noise-induced hearing loss, age-related hearing loss, or ototoxic drugs that damage the inner ear.<sup>1</sup> The economic impact of hearing loss in adults has been estimated to be very large, with systematic reviews estimating loss of productivity as high as 194 billion dollars.<sup>2</sup>

Increasing research has reported that age-related hearing loss was significantly associated with several types of cognitive impairment.<sup>3,4</sup> According to the World Organization of Healthcare (WHO), people with cognitive disorders, including, dementia will be around 100 million by 2050, against the current 36 million, therefore representing a new epidemic.<sup>5</sup> Unfortunately, no definitive treatments for dementia are available and prevention of potential risk factors for dementia and cognitive disorders is therefore important.<sup>6</sup>

It follows that any correction of hearing loss would not only be able to prevent the progression of dementia, but could potentially alleviate its clinical impact.<sup>7</sup> Hearing loss, in the ADI (Alzheimer's Disease International) report is considered one of the twelve reversible risk factors for the onset of cognitive impairment and dementia.<sup>8</sup> Therefore, research findings suggest that greater focus on prevention and early identification of hearing loss and deafness and, if there are indications, the adoption of simple remedies, such as the use of appliances acoustic, can delay the onset of dementia.<sup>9</sup>

The aim of this survey made among the members of the *Società Italiana Geriatria Ospedale e Territorio* (SIGOT) is to explore how far this problem is known in the Italian geriatric community and how to develop a collaboration with other services (audiology

Correspondence: Nicola Veronese, Geriatric Unit, Department of Internal Medicine and Geriatrics, University of Palermo, Palermo, Italy.

E-mail: nicola.veronese@unipa.it

Key words: Hearing loss; geriatric medicine; National Health System.

Acknowledgments: this study was supported by an unrestricted grant by AMPLIFON ITALIA S.p.A.

Contributions: NV, AF, survey conception; AF, CC, PM, data collection; AF, NV, FSR, paper drafting; VF, PM, AC, AP, critical revision. All the authors read and approved the final version submitted.

Conflict of interest: the authors declare no potential conflict of interest.

Availability of data and materials: upon reasonable request to the corresponding author.

Ethical approval and consent to participate: not required.

Received for publication: 11 March 2022.  
Accepted for publication: 28 March 2022.

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0).

©Copyright: the Author(s), 2022  
Licensee PAGEPress, Italy  
*Geriatric Care* 2022; 8:10455  
doi:10.4081/gc.2022.10455

or ENT) for both the possibility of correcting this deficit and for the possibility of evaluating older people with hearing loss in the context of geriatric assessment methodology.

### Materials and Methods

We reported the results of this survey according to the reporting guideline for survey research.<sup>10</sup> Two authors (AF, NV) designed an online survey to collect information regarding the knowledge and interest of members involved in SIGOT activities in Italy. The survey was revised by a third senior author (AP). The survey was formatted using Google forms and available at <https://forms.gle/WCVVStow8HcepwR57>, during the 2021. A formal invitation was sent to all SIGOT members monthly during the 2021. The survey was sent in Italian to all members. Finally, this survey was promoted during the online National SIGOT congress. The full questionnaire was available online as link at the SIGOT homepage and reported, translated in English, in Supplementary Table 1.

Questions were structured under different

main headings: general characteristics/ demographics, general attention to hearing loss problem in older people and relationships with the National Health System, personal opinions (free field). All the questions were mandatory, except the final question regarding suggestions and opinions. The survey took less than 5 minutes to be completed.

All quantitative variables were reported descriptively as percentages (%) relative to the total number of participants included.

## Results

Among approximately 900 members of the SIGOT, 122 participants from all Italian Regions responded to the survey. Table 1 summarizes the questions and the most common answer to each question. A slightly higher prevalence of females (52.5%) was observed, and respondents mainly aged 61-70 years were most represented across all age groups (31.1%). Most of the respondents worked in hospitals (41.8%).

The SIGOT members answered that they consider hearing loss as clinically relevant is always important (55.7%) and that they

sometimes talk with their patients about hearing loss in 41.8% of the cases. Unfortunately, the 59.0% of the respondents had not any audiological center or fellow specialist of reference for hearing loss, even if an audiological consulting service is available in 50.8% of the cases.

Regarding the services and specialists available, the 77.9% of the respondents had not any audiologist/otolaryngologist to refer and almost all (89.3%) had not a structured experience between Geriatrics and Audiology or a structured advice in case of difficult cases (52.5%). Teleconsultation was not available in 82.8% of cases.

The SIGOT members suggested in the 70.5% that the National Health System should provide a contribution for the purchase of a hearing aid. Moreover, 38.5% of SIGOT members reported that the possibility of correction of hearing loss with prostheses or cochlear implants in older people is very good for older patients (Figure 1) and that in 87.7% a significant improvement in quality of life was observed (Figure 2). Cognitive and mood disorders are believed as the most important of priority for hearing aids in older people and the respondents reported that the combination of the assessment of hearing loss in compre-

hensive geriatric assessment, better collaboration with Audiology services, and the use of simple detection tools could be ideal for managing hearing loss in older people.

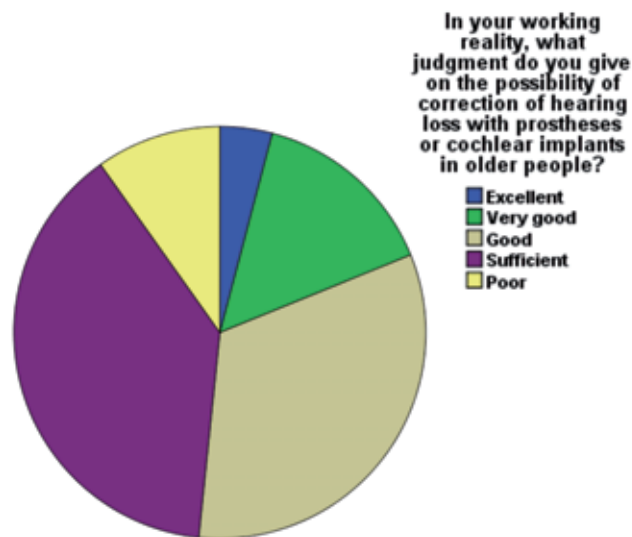
## Discussion and Conclusions

Overall, with this questionnaire exploring the interest of members of the SIGOT regarding hearing loss, we found that this condition is highly perceived by the physician as clinically relevant, even if the service network is still poorly available. Moreover, the respondents reported that, among all the conditions faced by the physicians dealing with older people, cognitive disorders, such as dementia, are probably the most important for hearing loss.

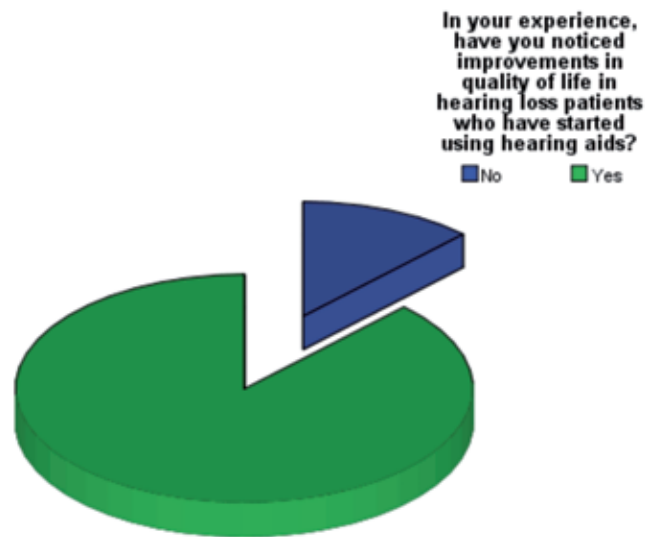
It is important to remember that the sooner hearing loss is detected, the better the outcome for the person with the loss. In this sense, hearing loss is associated with a spectrum of medical conditions, including cognitive difficulties, poor quality of life, and some systemic diseases such as rheumatoid arthritis.<sup>3</sup> Some studies have already reported that to correct hearing loss

**Table 1. Descriptive characteristics of the participants included.**

Question	Most frequent answer	Percentage
Age	61-70 years	31.1
Gender	Females	52.5
Italian region	Emilia-Romagna	17.2
Main clinical area of activity	Hospital	41.8
Do you take hearing loss into consideration in your professional activity?	All times	55.7
How often do your patients talk to you about problems related to hearing loss?	Sometimes	41.8
In the case of a patient with hearing loss, do you have an audiological center or fellow specialist of reference with whom you collaborate?	No	59.0
Is there an audiological consulting service for these patients at the facility where you work?	Yes	50.8
In your experience, have you had a fellow audiologist/otolaryngologist report hearing loss patients of old age?	No	77.9
In the field of health services with which you relate there are structured experiences of Geriatrics and Audiology Protocol?	No	89.3
In the field of health services with which you relate, there are structured experiences of Teleconsultation?	No	82.8
In the field of health services with which you relate, there are structured experiences of Structured advice on particular cases?	No	52.5
In your experience, have you ever mentioned to a patient that the National Health System may provide a contribution for the purchase of a hearing aid?	Yes	70.5
In your working reality, what judgment do you give on the possibility of correction of hearing loss with prostheses or cochlear implants in older people?	Very good	38.5
What could be the priority areas of use of hearing aids in older persons?	Mild cognitive impairment, mild dementia, mood disorders	27.0
In your experience, have you noticed improvements in quality of life in hearing loss patients who have started using hearing aids?	Yes	87.7
In your opinion, what may be the main needs to spread a culture of greater attention to hearing loss in older people?	Combination of the assessment of hearing loss in comprehensive geriatric assessment, better collaboration with Audiology services and use of simple detection tools	11.0



**Figure 1. Prevalence and rate of the possibility of the correction of hearing loss.**



**Figure 2. Prevalence of physicians indicating improvement in quality of life after starting hearing aids.**

with prostheses or cochlear implants may improve cognitive status in older people,<sup>11,12</sup> suggesting that we should target our screening campaigns in older people also for early detecting hearing loss.

At the same time, our survey suggests that the geriatricians have a great sensitivity in hearing loss problems in older people, but, unfortunately, they have not available a network of services and/or specialists that can help them in the management of this condition in daily clinical practice. In this sense, almost all the SIGOT members had not a structured pathway for managing hearing loss, including the use of telemedicine or teleconsultations. Despite this, several members reported that Italian National Health Care System should provide economic and non-economic helps for older people with hearing loss.

Finally, in the clinical experience of SIGOT members, the correction of hearing loss with prostheses or cochlear implants in older people may lead to a significant improvement in quality of life. This is probably due to several reasons and, in particular, that hearing loss affects social interaction and social relationships, primarily through its impact on verbal communication and conversation.<sup>13</sup> The improvement in social relationships can also decrease the sense of loneliness and depression, often found in people with hearing loss.<sup>14,15</sup> As reported, the SIGOT members indicated that the combination of multidimensional assessment of hearing loss combined with more resources and the use of simple screening tools could help in the management of hearing loss in older people.

The findings of our study must be inter-

preted within its limitations. First, the survey was conducted only in Italian. Second, there was a preponderance of senior researchers, and these views may not be representative of more junior colleagues.

In conclusion, our survey showed that interest in hearing loss problems in older people perceived by the SIGOT members is elevated, but some barriers, particularly in the availability of other specialists and in the services given by National Health System are still very limited. The interest of the association between hearing loss and cognitive disorders is high since, in the clinical experience of SIGOT members, the correction of hearing loss may lead to an improvement in quality of life, particularly in people suffered on dementia or mild cognitive impairment.

## References

1. Davis AC, Hoffman HJ. Hearing loss: rising prevalence and impact. *Bull World Health Organ* 2019;97:646.
2. Huddle MG, Goman AM, Kernizan FC, et al. The economic impact of adult hearing loss: a systematic review. *JAMA Otolaryngol-Head Neck Surg* 2017;143:1040-8.
3. Trott M, Smith L, Xiao T, et al. Hearing impairment and diverse health outcomes: An umbrella review of meta-analyses of observational studies. *Wiener Klinische Wochenschrift*; 2021;133:1028-1041.
4. Thomson RS, Auduong P, Miller AT, Gurgel RK. Hearing loss as a risk factor for dementia: a systematic review. *Laryngos Invest Otolaryngol* 2017;2:69-79.
5. World Health Organization. Dementia: a public health priority; 2012. Available from: <https://www.who.int/publications/i/item/dementia-a-public-health-priority>
6. Livingston G, Huntley J, Sommerlad A, Ames D, Ballard C, Banerjee S, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *Lancet* 2020;396:413-46.
7. Mamo SK, Nirmalasari O, Nieman CL, et al. Hearing care intervention for persons with dementia: a pilot study. *Am J Geriatr Psychiat* 2017;25:91-101.
8. International AsD. Dementia risk factors infographic. Our infographic showing 12 modifiable risk factors for dementia. Available from: <https://www.alzint.org/resource/dementia-risk-factors-infographic/>.
9. Griffiths TD, Lad M, Kumar S, et al. How can hearing loss cause dementia? *Neuron* 2020 [Epub ahead of print].
10. Kelley K, Clark B, Brown V, Sitzia J. Good practice in the conduct and reporting of survey research. *Int J Qual Health Care* 2003;15:261-6.
11. Sorrentino T, Donati G, Nassif N, et al. Cognitive function and quality of life in older adult patients with cochlear implants. *Int J Audiol* 2020;59:316-22.
12. Sarant J, Harris D, Busby P, et al. The effect of cochlear implants on cognitive function in older adults: initial baseline and 18-month follow up results for a prospective international longitudinal study. *Front Neurosci* 2019;13:789.
13. Hallam R, Ashton P, Sherbourne K,

Gailey L. Persons with acquired profound hearing loss (APHL): how do they and their families adapt to the challenge? *Health* 2008;12:369-88.

14. Cosh S, Helmer C, Delcourt C, et al. Depression in elderly patients with hearing loss: current perspectives. *Clin Intervent Aging* 2019;14:1471.

15. Shukla A, Harper M, Pedersen E, et al. Hearing loss, loneliness, and social isolation: A systematic review. *Otolaryngol-Head Neck Surg* 2020;162:622-33.

### Supplementary Table 1.

#### Survey on hearing loss in Geriatric Medicine

*The relationship between hearing loss and cognitive impairment in the elderly population is an emergent issue with growing interest in clinical and epidemiological research. Many studies have shown that older people with hearing loss, compared with people who do not have this problem, are significantly more predisposed to develop these deficits. According to the World Health Organization (WHO), there will be around 100 million people with dementia by 2050, compared to 36 million today. It is important to remember that any correction of hearing loss would not only be able to "prevent" the progression of dementia but could potentially alleviate its symptoms and delay the progression of disease. Hearing loss, in the ADI (Alzheimer's Disease International) report is considered one of the twelve risk factors for the onset of cognitive impairment. Research results suggest that greater attention to the prevention and early identification of deafness and, where there are indications, the adoption of simple remedies, such as the use of hearing aids, may delay the onset of hearing loss. dementia. The objective of the survey is to explore how well this problem is known in the Italian geriatric community and how to develop a collaboration with audiology services both for the possibility of correcting this deficit and for the possibility of evaluating elderly people with hearing loss in the context the geriatric assessment methodology.*

#### Interviewer data:

Age range: (indicate decades of age from 20-30 years up to 70-80 years)

Gender: Female/Male

Italian Region

Main clinical area of activity with the following options

- General Medicine/Primary Care
- Public facility outpatient clinic
- Private clinic
- Geriatrics hospital/University inpatient unit
- Other hospital/university department (specify the discipline \_\_\_\_\_)
- Nursing Home/Long Term Care Facility
- Home care

#### Question number 1

Do you take hearing loss into consideration in your professional activity? (check box, multiple answers allowed):

- All times
- Often
- Sometimes
- It is part of the basic geriatric evaluation
- I don't routinely evaluate it
- Never

#### Question number 2

How often do your patients talk to you about problems related to hearing loss?

- Never
- Rarely
- Sometimes
- Often
- Always

#### Question number 3

In the case of a patient with hearing loss, do you have an audiological center or fellow specialist of reference with whom you collaborate?

- Yes
- No

#### Question number 4

Is there an audiological consultancy service for these patients at the facility where you work?

- Yes
- No

#### Question number 5

In your experience, have you had a fellow audiologist/otolaryngologist report hearing loss patients of old age ?

- Yes
- No

#### Question number 6

In the field of health services with which you relate there are structured experiences of Geriatrics and Audiology Protocol?

- Yes
- No
- Routine activities
- For research only

#### Question number 7

In the field of health services with which you relate, there are structured experiences of Teleconsultation?

- Yes
- No
- Routine activities
- For research only

#### Question number 8

In the field of health services with which you relate, there are structured experiences of Structured advice on particular cases ?

- Yes
- No
- Routine activities
- For research only

#### Question number 9

In your experience, have you ever mentioned to a patient that the National Health System may provide a contribution for the purchase of a hearing aid ?

- Yes
- No

#### Question number 10

In your working reality, what judgment do you give on the possibility of correction of hearing loss with prostheses or cochlear implants in older people?

- Excellent
- Very good
- Good
- Sufficient
- Poor

#### Question number 11

What could be the priority areas of use of hearing aids in older persons? (check box, more answers allowed)

- Elderly with MCI (Minor Neurocognitive Disorder)
- Elderly with mild to moderate dementia
- Elderly with severe dementia
- Elderly with mood disorders
- Elderly people with balance and gait disorders
- Other (specify):

#### Question number 12

In your experience, have you noticed improvements in quality of life in hearing loss patients who have started using hearing aids?

- Yes
- No

#### Question number 13

In your opinion, what may be the main needs to spread a culture of greater attention to hearing loss in older people? (check box, more answers allowed)

- Assessment of hearing loss in comprehensive geriatric assessment
- Better collaboration with Audiology services
- Use of simple detection tools
- Use of telemedicine systems
- Knowledge of an audiometric examination
- Knowledge of the relationships between neuropsychological tests and auditory function
- Other (specify):