

Social Engagement and Hearing Loss

Helping patients with hearing loss avoid social isolation could be the key to a better quality of life and better physical and mental health—as well as a renewed focus for the hearing healthcare profession.



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Hearing, among all the senses, connects us to meaningful conversations and activities. Audiologic care needs to renew its focus on helping patients regain the communication and social engagement that makes life fun and rewarding.

By Lena Kauffman

When Michael A. Harvey, PhD, a clinical psychologist in private practice in Framingham, Mass, first began seeing patients with hearing loss many years ago, he was not surprised that a reduction in hearing ability would be associated with a host of psychosocial issues, including depression and loneliness. After all, hearing is an incredibly important sense and deafness carries the stigma of being associated with old age and infirmity. However, he was taken aback by just how strongly some patients were impacted by their hearing loss.



Michael Harvey, PhD

Early in his professional pivot toward treating the psychosocial issues of patients with hearing loss, Dr Harvey met a patient who remains imprinted in his memory today. The patient was a WWII paratrooper—an incredibly brave man who had once jumped out of airplanes and into battle. Casualty rates for paratroopers were many times that of regular troops, but the patient said that jumping out of an airplane into a battlefield could not compare with the terror he felt entering social situations with his hearing loss.

“It surprised me,” Dr Harvey said. “Anxiety is one thing, but terror is quite another.”

Today, after decades of treating psychological issues in patients who also have hearing loss, consulting with audiologists, and writing books about the issue, Dr Harvey has come to understand how critical being able to hear and communicate is to both the mental and the physical wellbeing of his patients.

And he is not alone. Researchers across the world have noted how hearing loss correlates with worsening health outcomes, increased healthcare costs, and poorer mental health. In the effort to understand why this is, they are looking at a range of possible factors and potential causal mechanisms. One of the most promising of those factors is how hearing loss that interferes with a person’s ability to communicate might be connected to social isolation.

“Mishearing something is humiliating, and humiliation is potent stuff,” Dr Harvey said.

POOR HEARING, POOR HEALTH

According to the Centers for Medicare and Medicaid Services, national health spending is projected to reach \$5.7 trillion by 2026, due in part to the aging of the population and the corresponding growth in costly medical conditions and chronic health problems associated with aging.¹ Healthcare leaders—like the 487 *New*

England Journal of Medicine Catalyst Insights Council members surveyed last year by the BDO Center for Healthcare Excellence & Innovation—are in what the international business advisory firm BDO calls “a race against time” to figure out how to lower healthcare costs and improve quality of life for seniors.² Unfortunately, there is not an easy technological solution to what the healthcare leaders said was the biggest social determinant of healthcare most crucial to improving elder care: familiar support. Or is there?

In November 2018, a two-part report³ was published in the influential *Journal of the American Medical Association (JAMA) Otolaryngology–Head & Neck Surgery*, based on an analysis of health data from more than 150,000 people 50 years and older reporting age-related hearing loss and no hearing aid use. Backing up other studies with similar findings, the report noted that over a decade of data on this very large group of older people shows that *untreated hearing loss was associated with 46% higher total healthcare costs*. According to the report, the reason people with untreated age-related hearing loss might be so costly to care for was that hearing loss was associated with:

- 52% greater risk of dementia
- 41% higher risk of depression
- 30% greater risk for falls
- 50% more hospital stays
- 44% higher risk of being readmitted to the hospital within 30 days.³

Furthermore, a 2019 study found that in a population of Norwegian patients, those with hearing loss were more likely to die due to cardiovascular disease before age 75 than those without hearing loss, and the strongest correlation was seen among the patients who were also divorced or separated (independent factors linked with loneliness).⁴

Can social isolation related to hearing loss *actually kill you* from stroke and heart failure—in poetic terms, dying of loneliness or a broken heart?

It’s a leap, but Dr Harvey thinks there could be a link. “Human beings are social creatures,” he said. “People need people, and if we isolate ourselves or become isolated, we’re going to have a variety of effects from it like depression, anxiety, poor health, or reduced cognitive functioning.”

Social isolation and loneliness by themselves are linked with an increased risk of hypertension, coronary heart disease, and stroke on par with the increase in risk due to smoking and obesity.⁵ The reasons why are not totally clear, but in a study of 3,392 British

men and women age 52 and older, socially isolated people were less likely than non-isolated participants to consistently report weekly moderate-to-vigorous physical activity and eating a healthy diet. They were also more likely to smoke and were less successful at quitting smoking.⁶

Results like these are part of the reason why the NEJM/BDO survey participants put “familial support” so far ahead of other social determinants of healthcare most crucial to improving elder care. It is intriguing to ponder if something as simple and relatively low cost as hearing aids and other communication technologies for people with hearing loss might help reduce social isolation. It could also conceivably strengthen support networks for the estimated two out of three US adults age 70 and older who could benefit from hearing aids but do not use them.⁷

HEARING LOSS AND SOCIAL ISOLATION

Humans communicate verbally through language, making hearing, among all the senses, uniquely important in effective and rewarding social interaction. When you can't hear enough to easily understand what is being said, it can be so frustrating and exhausting to communicate, that many people simply give up and withdraw from social engagement.

In 2016, researchers writing for the *International Journal of Audiology* quantified the psychosocial experiences of adults with mild-to-moderate hearing loss using a self-regulatory model originally developed by Howard Leventhal, PhD, and colleagues in 1980. No surprise to hearing care professionals, the researchers found that hearing loss was associated with “negative emotions, connotations and consequences,” and that people with hearing loss had both engaged coping responses (like getting hearing aids and learning lip reading) and disengaged coping responses (like withdrawing from other people).⁸

“I just wanted to be on my own and [with] people that I knew...I was frightened to meet new people because you don't know how they speak,” one participant in the study said.

A pioneer in researching the impact of hearing loss on social isolation is Barbara E. Weinstein, PhD, a professor of audiology at City



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University of New York. Dr Weinstein has been looking at social isolation in people with hearing loss since she first learned that social isolation could be measured during a graduate course in the 1970s.

There are two main ways to measure social isolation. One is through an objective measure arrived at by studying the person's social networks and seeing how many other people that person is connected to. The other way is a subjective measure arrived at by asking people to rate how lonely they are.

“Loneliness is the perception of the adequacy of your networks,” Dr Weinstein explained.

Among the seniors Dr Weinstein first studied, hearing loss was associated with both objective and subjective measures of social isolation, but the relationship was stronger with the more subjective social and emotional loneliness measure than the more objective social network measurement of isolation.⁹ “While my findings were published in a well-respected journal, most audiologists were not really interested in the data, because social disengagement was considered a normal trajectory as people aged in those days!” Dr Weinstein said.

Now that is changing, in part because researchers are eager to unlock why something as simple and low cost as fitting a patient with a hearing aid or gaining access to assistive technologies might be able to stave off such costly issues as those identified in the large-scale patient data research published last year in *JAMA*.³



Barbara Weinstein, PhD

For More on Depression and Hearing Loss...

A recent webinar and white paper by Victor Bray, PhD, sponsored by Hamilton® CapTel®, provides one of the most comprehensive reviews of the literature about the surprisingly complex association between hearing loss and depression—and why hearing care professionals may be co-managing depression with mental healthcare professionals in the future. To view the free webinar, visit <https://bit.ly/2VcEBVj>.



HEARING LOSS AND QUALITY OF LIFE

In 2018, Melanie A. Ferguson, PhD, a consultant clinical scientist in audiology and associate professor in hearing sciences at the NIHR Nottingham Biomedical Research Centre at the University of Nottingham in England, was the lead author on a systematic review with a large meta-analysis of outcomes for people with mild-to-



Melanie Ferguson, PhD

moderate hearing loss who were fitted with hearing aids. Published in the influential *Cochrane Database of Systematic Reviews*, the analysis showed that not only did hearing aids improve listening ability, but they also significantly improved measures of health-related quality of life.¹⁰

“We are still not certain what the underlying mechanisms are, but there is a clear association between hearing loss and all the psychosocial aspects: social isolation,

loneliness, depression, cognitive decline, and dementia,” she said.

Quality of life matters. In both the United Kingdom and the United States, government health policy makers are taking a hard look at addressing poor quality of life in seniors—and specifically loneliness. In the United States, the Health and Medicine Division of the National Academies of Sciences, Engineering and Medicine (NASEM) has convened a special committee on the “Health and Medical Dimensions of Social Isolation and Loneliness in Older Adults.” Similarly, last year, the American Geriatrics Society (AGS) developed a white paper calling on AGS members to play a more active role in promoting healthy aging, including addressing measures of health-related quality of life.¹¹ Additionally, UK Prime Minister Teresa May appointed a Minister for Loneliness to address an issue that Mark Robinson, chief officer of Age UK, says has been proven to be worse for health than smoking 15 cigarettes a day.¹²



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There is also strong evidence that emotional wellbeing and quality of life relates to resilience in the face of problems. One of the research projects Dr Ferguson is currently involved in is looking at how hearing loss may reduce resilience and ability to cope with other problems.

“None of this sounds like rocket science,” she said. “It actually seems quite obvious, but little has been published about it. It is called a *coping threshold*. People can cope up to a certain threshold, and if the hearing loss pushes them over, then the hearing loss is a major issue that impacts their mental wellbeing.”

From a psychology perspective, Dr Harvey adds that people who face difficulty communicating, as many of his patients do, are at risk of depression related to social isolation. When you are depressed, you are often unable to do those things required to manage other serious and chronic healthcare conditions, like follow a strict medication schedule, lose weight, exercise, or stop smoking/drinking.

“With depression sometimes comes difficulty following everything you have to do because you lose your motivation to do so,” he explained. “With some people, but not all, there is what’s called ‘passive suicidality.’ They are not actively suicidal. They are not going to go out and buy a gun or take pills to kill themselves. But they may think, ‘Hey, if my diabetes kills me, or if something else gets me, it’s okay.’ That’s common with depression, and depression is common with isolation. And hearing loss, if not treated, can be a cause of isolation.”

DEMENTIA AND HEARING LOSS

While some studies have found a correlation between hearing loss, social isolation, and worse health outcomes, all the researchers contacted for this report cautioned that we do not have a causal link. There could be *many* factors at play, including an independent and as yet unknown link between hearing loss and worse health or frailty in old age. Furthermore, teasing out causality is difficult because humans are not laboratory animals. It is unethical to take away or refuse to provide a proven safe and effective treatment like hearing aids in order to test what happens to a person’s long-term health when they can no longer hear well enough to communicate.

Piers Dawes, PhD, a senior lecturer at the University of Manchester, co-authored a study published last year in the *Journal of the American Geriatrics Society* that found evidence hearing aid use was associated with a slowing of measures of cognitive decline in a large cohort of older US adults.^{13,14} In their study, trajectories of cognitive function were plotted based on memory test scores before and after using hearing aids. After adjusting for potential confounders, they found that the rate of cognitive decline on the memory test was slower following the adoption of hearing aids.

This is just one study, and studies do not consistently show a benefit of hearing aid use on cognitive outcomes, so Dr Dawes remains cautious about jumping to conclusions. “It’s very difficult to dis-



Piers Dawes, BSc, DPhil

entangle causal effect and the mechanisms that may underlie the positive impact of hearing aid use on cognitive health, but I think that social isolation is at least plausible,” he said.

As evidence accumulates, hearing healthcare is getting the attention of governments, industry, and the media. In February 2019, the *Wall Street Journal* published “Hear Better, Think Better,”¹⁵ an article about recent research, like Dr Dawes’ work, suggesting hearing aid use could slow or even reverse cognitive decline in older people.

Dr Dawes noted that this interest is probably a good thing for older people overall because the assumption that dual sensory decline (eg, hearing and vision loss) and cognitive decline are natural and normal parts of aging could be causing older people real harm, leading to under-treatment of both conditions which have relatively simple, safe, and low-cost solutions. Worse, if the theories about the link between hearing loss, social isolation, and worsening health outcomes are correct, not treating age-related sensory decline could make people with hearing loss susceptible to more serious and costly illnesses later on in their lives.

“It’s becoming more and more important, rather than to be reactive in dealing with health problems once they’ve already occurred. Instead, we should do what we can to optimize wellness,” Dr Dawes said. “I think looking at optimizing sensory health in the context of aging is an important part of that.”

According to the Alzheimer’s Association, in 2018, Medicare and Medicaid spent an estimated \$186 billion caring for those with Alzheimer’s and other dementias—67% of the total costs of these programs.¹⁶ Regardless of the exact causal mechanism, if something as simple as fitting people with hearing aids or providing them with assistive technologies early on, when hearing loss first starts to impede communication, could reduce the risk of people to develop dementia by more than half, as the *JAMA* report³ suggests, then the savings in Medicare and Medicaid could be in the billions of dollars.

BRAIN CHANGES IN HEARING LOSS

In treating strabismus (lazy eye), pediatric ophthalmologists discovered long ago that it was critical to treat the condition early because a child’s developing brain will quickly give up trying to

make sense of the confusing visual input coming from the misaligned eye; instead, it simply tunes out the signals from that eye. Even when the condition is corrected, vision is not returned to the eye because the brain has stopped accepting signals from it.

Could the brain be making a similar choice when verbal communication becomes too difficult to understand due to hearing loss? Anu Sharma, PhD, an adjunct professor in the Department of Otolaryngology and Audiology at the University of Colorado at Denver Medical School, is studying neurological changes in older adults with hearing loss. She has observed that even in the early stages of hearing loss, the brain starts to throw more effort at interpreting auditory signals, recruiting other parts of the brain in the effort, including those that deal with executive function (decision making) and memory. However, after a certain point as the hearing loss worsens, it just gets too hard and the brain begins to tune out auditory communication.

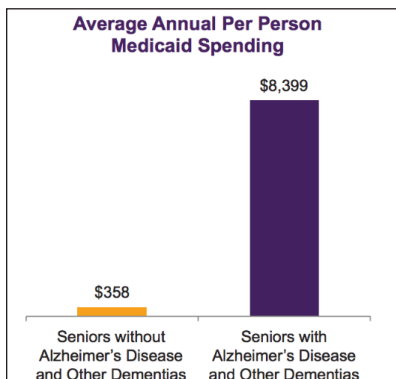
One intriguing possibility is that while hearing loss may not be the cause of cognitive decline and dementia, if hearing loss leads to the person withdrawing socially from other people or engaging in any form of rewarding two-way communication, it could lead to brain changes that accelerate cognitive decline—similar to what Dr Dawes observed in his study group.

The good news is that the changes in brain processing may be reversible. In a study Dr Sharma is conducting, participants who were fitted with hearing aids showed functional brain changes after 6 months that indicated their brains were starting to behave more like the brains of people without hearing loss.

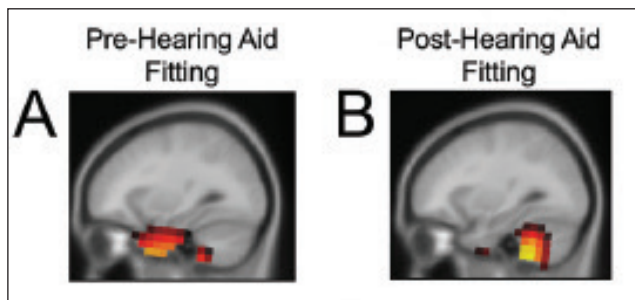
One of the things that Dr Sharma also observed was that the positive brain changes only occurred when the hearing aids were well fitted. As one would expect, if the hearing aid was not actually improving hearing to the point where the person could once again understand everyday verbal communication, the brain would



Anu Sharma, PhD



The social costs of Alzheimer’s Disease are devastating, and the monetary costs in treating people with dementia represent a major strain on our medical system. Source: Alzheimers Association.¹⁶



The brain’s processing centers can change in response to even mild-to-moderate hearing loss, as demonstrated in a recent article¹⁸ by Dr Sharma and her colleagues. Panel A illustrates a pre-hearing aid fitting response to visual stimulus: the adult shows recruitment of the temporal (auditory) cortex for visual processing in addition to occipital (visual) cortical areas. In other words, the parts of the brain responsible for vision are “annexing” parts of the brain normally reserved for hearing (indicated by activity in the more-forward region). Panel B illustrates that, within several weeks of hearing aid use, there is a reversal of this cross-modal recruitment.

not be impacted. For her studies, Dr Sharma and her colleagues do their own fitting of the hearing aid. It underscores that it is not the hearing aid itself that may be making the difference, but the *hearing aid’s* role in the larger outcome—restoring closer-to-normal communication for the patient.

Originally a pediatric audiologist who is now studying hearing loss in

seniors, Dr Sharma said she's come to believe that to avoid possibly negative brain changes, hearing aids may need to be fitted earlier when hearing loss first begins to interfere with communication and socializing. Additionally, older people with hearing loss may need more support than simply being fitted with a hearing aid and sent home with instructions.

"We wouldn't think of fitting a pediatric patient with a cochlear implant without some therapy, and we may need something similar for older adults," she said. "Many audiologists have ceded the therapy piece [for adult care] and I'm not sure why."

WHAT IT MEANS FOR HEARING HEALTHCARE

The World Health Organization (WHO) is compiling a report on hearing loss, and Dr Sharma is hopeful that it may include the impact of hearing loss on cognition. In her view, the amount of evidence accumulating about the correlation between hearing loss and cognitive decline, as well as other costly negative health outcomes, is a call to action for audiology.

"What it tells us is that the awareness about the impact of hearing loss on the brain is getting real," she said.

There is an opportunity to increase screening in the primary care setting for social isolation, depression, and hearing loss, and as a recent webinar (see sidebar on p 3) by Victor Bray, PhD, demonstrated, hearing care professionals may soon become an integral part of the multidisciplinary care team addressing these concerns.¹⁹

"There are going to be some people who will need more support with their hearing difficulties and communication, and I think this is really highlighting the requirements for audiologists to become more aware of the psychosocial consequences of hearing loss," Dr Ferguson said. "For audiology to continue to thrive, audiologists are going to need to become more conversant with these holistic approaches and be more confident in dealing with psychosocial aspects like depression, social isolation, and loneliness."

Dr Ferguson is overseeing a survey on what audiologists might need in terms of training to step into this role. "We can't expect audiologists suddenly to become conversant with a whole range of counseling skills or other interventions without training. And, in our survey, that is exactly what audiologists think too," she noted.

Dr Weinstein is among those urging this type of shift in the field and recently wrote an article in favor of re-framing the professional image of audiology and engaging in more counseling and advocacy regarding the contribution of hearing to one's overall wellbeing.²⁰

"I think the bottom line is that hearing loss interferes with the ability to communicate, and communication is critical for social engagement," Dr Weinstein said. "This is a whole different frame of reference in terms of what audiologists should look at and what we're doing. We're restoring hearing, audibility, and understanding so that we can restore the ability to communicate because that's essential to engagement."

She noted there is some evidence that part of the reason patients with hearing loss also have worse health outcomes is that good communication and a strong relationship with doctors, nurses, and other caregivers can improve the ability to understand and follow treatment recommendations. When hearing loss gets in the way of

communication and social interaction, patient harm may occur.

"Audiologists should be counseling patients and their caregivers how to be up-front about their hearing problems; how to say, 'Listen, I have difficulty hearing. This is how you need to communicate with me,'" Dr Weinstein said. "We have to be communication advocates for our patients, so they can learn to advocate for themselves, because it's difficult to affect change from [doctors to patients]...but if the patient says something and is proactive, then the doctor is likely to listen."

BEYOND HEARING AIDS: A CALL TO ACTION

Dr Weinstein did a survey of members of the New York City Hearing Loss Association of America, most of whom have cochlear implants and very significant hearing loss, and was blown away to learn that the people who took the survey overwhelmingly associated their audiologist with selling hearing aids. None associated audiologists with counseling and helping them with their hearing challenges. "We're seen as hearing aid sales people," she said. "We're not seen as professionals who help people live better with hearing issues. This must change if we are to remain a viable profession."

Some professionals in hearing healthcare are moving beyond the technology, however, and focusing on the overall quality of life of the patient, not just the hearing aid fitting. Dave Blanchard is the Strategic Business Development Manager for Hamilton® CapTel®, a leading provider of captioned telephone service, based in Aurora, Neb. Blanchard engages with hearing care professionals, doctors, and other advanced care clinicians all across the country, as well as family members of people with hearing loss. He reports that hearing care professionals often recommend a range of technologies, such as a captioned telephone, that can help patients stay connected with family and friends. Restoring communication and social interaction is the primary focus of Hamilton® CapTel®.



Dave Blanchard

"Oftentimes, particularly with veterans, hearing loss is perceived as less important than other chronic conditions," said Blanchard. "We work to educate people that addressing hearing loss is just as important as treating the other conditions. Eliminating barriers through the use of available technology, such as a captioned telephone, allows individuals with hearing loss to connect with family, friends, and businesses over the phone. Staying connected can be a critical factor in staying healthy."

New research linking hearing loss to isolation and negative physical and mental health outcomes resonates with Blanchard. Seeing the joy many Hamilton® CapTel® customers experience when they are able to once again communicate over the phone speaks volumes to the importance of human communication to overall wellbeing. Being there when a person who had previously been unable to communicate on the phone for a decade is finally able to call an old friend or speak to a grandchild is, for Blanchard, one of the best parts of his job.

“Veterans really focus on connecting with other veterans because it’s the other veterans who understand where they are at either emotionally or physically,” Blanchard said. “Likewise with family members and lifelong friends, if you’ve had a friend for 50 or 60 years, and you get to call that person and reminisce, it’s almost along the lines of some of the music therapy done in senior living communities where they will put music on from the ’40s. Suddenly, people who haven’t gotten out of their chair will get up and start moving. It’s almost like *that conversation* is music to their ears, because it puts them back to a time when they were kids and were climbing hills and trees and swimming in the river. The therapy that comes from that type of conversation, you can see the impact on people’s faces.”

Coincidentally, like Dr Harvey, Blanchard has a World War II paratrooper patient that sticks in his memory. She was a jump-nurse—one of a select number of nurses trained to parachute into a combat zone to render aid. Unfortunately, she had profound hearing loss that had kept her from connecting with a dear old friend and former fellow jump nurse named Sylvia. Only Sylvia could truly understand her experience as a jump nurse because she had been there jumping out of planes next to her.

“Because she was a family friend, I went ahead and helped with the installation [of her captioned phone],” Blanchard said. “We plugged it in, got it on their wifi network, and called her friend. She said, ‘Oh my gosh, Sylvia, I can’t believe I can see what you’re saying!’ That’s an amazing moment where you see the joy that can come as a result of a simple connection to somebody you really care about.”

Aging brings physical limitations and introduces health chal-



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lenges that can make connecting with your social network more difficult. Research continues to shed light on the importance of social engagement and how the support of others—friends and family we live for—is even more important as we age. Being able to hear better may not seem that important when considering how to treat serious chronic illnesses, but the correlations between hearing health and overall physical and mental health may mean that hearing is much more important than people previously believed.

Lena Kauffman is a freelance writer and the former editor of Hearing Review's sister magazine, Sleep Review. She is based in Ann Arbor, Mich.

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