Cognition and Hearing Health: A Call to Action, and How We Can Help Our Patients

Presenter: Tammy Stender, AuD

Hello. Thank you so much for joining me today. My name is Tamara Stender and I'm a director of Global Audiology External Relations for GN Hearing Today. I'm so glad you joined me because I'd like to talk about a topic that has been in the news and that may come up in our clinics with more regularity, and it is the link between cognition and hearing health. What I'd like to talk about today is some of the recent research, what it means to us as hearing professionals and what we should do with it, a call to action, and most importantly, how we can help our patients who may have questions about what they've seen or who may be already experiencing some cognitive decline.

The learning objectives for today are to identify the manifestations of the social and emotional impact of hearing loss, to discuss recent research linking cognition and hearing loss, and list the potentially modifiable risk factors for dementia, and to explain ways to talk about these findings in research regarding cognition and hearing loss in your clinic, detailing certain hearing aid selection considerations and programming considerations that may optimize the fitting for individuals with cognitive decline. But first, I'd like to share with you a couple of stories. When I was a little girl, my family would drive from Iowa to upstate New York to visit my grandparents and I loved to do this. Every summer I would wake up in the morning and my grandmother would come meet me and was singing to me first thing in the morning all of these romantic songs from South Pacific and other musicals from long ago, telling me about all these romantic stories that she remembered from her youth. I loved hearing these stories.

But as time went on, it became more and more apparent that she was losing touch with the present day reality and she was living more and more in the past in those memories. My father in law from the west coast was a really fun and intelligent guy to hang out with. He loved automobiles. He always had a few cars that he was in the process of fixing up at his house and he would go to Indy 500 races every single year. But one year when he came to visit us where we live with our family in Chicago, we were on Interstate 94 and he became very agitated.

He looked out the window and he said, why are there children on TriCycles on Interstate 94 now? As you can imagine, I94 is a very busy road and there would never be children on tricycles riding along I94. He was seeing things that were not there and was very upset by what he was seeing because it didn't make sense and he knew it. Both my Grandmother and my father in law have passed on, but I admire both of them so much for how they lived their lives. They did everything they could with the knowledge available to them during their lives to have the best healthy outcomes later in life.

My grandmother was a home EC teacher, was wonderful to her students and a very active member of her community. My father in law school so engaged in the auto hobby and watching the Indy 500 all the time, and yet both of them had difficulties with their mental abilities later on in life.

So that leads naturally to a question of what does the future hold for me or for anyone else that I love around me? Will I be living in the past? My romances and memories from my early 20s, my glory days? Or will I be scared because I saw something that doesn't make sense, that no one else could see on the interstate? There's no way of really knowing what life holds for us in the future, but all we can do is make the best decisions we can with the knowledge available to us in the present day to have the healthiest aging outcome possible.

We might not know how to control everything. We don't control everything. But is there anything that can help us live longer, healthier lives? Research has been published recently that has really started to look at the link between cognition and hearing loss, as well as many other potentially modifiable risk factors for dementia and cognitive decline later in life. But what's really important to us as hearing professionals is, is this link that has been identified in many studies between cognition and hearing loss, none of it being causal, all of it being correlational, but something that we can no longer ignore.

When patients come into our offices and ask us, what do you think about this research about the risk of dementia and hearing loss? What can we say to them? We don't want to scare them necessarily. We

definitely don't want to tell them that hearing loss is a causation for dementia later in life. Because the research doesn't suggest that.

It just suggests that it's a risk factor. And like any risk factors, it's something to be noted and also something to consider if there's ways of mitigating that risk. So while we don't want to scare our patients, we also want to be able to talk intelligently with them, calmly and confidently, and yet still within the scope of our practice of what we are comfortable saying as hearing professionals. Many of us, myself included, had no special training in cognition when I was in grad school. So this is something that might not be so comfortable for me to talk about, but there's got to be a happy medium of looking at the research and explaining it in a way that makes sense to patients without scaring them, but with giving them tools to improve their lives.

How big of a problem is this, this hearing loss? Well, if you just look in the United States, one in six US adults aged 18 and over report some trouble hearing. That translates to about 38 million US adults. Of these, about 29 million could benefit from using hearing aids. And yet only 1 in 4 US adults ages 20 and over who could benefit from hearing aids has ever used them.

This is something that means that it is a public health issue. It is something that impacts the way that our population goes through life and uses services and medical resources. It's a huge problem that probably will affect us personally, if not for ourselves, but for our loved ones. And yet people who have hearing loss don't always do something about it. And this leads to an impact that is harder to measure but has a huge impact on the quality of life.

The impact of untreated hearing loss, that is having hearing loss that affects the way that you interact in your life, is largely social and emotional. It can manifest in terms of depression, loneliness, avoidance, withdrawal, anger, reduced alertness, isolation, irritability. All of these things draw us more into ourselves and gets us away from other people. And interacting with other people is good for us. It

keeps us young, it keeps us happy and engaged.

And the research is showing that these kinds of engagement opportunities are so important for healthy aging. So. So the impact of hearing loss goes far beyond not hearing what the waiter said when they asked for your order. It's in how you live your life in the greater sense. Many of you may have seen this infographic.

It comes from a 2024 Lancet journal article that talks about potential modifiable risk factors for developing dementia. It looked at a great number of studies regarding comorbidities and possible links with certain conditions and development of dementia. Hearing loss was identified as one of those potential modifiable risk factors. And in fact, at 7%, meaning that 7% of dementia cases could be attributed to untreated hearing loss, it was the largest potential modifiable risk factor for dementia, tied with high LDL cholesterol. This is huge.

This is very impactful. It means that the social and emotional impact of having untreated hearing loss, of withdrawing, is having impact in the risk of developing dementia later on in life. When you look at hearing loss and some related risk factors that they identified, such as depression and social isolation later in life, you see that that accounts for 15% of dementia risk. This is very important. And what do we do with this information?

If there is something that we can do now to help people along the way not experience dementia, it has an impact not only for that individual, but for public health in our country as well. One of the studies that was highlighted in the Lancet article was released in 1989. Yes, it's also the name of the Taylor Swift album, But this was a really important study because it was the first to develop the hypothesis that there was a link between cognition and hearing loss. The study looked at 100 people with Alzheimer's type dementia and 100 matched controls. And what they found was that the prevalence of people with hearing loss, 30dB or greater, was higher in the group with Alzheimer's type dementia than in the

control group.

And in fact, that continued for people with even greater severity of hearing loss had an even greater percentage of people in the Alzheimer's type group. What this is important for is that no one had ever really studied the link between cognition and hearing loss at that time. And it opened up people's minds to the fact that there might be some link over the next 25 years. There were not a lot of studies done between cognition and hearing loss. But in 2011, a study was released by Frank Lin and his colleagues at Johns Hopkins.

This study was a longitudinal study over 25 years looking at 3,777 test participants, of which one third reported difficulties hearing and 2/3 reported that they were doing fine with their hearing, whether that meant that they had fine hearing or were wearing hearing aids. What they found is that in the group that reported hearing loss, there was twice the risk of developing dementia with even a mild hearing loss. And as the severity of untreated hearing loss increased, so did the risk of dementia. What was interesting was that they looked at the comorbidities and found this to be a finding that was correlated to speech, despite isolating the other variables. And as well, they also identified that men with hearing loss had a greater likelihood of developing depression.

Furthermore, after further analysis, the group that had been wearing hearing aids was not experiencing some of those comorbidities that went along with having untreated hearing loss. And people who were not having troubles with their hearing were able to live independently longer in life, much like people with normal hearing would have.

Jumping forward to 2023, Frank Lin did another study. He wanted to see if there was any kind of correlation between wearing hearing aids and not wearing hearing aids on cognitive Decline. He had 977 test participants in this study, and of those, 25% were identified to have other risk factors, cardiovascular risk factors in particular, that would also make them more likely to develop dementia.

What he found was that in the group that had cardiovascular risk factors, hearing aids, meaning hearing intervention, slowed down the loss of thinking and memory abilities by 48% over the course of three years. Now, as with any statistics, this means that this is a good idea to talk about and to think about as we move forward.

There is no causation, it is all correlation. But it is stunning in the ability to highlight that we might be able to help people live longer, healthier lives well into their later years. And therefore, we have a call to action. What do we do with this information? What is appropriate to say, how do we say it?

And how do we fit our hearing aids to help people? What kind of evidence is there in the academic research that would guide us to have the best outcomes? We don't want to scare people. We don't want to tell them that not wearing hearing aids is going to cause dementia. Clearly, that is not correct.

We don't want to say that untreated hearing loss is causative, because that's not what the research says either. What we want to say is that there has been a correlated link between cognition and hearing loss and that the studies suggest that being able to hear well is going to help you live healthier lives later on. Well, the wonderful thing is that although we may have not been specifically trained to talk about cognition and dementia, we have been specifically trained to talk about hearing and hearing loss. Counseling and making referrals is very ingrained in our profession, and we are uniquely positioned to help people in this way. And it all starts with our humanity, with common sense, things that we know that might not be common sense to people who haven't studied in our field.

Number one, having a family member present when you give these kinds of recommendations is so important to help the patient later on when they go home and try to remember what exactly was said. It helps everyone, but especially those who are having problems with cognition. Focusing on good communication strategies is of utmost importance, again, for everyone, but even more so for people who have hearing loss and who are getting used to wearing hearing aids. That involves not having

conversations in different rooms while there's background noise, making sure that you can see the speaker. All of the things that we've been taught and we can pass along.

Helping people understand their hearing loss and the health effects of it is a natural extension of what we do when we explain that they have A hearing loss and what this might mean to them. This helps them understand why it is that they have no problems hearing you in the clinic because you're in a quiet room, but they have a really hard time in that restaurant or at that party that they went to last weekend. Providing resources to the patient on more information about hearing loss, if they're interested, or how to use their hearing aids, is paramount to our profession. And yet we discuss realistic expectations. This is not going to restore your normal hearing, nor will it make it perfect in every situation, but it is going to help you and it is going to help you engage in those social interactions that are so important, not only for the moment, but for your overall well being and quality of life.

And with that, we provide positive messaging and optimism, focusing on the known benefits of addressing hearing loss, of which there is plenty of research to support in terms of improved communication, quality of life, healthy aging. It helps people stay active longer and more engaged with their loved ones and everyone around them. When the discussion gets too deep into the dementia side and into what kind of testing might be required for an individual, then that's when we make referrals. That's when I don't feel comfortable talking about it in my experience, so I know there's someone better to talk about it. And that person I will refer them to.

This is truly what we do every day. And what brings people in to see us beyond counseling and making referrals? We have a very, very good niche here with hearing aids. We know what kinds of styles will be best for people looking at them as a whole individual. So what kind of manual dexterity do they have?

Are they shaking? Are they able to see well? If they drop the hearing aid on the floor, will they be able to pick it up? Will they be able to see it? So how durable is that hearing aid need to be when we select it

for them?

What kind of power do they need to get the best benefit out of their hearing aids to make sure that things are audible for them and how easy do they need it to be to use? Are they going to be ones that use an app and all of the accessories? Do they want the most that they possibly can in every situation, or would they be better served with a single program that automates everything for them? And depending on what we observe as humans of the patient sitting in front of us helps us guide ourselves and the patient to better considerations on hearing aid style. And with that, we make recommendations on technology as well.

Again, looking at the whole patient, not just their audiogram. So Automation can be very helpful for people with cognitive decline because it takes one less thing out of their lives to worry about. If the hearing aids are able to segue seamlessly from a quiet environment to a noisy environment, by going from omnidirectionality to directionality when appropriate, that just makes it easier for them to use. Noise reduction can make it more comfortable to listen in difficult listening situations. And when it's more comfortable, they have to use less mental abilities to focus on what's going on.

Programming capabilities such as adjusting the attack and the release times is available in many of our products. And that way you can make it easier to understand based on the amount of distortion or the quickness of the time constants that we use for compression. Adjustability and customization can be the finishing touch for a personally fitted device. And that's what brings people to us, after all. Finally, compatibility with accessories for those situations that are really difficult, really noisy situations, like going to a place of worship or a holiday party, or working around the table with your work group at the office, accessories can be the difference between success and failure in the most difficult noisy environments.

The Lancet study identified a particular study in speech and noise hearing, and this study identified that people who perform poorly on speech and noise tasks, which in the clinic would be something like a QuickSync, had almost two times higher odds of developing dementia compared to those who had good speech and noise hearing. So this means that it's something that we really need to pay attention to when we are working with someone who has known cognitive difficulties or working memory decline. Speech and noise is going to be a very important part that we get right for them to make them successful in their everyday interactions. It is of course the biggest issue for people with hearing loss anyway. It is what brings them to us.

So we need to make sure we solve this problem when we are treating our patients and we have plenty of tools to be able to do it. We have hearing aids with four microphone directional beamforming when needed, which helps them really focus in those do or die situations where they have to be able to understand the person in front of them. Companion mics that allow them to hear someone who might not be right in front of them, but they need to hear well. So like a lecturer in a hall or in a place of worship, or even just across the table at a family gathering at a restaurant, TV streamers to be able to hear the TV at a reasonable volume for everyone else in the room, and Auracast broadcast streaming, which along with telecoils, helps people with hearing aids hear better in the most difficult reverberant listening situations. Luckily, there's research that guides us in ways to program hearing aids for people with cognitive decline as well, and these are considerations that we can keep with us when we are faced with someone who has these known cognitive issues.

For example, lowering the distortion is a common theme in in the academic research in this space. Earhart did a study in 2013 that looked at older listeners with poor working memory abilities and found that they are more susceptible to the effects of signal distortions. And she highlighted in her study those that are in frequency lowering in these noisy environments. So with that, perhaps limiting frequency lowering to a more conservative setting would be appropriate for people with known cognitive disorders

decline. Also, Gatehouse did some studies in the early 2000s that looked at time constants and people with cognitive decline and determined that slower time constants for wide dynamic range compression could be beneficial for this population as well.

So these are just guidelines that might help guide us to a better fitting and better outcomes for for our patients as individuals and when we are looking for automation resound 360 all around truly is an all encompassing program. It allows users to go through their day without having to change programs or settings on their apps because it already changes those settings for them, whether the user is in a quiet environment where they would prioritize hearing all around them and those spatial cues of a nature walk, for example, or a moderately noisy environment where the speaker changes often, such as a restaurant environment where you need to hear the wait staff as well as your friends telling jokes around the table, or a do or die situation of speech, intelligibility being of utmost importance when you need to be able to hear the person in front of you regardless of the level of noise behind you. All of these environments are commonplace in people's lives and being out and being able to engage in a variety of environments all contributes to healthy aging. It all helps people be more successful no matter where their day takes them and lets them be the person that they want to be without having to think about their hearing, without having to worry about changing programs. All of this is encompassed in the 360 all around program for them to live more naturally and a more healthy way of aging.

So the research is coming out and we are starting to illuminate our path to having better knowledge about the link between cognition and hearing loss. While we don't have all the answers yet, and we don't have the solid recommendations that we know will work, we also know that we work with with individuals who may have specific needs. One individual will have different needs than another, but it gives us information to better serve our patients. With this research that our patients might have already heard about, we are able to talk about things in a way that is within our scope of practice, as well as do something about it, which is to fit them appropriately with amplification that see suits their needs.

Because, after all, we don't know what the future holds for any of us.

All we can do is use the information and knowledge that we have today to make choices that will hopefully help us live healthy lives way into our later years. This is how I see myself, active and engaged, able to do whatever I want to do, no matter how old I become. This is what I want for every one of my patients. Thank you so much for joining me today, and I appreciate your time.