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## **Tinnitus Treatment and the Effectiveness of Hearing Aids: Hearing Care Professional Perceptions**

by **Sergei Kochkin, PhD, and Richard Tyler, PhD**



***Sergei Kochkin, PhD**, is the executive director of the Better Hearing Institute, Washington, DC, and **Richard Tyler, PhD**, is a professor in both the Department of Otolaryngology-Head & Neck Surgery and the Department of Communication Sciences and Disorders at the University of Iowa, Iowa City. He has authored numerous articles and edited three books on the subject of tinnitus, including *Tinnitus Treatment: Clinical Protocols* (Thieme Publishing), *Tinnitus Handbook* (Singular Publishing), and *The Consumers Handbook to Tinnitus* (Auricle Ink).*

### **Hearing aids are an exceptional starting point for tinnitus patients who also have hearing loss**

It is estimated that 10% to 15% of the US population experiences chronic or persistent tinnitus (eg, ringing in the ears or internal head noises).<sup>1</sup> About half of the people with tinnitus are bothered by it, and it is reported that about 1% indicate that tinnitus substantially affects their life. Tinnitus can have a direct impact on a person's emotional well-being, their hearing, and ability to sleep and to concentrate. These in turn influence basic life functions such as socialization and relaxation.<sup>2,3</sup> In severe cases, it can interfere with the individual's ability to perform adequately on the job, or contribute to psychological disorders such as depression, suicide ideation, posttraumatic stress disorder, anxiety, and anger. The constancy of tinnitus and the lack of control can provoke fear, which exacerbates the problem, leading to an ever-increasing cycle of distress in the person suffering from tinnitus.<sup>4</sup>

Despite the high prevalence of tinnitus and its obvious impact on the psychological health of the patient, only a small number of people contact physicians or hearing care professionals for help. The reason perhaps lies in the widespread belief that tinnitus is incurable or untreatable. Yet, there are several methods for treating tinnitus by alleviating the impact it has on quality of life.<sup>3,5,6</sup>

One major inadvertent tragedy associated with the belief that tinnitus cannot be helped is that people, in addition to not seeking help for their tinnitus, also do not seek help for their hearing loss. In a recent large-scale survey of the US hearing-impaired population who had neglected their hearing loss, 39% (more than 9 million adult Americans) indicated they had not sought help for their hearing loss specifically because they concurrently had tinnitus.<sup>7</sup>

The literature is quite specific that untreated hearing loss negatively affects nearly all dimensions of the human experience. Research demonstrates the considerable negative social, psychological, cognitive, and health effects of untreated hearing loss—with far-reaching implications that go well beyond hearing alone. In fact, those who have difficulty hearing can experience such distorted and incomplete communication that it seriously impacts their professional and personal lives, at times leading to isolation and withdrawal. Studies<sup>8,9</sup> have linked untreated hearing loss to:

- Irritability, negativism, and anger;
- Fatigue, tension, stress, and depression;
- Avoidance or withdrawal from social situations;
- Social rejection and loneliness;
- Reduced alertness and increased risk to personal safety;
- Impaired memory and ability to learn new tasks;
- Reduced job performance and earning power; and
- Diminished psychological and overall health.

**A survey of 230 hearing care professionals suggests that six out of 10 patients (60%) experience minor to major relief of tinnitus when wearing hearing aids, and a total of one in five (22%) receive major relief. Less than 2% of patients experience a worsening of their tinnitus when wearing hearing aids, while 39% receive no benefit.**

So the individual with both untreated tinnitus and untreated hearing loss would be expected to suffer an even more diminished quality of life than individuals with only tinnitus or only hearing loss.<sup>10</sup>

We believe that, if hearing care professionals can provide effective treatment for tinnitus, they can also be instrumental in motivating people to concurrently treat their hearing loss. This will have a double impact in improving their patients' quality of life.

Nearly everyone with tinnitus also has a hearing loss. For those with hearing loss, hearing aids should obviously improve their hearing and communication. But many do not appreciate that hearing aids can also improve tinnitus:<sup>11-15</sup>

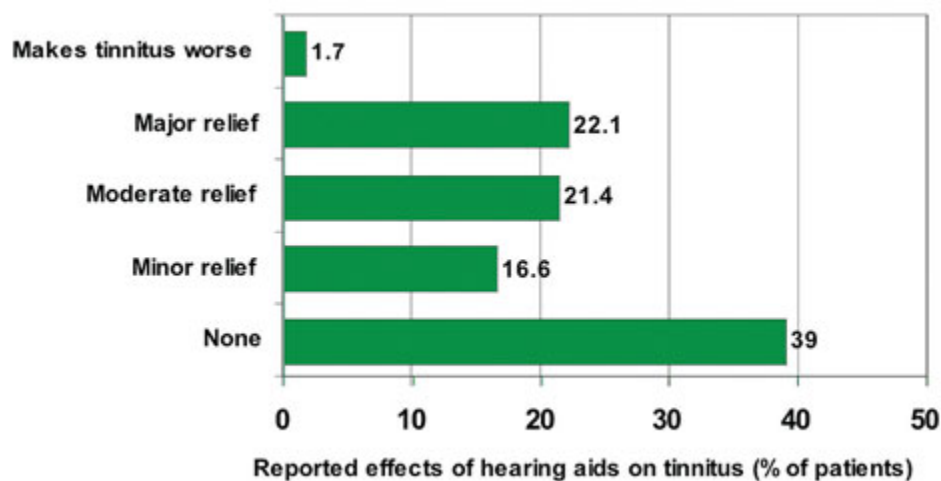
- Improving communication reduces stress, therefore making it easier to accept or cope with tinnitus.
- Amplifying background sound, or producing background ambient noise, thereby reduces the loudness or prominence of tinnitus.

New open-fit hearing aids might be a particular effective sound therapy for some suffering from tinnitus.<sup>13</sup>

Tinnitus is likely coded by spontaneous neural activity in the auditory cortex, perhaps as an increase in activity, an overrepresentation of some frequency-tuned neurons, or an increase in synchrony across neurons. By viewing hearing aids as physiotherapy or sound therapy for the ears, the very act of listening to sound exercises the auditory portion of the brain.

In the presence of hearing loss, the fitting of hearing aids activates the auditory cortex. Thus, sounds amplified by hearing aids may interfere with the central auditory representation of tinnitus.<sup>13</sup> Hearing aids might be viewed as Gestalt therapy for the ears since tinnitus that was previously conspicuous in the foreground is relegated appropriately to the background with all other environmental sounds. The very act of taking the focus off of tinnitus spells relief for many people.

The purpose of this paper is to report the results of a survey of hearing health care practitioners in America on their ability to treat tinnitus with hearing aids and other strategies.



**FIGURE 1.** Reported effectiveness of hearing aids on patients with tinnitus (survey of 230 hearing health care professionals). About 60% of patients are reported to receive some benefit.

## Method

An online survey on tinnitus mitigation was sent to the subscribers of the Better Hearing Institute's newsletter in August 2008. A total of 230 hearing care professionals responded to the survey through September 2008: 76% were audiologists, 21% hearing instrument specialists, 1% otolaryngologists, and 1% other. In terms of practice setting, 41% were in private practice audiology, 20% were private practice hearing instrument specialists, 16% worked in an otolaryngology office, 9% in a hospital, 7% for the Veterans Administration or military, 5% in a clinic or health maintenance organization, and 3% in a university clinic. Respondents resided in 44 of the United States or in Canadian provinces.

## Results

With respect to prevalence of tinnitus in their practices, the respondents varied widely from a low of 2% to a high of 100%; the median was 50% of all patients seen in a typical day by the typical hearing care professional. A median of 9% of their patients experience tinnitus so severe as to interfere with their ability to lead a normal life. Hearing care professionals rarely treated a patient with tinnitus who did *not* have concurrent hearing loss; only 3% (median) of tinnitus patients were reported to have normal hearing.

A total of 1 in 4 respondents considered their practices as *specializing* in the treatment of tinnitus, and 35% of practitioners in fact used psychometrically valid tinnitus severity scales in their practice.<sup>4,5,16</sup> With respect to education, 44% of practitioners never took a course on tinnitus treatment, 32% took 1 course, 16% 2 courses, and 8% took 3 or more courses. As part of their education on tinnitus, the typical hearing care professional had read on average (median) 5 books or articles on the subject.

In terms of treatment, the average tinnitus patient received a median of 10 minutes of counseling and 18% were recommended self-help books or articles (eg, *Living with Tinnitus*,<sup>17</sup> *Tinnitus: A Self Management Guide for the Ringing in Your Ears*,<sup>18</sup> or *The Consumer Handbook on Tinnitus*<sup>19</sup>). A median of 60% of hearing care providers use sound therapy devices to treat tinnitus. The vast majority (88% median) of hearing care professionals use hearing aids to treat their patients' tinnitus. The minority (<1%) use maskers, combo hearing aids/maskers, music therapy devices, or environmental sound generators. The majority (90% median) use partial versus total masking to treat tinnitus.

For 20% (median) of patients, the hearing care professional increased the amplification of low-level sounds as part of treatment.<sup>20,21</sup> For 10% (median) of patients, the hearing care professional reduced the maximum output when fitting the hearing aid as part of treatment. This was likely a result of concomitant loudness hyperacusis.

What about efficacy—that is the ability of hearing aids to alleviate the effects of tinnitus? Referring to Figure 1 (mean values), the hearing care professionals report that 6 out of 10 patients (60%) reported minor to major relief of tinnitus when wearing their hearing aids. A total of 1 in 5 (22%) receive major relief. Less than 2% of patients experience a worsening of their tinnitus when wearing hearing aids, while 39% receive no benefit.

In our survey of hearing care professionals, they felt that 20% of their patients were inadequately served by any existing treatment modalities.

## Conclusions

Nearly 9 million people with hearing loss have not sought out the services of a hearing care provider because they have tinnitus and believe that nothing can be done about it. Most people with tinnitus also have hearing loss. In addition to improving communication, hearing aids can also help tinnitus. The results from this survey indicate:

- 60% of patients report some relief of their tinnitus when using hearing aids;
- 22% actually report major relief of their tinnitus when using hearing aids;
- 56% of respondents to the survey reported they had taken at least one course on tinnitus;
- The median time spent in tinnitus counseling was 10 minutes;
- 18% of respondents indicated they distributed a self-help book on tinnitus to their patients.

Future research by the Better Hearing Institute will evaluate from the consumer's perspective both the prevalence of tinnitus and the efficacy of hearing aids in relief of tinnitus. We have recently developed suggested guidelines for setting up a tinnitus clinic<sup>22</sup> in the hope that more hearing care professionals will be motivated to do so.

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