

ORIGINAL RESEARCH

Long-Term Effectiveness of Ear-Level Devices for Tinnitus

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OBJECTIVE: This study was undertaken to assess long-term changes in tinnitus severity exhibited by patients who purchased and used ear-level devices (hearing aids or sound generators).

STUDY DESIGN AND SETTING: Patients were evaluated and treated within a comprehensive tinnitus management program. Follow-up questionnaires were mailed to patients 6 to 48 months after their initial appointment.

RESULTS: Follow-up questionnaires from 150 patients were reviewed. Fifty patients purchased and used hearing aids, 50 patients purchased and used in-the-ear sound generators for an average of 18 months after their initial appointment; 50 patients did not use ear-level devices. At follow-up, all 3 groups of patients exhibited significant reductions in Tinnitus Severity Index scores and self-rated tinnitus loudness. Patients who used ear-level devices reported greater improvement than patients who did not use hearing aids or sound generators.

CONCLUSIONS: Ear-level devices such as hearing aids or sound generators can help a significant number of patients who experience chronic tinnitus. Both types of devices reduce patients' perception of tinnitus and can facilitate habituation to the symptom. Amplification provides additional benefits of improved hearing and communication.

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Most cases of chronic tinnitus, especially those associated with sensorineural hearing loss, cannot be “cured.” Unfortunately, this fact prompts too many clinicians to tell patients that “nothing can be done” for tinnitus. The statement “because nothing can be done for tinnitus, you just have to learn to live with it” is both erroneous and counterproductive. Even though a true “cure” for most cases of chronic tinnitus is not yet available, patients can obtain

relief from the symptom with assistance from informed clinicians.

Duckro et al¹ wrote “As with chronic pain, the treatment of chronic tinnitus is more accurately described in terms of management rather than cure.” The goal of tinnitus management is not necessarily to mask or remove the patient's physical perception of tinnitus. In many cases, this is not possible. Successful tinnitus management enables patients to pay less attention to their tinnitus. An effective tinnitus management program can help patients to understand and gain control over their tinnitus, rather than allowing tinnitus to control them.² The ultimate goal of tinnitus management is to reduce the *severity* of tinnitus for each patient. Tinnitus severity can be defined and quantified several ways: by how much or how often a patient is bothered by tinnitus; by how much or how often tinnitus detracts from the patient's enjoyment of life; or by how disabling patients perceive their tinnitus to be.³

Acoustic therapy is a vital component of effective tinnitus management.⁴ One definition of acoustic therapy is *using external sounds to provide relief from tinnitus*. Strategies for individual patients can include background music, relaxation tapes or CDs, tabletop sound machines, fountains, or waterfalls, pillows embedded with speakers, hearing aids, ear-level sound generators, and bone-anchored or cochlear implants.

Regardless of which devices are used, the rationale for acoustic therapy remains the same: increase the level of external sounds to decrease the patient's perception of tinnitus. Here is an analogy that can help to explain the concept to patients: bothersome tinnitus can be thought of as a candle burning in a dark room. Even a small candle flame seems bright in a dark room. When overhead light fixtures

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are turned on, however, the same candle flame becomes much less noticeable than it had been in the dark.

Previous studies attempted to assess the effectiveness of hearing aids.^{5,6} These studies did not, however, assess long-term effects of amplification on tinnitus severity. This is an important point to consider because patients' perception of their tinnitus often changes with time. Other studies attempted to assess the effectiveness of ear-level sound generators (or "maskers") for tinnitus.^{7,8} These studies concluded that a majority of patients benefited from using the devices. None of the studies included pre- or post-treatment measures of tinnitus severity to quantify patient improvement.

The present study was undertaken for the following reasons: (1) to assess long-term changes in tinnitus severity exhibited by patients who used hearing aids or ear-level sound generators as part of a tinnitus management program; and (2) to contribute to the development and refinement of effective assessment and management procedures for tinnitus.

MATERIAL AND METHODS

Detailed questionnaires were completed by patients before their initial appointment at the Oregon Health & Science University Tinnitus Clinic. Questionnaires requested information about patients' medical, hearing, and tinnitus histories (see Johnson⁹ for complete questionnaires). Twelve questions were included that constitute the Tinnitus Severity Index (see Appendix), an efficient indicator of the negative impacts of tinnitus upon patients.¹⁰ Patients rated the loudness of their usual tinnitus on a 1-to-10 scale (see Appendix). An abbreviated version of the Beck Depression Inventory¹¹ was also included. Information from these questionnaires was entered into a database known as the Oregon Tinnitus Data Registry.

The initial appointment at the clinic had the following format:

1. The Tinnitus Management Team (composed of an otolaryngologist, a neurophysiologist, and an audiologist) reviewed questionnaires and medical records before meeting each patient.
2. At their initial appointment, patients met with all Management Team members for an in-depth interview and review of their medical, hearing, tinnitus, and psychosocial histories and conditions. Patients received education about possible causes of tinnitus as well as reassurance and counseling regarding factors that could exacerbate or improve their condition.
3. Otolaryngological and neurological examinations.
4. Audiological evaluations including pure tone air and bone conduction thresholds; word recognition in quiet and noise; MCL/UCL testing; tympanometry.
5. Tinnitus evaluations that included matching tinnitus to sounds played through headphones; determination of minimum masking levels (MMLs); measurements of re-

sidual inhibition (see Johnson⁹ for a description of these procedures).

6. The Tinnitus Management Team reviewed the results of evaluations and explained them to the patient.
7. Evaluations of acoustic therapies: based on the patient's audiological evaluations, specific devices were described and demonstrated. The following criteria were used to select appropriate ear-level devices for demonstrations: patients with normal hearing: sound generators; mild hearing loss: sound generators or behind-the-ear, digital hearing aids; significant, aidable hearing loss, behind-the-ear, digital hearing aids; significant, aidable loss: digital hearing aids. If the patient already used hearing aids and desired additional tinnitus relief, digital behind-the-ear combination instruments (combination of hearing aid + sound generator in one device) were demonstrated.
8. Recommendations were formulated and explained to the patient. Ear-level devices were recommended if, during the demonstration, the patient experienced a reduction in tinnitus perception or a noticeable improvement in hearing sensitivity. During the last 7 years (900 tinnitus patients), our clinic recommended ear-level devices for the following percentages of patients: hearing aids, 30%; in-the-ear sound generators, 33%; combination instruments (hearing aid + sound generator in one device), 6%; and no ear-level device recommended, 31%.

The following patients were selected for the present study: 50 consecutive patients who purchased and used one or two hearing aids, 50 consecutive patients who purchased and used 1 or 2 in-the-ear sound generators daily for a minimum of 6 months; 50 patients who did not use ear-level devices. One hundred patients were fitted with ear-level devices 2-3 weeks after the initial appointment. Fifty patients were fitted with hearing aids to maximize their hearing and communication ability while minimizing problems such as occlusion, feedback and sound distortion. Patients were instructed to use their hearing aids as much as possible every day. Fifty patients were fitted with sound generators that produced a broad band of frequencies (100-8000 Hz) with a maximum output of 77 dB SPL. Patients were instructed to set the loudness of sound generators to a comfortable level that provided maximum relief from tinnitus and to use the devices as needed during the day. All hearing aid and sound generator patients were told that the devices might not completely cover or mask their tinnitus. This was not necessarily the goal of using the devices. Patients were told that the devices should reduce their perception of tinnitus and help them to pay less attention to the symptom.

Fifty patients who did not use hearing aids or sound generators were encouraged to utilize other forms of acoustic therapy. That is, to add pleasant sounds (music, relaxation CDs, or a sound machine) to quiet environments to obtain relief from tinnitus. All patients also received recommendations regarding medications, lifestyle changes, excessive noise exposure, and coincident problems such as insomnia, anxiety and depression (see Shiley et al¹² for a

Table 1
Characteristics of patients at the time of their initial tinnitus clinic appointment

| | Hearing aid patients (n = 50) | Sound generator patients (n = 50) | No device patients (n = 50) |
|---|----------------------------------|--------------------------------------|--------------------------------|
| Age (y) | 55.8 ± 17.0 | 49.8 ± 12.2 | 52.8 ± 13.0 |
| Males /females | 30 M/20 F | 38 M/12 F | 35 M/15 F |
| Years from tinnitus onset to initial clinic appointment | 7.5 ± 8.4 | 4.0 ± 5.9 | 6.9 ± 7.5 |
| Self-rated loudness of tinnitus (1-to-10 scale) | 7.5 ± 1.7 | 7.6 ± 1.6 | 7.1 ± 1.9 |
| Matched loudness of tinnitus (dB SL) | 7.7 ± 6.6 | 7.8 ± 7.8 | 6.1 ± 5.5 |
| Matched pitch of tinnitus (kHz) | 4.3 ± 2.9 | 7.0 ± 4.0 | 6.7 ± 3.5 |
| Tinnitus minimum masking level (dB SL) | 21.7 ± 12.1 | 24.3 ± 13.6 | 22.5 ± 11.5 |
| Tinnitus Severity Index score | 38.2 ± 8.3 | 39.6 ± 8.9 | 38.1 ± 9.0 |
| Beck Depression Inventory score | 5.2 ± 6.1 | 5.0 ± 3.8 | 5.1 ± 5.3 |

more detailed explanation of tinnitus management strategies). Referral and contact information regarding physical or psychiatric evaluations, psychological counseling, and other recommended services or products was provided.

Patients were encouraged to contact the clinic if they had questions and also to inform us of their progress. Hearing aid patients returned to the clinic 1-3 times after the initial fitting for additional device adjustments. Sound generator patients did not usually return to the clinic after the initial fitting, unless they experienced a problem with their devices. We contacted all patients by telephone one month after the initial appointment to answer questions and also to check their compliance with the tinnitus management plan. Follow-up questionnaires were mailed to patients 6 to 48 months after their initial appointment. In addition to the 12 Tinnitus Severity Index questions and the 1-to-10 tinnitus loudness self-rating scale (see [Appendix](#)), follow-up questionnaires also contained an abbreviated version of the Beck Depression Inventory (aBDI) and the following question: "Did the [hearing aid *or* sound generator] help your tinnitus?" Possible choices included: (1) not at all; (2) a little; (3) a moderate amount; (4) quite a bit; or (5) very much.

Data relating to patient demographics, audiometric thresholds, matched and self-rated (according to the 1-to-10 scale in [Appendix](#)) tinnitus loudness, tinnitus pitch, tinnitus severity, and aBDI scores were analyzed (mean values were calculated and compared using analyses of variance and two-tailed *t*-tests).

These protocols were reviewed and approved by the Institutional Review Board at Oregon Health & Science University. Informed consent was obtained in writing from patients before their participation in this study.

RESULTS

Characteristics of patients at the time of their initial appointment are listed in [Table 1](#). These results are typical for our tinnitus clinic population. Sound generator patients (7.0 ± 4.0 kHz) and no device patients (6.7 ± 3.5 kHz) matched their tinnitus to higher-pitched sounds than hearing aid patients (4.3 ± 2.9 kHz). Sound generator patients experienced tinnitus for a shorter amount of time (4.0 ± 5.9 years)

Table 2
Averaged pure tone air conduction thresholds (dB HL) at the initial appointment

| | 250 Hz | 500 Hz | 1,000 Hz | 2,000 Hz | 3,000 Hz | 4,000 Hz | 6,000 Hz | 8,000 Hz |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Hearing aid patients | | | | | | | | |
| Right ear | 26.6 ± 18.0 | 26.6 ± 20.0 | 30.2 ± 21.1 | 35.2 ± 22.1 | 46.3 ± 21.6 | 53.6 ± 22.9 | 56.8 ± 22.6 | 63.6 ± 24.5 |
| Left ear | 26.2 ± 16.5 | 24.1 ± 16.3 | 28.1 ± 18.4 | 37.6 ± 16.8 | 51.1 ± 15.9 | 56.9 ± 19.2 | 65.7 ± 19.7 | 68.9 ± 20.1 |
| Sound generator patients | | | | | | | | |
| Right ear | 11.0 ± 8.3 | 9.1 ± 6.7 | 9.7 ± 8.4 | 9.3 ± 9.7 | 20.4 ± 13.5 | 27.2 ± 16.4 | 34.5 ± 17.9 | 35.8 ± 21.0 |
| Left ear | 12.3 ± 10.4 | 10.0 ± 10.6 | 10.6 ± 11.8 | 11.5 ± 12.2 | 24.1 ± 15.8 | 30.0 ± 19.1 | 35.1 ± 19.9 | 37.7 ± 20.9 |
| Non-device patients | | | | | | | | |
| Right ear | 16.0 ± 15.5 | 15.5 ± 16.2 | 18.3 ± 17.5 | 22.3 ± 21.0 | 32.8 ± 22.9 | 41.5 ± 25.3 | 45.9 ± 26.0 | 46.5 ± 27.1 |
| Left ear | 16.5 ± 16.1 | 16.0 ± 17.0 | 17.9 ± 18.1 | 23.5 ± 20.8 | 35.7 ± 23.0 | 43.9 ± 24.9 | 48.4 ± 25.0 | 48.5 ± 26.3 |

Table 3
Answers to “Did the [device] help your tinnitus?”

| | Hearing aid patients (n = 50) | Sound generator patients (n = 50) |
|-------------------|----------------------------------|--------------------------------------|
| Not at all | 4 (8%) | 1 (2%) |
| A little | 11 (22%) | 11 (22%) |
| A moderate amount | 11 (22%) | 16 (32%) |
| Quite a bit | 13 (26%) | 9 (18%) |
| Very much | 11 (22%) | 13 (26%) |

than hearing aid patients (7.5 ± 8.4 years) and no device patients (6.9 ± 7.5 years). Minimum masking levels (MMLs) of tinnitus were not significantly different among the three groups. All 3 groups of patients also had similar scores on the abbreviated Beck Depression Inventory. According to Beck and Beck,¹¹ a score of 0-4 on the inventory indicates no or minimal depression; 5-7 indicates mild depression; 8-15 indicates moderate depression; a score of 16 or more can indicate severe depression.

Table 2 lists the averaged pure tone air conduction thresholds for each of the 3 study groups. Hearing aid patients had significantly higher thresholds (two-tailed $P < 0.0001$) than sound generator patients for all frequencies tested between 250-8,000 Hz for both ears. Averaged pure tone thresholds from no device patients fell between the averaged values for sound generator and hearing aid patients.

Thirty two patients purchased and used 2 hearing aids. Eighteen patients used only 1 hearing aid; these patients had aidable hearing loss on 1 side only. Fifteen patients used behind-the-ear style hearing aids; 35 patients used in-the-ear or in-the-canal style aids. All hearing aids were digital and programmable from a variety of major manufacturers.

Twenty-six patients used 2 sound generators; 24 patients used 1 sound generator. Forty-nine patients used Tranquil in-the-ear sound generators manufactured by General Hearing Instruments (Harahan, LA). These devices have an open-ear, helical design to minimize occlusion. One patient used 2 in-the-canal sound generators manufactured by Starkey Laboratories (Eden Prairie, MN).

Patients returned follow-up questionnaires 6 to 48 months (mean = 18 months for all 3 groups) after their initial clinic appointment. Patients used their devices (hearing aids or sound generators) daily during the follow-up period. Table 3 lists patients’ answers to the question “Did the [device] help your tinnitus?” Seventy percent of hearing aid patients reported that amplification helped their tinnitus a moderate amount or more. Seventy-six percent of sound generator patients reported that the devices helped their tinnitus a moderate amount or more.

Table 4 contains follow-up responses from 50 hearing aid patients. Compared to responses on initial questionnaires, there was a significant reduction in self-rated loudness of tinnitus. There was also a significant reduction in

Tinnitus Severity Index scores. According to Cohen,¹³ this Effect Size (1.0) is considered “large.” However, there was no significant change in abbreviated Beck Depression Inventory scores.

Table 5 contains follow-up responses from 50 sound generator patients. Compared to responses on initial questionnaires, there was a significant reduction in self-rated loudness of tinnitus. There was also a significant reduction in Tinnitus Severity Index scores. This Effect Size (0.8) is also considered “large,” but the amount of improvement was less than that exhibited by hearing aid patients. There was no significant change in Beck Depression Inventory scores for the sound generator group.

Table 6 contains follow-up responses from 50 patients who did not use hearing aids or sound generators. Compared to responses on initial questionnaires, there was a significant reduction in self-rated loudness of tinnitus. However, the magnitude of reduction (8%) was smaller than that experienced by patients who used hearing aids (16%) or sound generators (18%). There was also a significant reduction in Tinnitus Severity Index scores for the no device group. This Effect Size (0.5) is considered “medium.” There was no significant change in Beck Depression Inventory scores for the group.

DISCUSSION

Although all 3 groups of patients in the present study reported long-term reductions in tinnitus severity, the greatest amount of improvement was experienced by patients who used ear-level devices (hearing aids or sound generators). Ear-level devices are the most convenient way for tinnitus patients to receive acoustic therapy. This strategy has multiple advantages and benefits for patients, including:

- Acoustic therapy is non-invasive and has no adverse side effects.
- Patients often obtain immediate relief from their tinnitus.
- Patients can use external sounds to exert some control over their tinnitus. This often results in reduced patient frustration and anxiety.

Table 4
Mean responses by 50 patients who used hearing aids

| | Initial | Follow-up | $P \leq$ |
|---|----------------|----------------|----------|
| Self-rated loudness of tinnitus (1-to-10 scale) | 7.5 ± 1.7 | 6.3 ± 1.9 | 0.0005 |
| Tinnitus Severity Index score | 38.2 ± 8.3 | 29.6 ± 8.4 | 0.0001 |
| Beck Depression Inventory score | 5.2 ± 6.1 | 5.2 ± 5.6 | NS |

NS, not significant.

Table 5
Mean responses by 50 patients who used in-the-ear sound generators

| | Initial | Follow-up | $P \leq$ |
|---|------------|------------|----------|
| Self-rated loudness of tinnitus (1-to-10 scale) | 7.6 ± 1.6 | 6.2 ± 1.9 | 0.0001 |
| Tinnitus Severity Index score | 39.6 ± 8.9 | 32.8 ± 8.9 | 0.0001 |
| Beck Depression Inventory score | 5.0 ± 3.8 | 4.4 ± 4.6 | NS |

NS, not significant.

- Some patients experience residual inhibition: tinnitus suppression or temporary disappearance after exposure to external sounds.
- Acoustic therapy can facilitate patients' habituation to tinnitus. That is, increasing the level of external sounds within safe limits can help patients learn to pay less attention to their tinnitus. If tinnitus becomes less noticeable, patients will be bothered by it less of the time.
- Increased exposure to external sounds (within safe limits) can increase blood flow to the inner ear.¹⁴ This helps to nourish and maintain auditory structures and might also contribute to healing processes when possible.
- Increased exposure to external sounds over time could contribute to reorganizations of neural pathways responsible for tinnitus generation and perception. Altering the pattern of activity within the central auditory system might result in permanent reductions in tinnitus perception.

Ear-level sound generators (sometimes called "maskers") provide a number of immediate benefits for tinnitus patients, including:

- Sound generators can make tinnitus less noticeable by decreasing the tinnitus signal-to-noise ratio.
- Sound generators can muffle the piercing quality of high-pitched tinnitus, making it more tolerable and easier to ignore.
- Sound generators give patients some control over their tinnitus. Part of the frustration for patients comes from the fact that they cannot escape from their tinnitus and, if they have not yet employed acoustic therapy, they cannot reduce its loudness.
- Sound generators are the most portable and inconspicuous ways for patients to receive this type of acoustic therapy almost anytime, anywhere.
- Because they deliver sound directly into the ear canal, the devices provide effective acoustic therapy using relatively low levels of sound.
- Some patients report improvement in their ability to concentrate (especially when reading) while wearing sound generators.

Hearing aids are usually beneficial for tinnitus patients who also have significant hearing loss. Some patients blame their tinnitus for communication difficulties that are actually caused by hearing loss. This is understandable because hearing loss often progresses slowly over time and people do not always realize what they have been missing. Tinnitus, on the other hand, is the addition of an unpleasant perception that sometimes has a sudden onset. Many patients pay more attention to the addition of tinnitus than to their gradual loss of hearing.

It is important for patients to understand the *relationship* between hearing loss and tinnitus AND to appreciate the *differences* between hearing loss and tinnitus. We stress the following points with our patients:

- Tinnitus does not cause hearing loss, but hearing loss makes it more likely for a person to hear tinnitus.
- Even if their tinnitus stopped completely, patients with significant hearing loss would still have communication difficulties.
- Hearing aids do not amplify tinnitus. In fact, hearing aids usually reduce the loudness of tinnitus by amplifying external sounds.
- Hearing aids improve speech perception for patients with significant hearing loss. This should relieve some of the frustration, isolation, and depression experienced by these patients.
- If hearing could be restored to pre-tinnitus thresholds, many cases of tinnitus would be cured. At the moment, the most practical way to restore hearing is by using hearing aids. This does not mean that hearing aids "cure" tinnitus. However, amplification can contribute to reductions in loudness and severity of the symptom.
- Using hearing aids to stimulate the auditory system could contribute to permanent reductions in neural activity responsible for tinnitus generation and perception.

Previous follow-up studies showed that patients who completed our tinnitus management program experienced long-term reductions in tinnitus severity.^{2,15} Although it was statistically significant, the improvement experienced by a heterogeneous group of 190 patients² was moderate

Table 6
Mean responses by 50 patients who did not use ear level devices

| | Initial | Follow-up | $P \leq$ |
|---|------------|------------|----------|
| Self-rated loudness of tinnitus (1-to-10 scale) | 7.1 ± 1.9 | 6.5 ± 1.8 | 0.001 |
| Tinnitus Severity Index score | 38.1 ± 9.0 | 33.8 ± 8.9 | 0.001 |
| Beck Depression Inventory score | 5.1 ± 5.3 | 5.2 ± 6.0 | NS |

NS, not significant.

(Tinnitus Severity Index reduction = 11%) and the Effect Size (0.5) was “medium.” However, particular sub-groups of patients experienced greater amounts of improvement. For example, patients whose sleep patterns improved exhibited a 23% reduction in Tinnitus Severity Index score on the follow-up questionnaire (Effect Size = 1.1). Patients whose initial Beck Depression Inventory scores decreased 3 or more points on the follow-up questionnaire exhibited a 24% reduction in Tinnitus Severity Index scores (Effect Size = 1.3).

Patients in the present study who used ear-level devices experienced comparable levels of improvement. Hearing aid patients exhibited a 23% reduction in Tinnitus Severity Index scores; sound generator patients exhibited a 17% reduction in Tinnitus Severity Index scores. Because acoustic therapy is just one component of our multimodal tinnitus management program, it is impossible to determine the effectiveness of this strategy alone. Teaching patients how to use external sounds to reduce their perception of chronic tinnitus usually helps to reduce the severity of their condition. Individualized treatment programs that were designed for each patient also contributed to the overall improvement in tinnitus severity reported on follow-up questionnaires. Previous studies demonstrated the importance of identifying and treating tinnitus patients who also experience chronic anxiety,¹⁶ insomnia,¹⁷ or depression.¹⁸

Several clinicians agree that a combination of tinnitus management strategies is more effective than one form of remediation used in isolation.^{19,20} Even though a customized combination of recommendations is effective for many patients with chronic and bothersome tinnitus, the process can be very time consuming. The time required for patient assessment, education, reassurance, and counseling, as well as for designing and initiating an individualized tinnitus management program can take >4 hr during the initial appointment. Follow-up appointments can last 2 hr or more. Most primary care physicians and otolaryngologists are not able to spend even a fraction of this much time with 1 patient during an office visit. If a clinician has assessed and treated every reasonable medical cause for a patient's tinnitus, and the patient reports little improvement in tinnitus severity, the clinician should do one of two things: 1) spend the time necessary to implement effective tinnitus management strategies; or 2) refer the patient to a comprehensive tinnitus management program with experienced personnel who are willing and able to spend a substantial amount of time with each patient. For a certain number of patients with

severe tinnitus, only a specialized treatment program of this type can help them to improve their condition.

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APPENDIX. TINNITUS SEVERITY INDEX QUESTIONS

DIRECTIONS: For the questions below, please **CIRCLE** the number that best describes you

| | Never | Rarely | Sometimes | Usually | Always | | | | |
|--|-------|--------|-----------|--------------|--------|---|---|---|-----------|
| Does your tinnitus | | | | | | | | | |
| 1. Make you feel irritable or nervous | 1 | 2 | 3 | 4 | 5 | | | | |
| 2. Make you feel tired or stressed | 1 | 2 | 3 | 4 | 5 | | | | |
| 3. Make it difficult for you to relax | 1 | 2 | 3 | 4 | 5 | | | | |
| 4. Make it uncomfortable to be in a quiet room | 1 | 2 | 3 | 4 | 5 | | | | |
| 5. Make it difficult to concentrate | 1 | 2 | 3 | 4 | 5 | | | | |
| 6. Make it harder to interact pleasantly with others | 1 | 2 | 3 | 4 | 5 | | | | |
| 7. Interfere with your required activities (Work, home, care, or other responsibilities) | 1 | 2 | 3 | 4 | 5 | | | | |
| 8. Interfere with your social activities or other things you do in your leisure time | 1 | 2 | 3 | 4 | 5 | | | | |
| 9. Interfere with your overall enjoyment of life | 1 | 2 | 3 | 4 | 5 | | | | |
| 10. How much of an effort is it for you to ignore tinnitus when it is present? | | | | | | | | | |
| Can easily ignore it..... | 1 | | | | | | | | |
| Can ignore it with some effort... | | 2 | | | | | | | |
| It takes considerable effort..... | | | 3 | | | | | | |
| Can never ignore it..... | | | | 4 | | | | | |
| 11. How much discomfort do you usually experience when your tinnitus is present? | | | | | | | | | |
| No discomfort..... | 1 | | | | | | | | |
| Mild discomfort..... | | 2 | | | | | | | |
| Moderate discomfort..... | | | 3 | | | | | | |
| A great deal of discomfort... | | | | 4 | | | | | |
| 12. Does your tinnitus interfere with sleep? | | | | | | | | | |
| No..... | 1 | | | | | | | | |
| Yes, sometimes..... | | 2 | | | | | | | |
| Yes, often..... | | | 3 | | | | | | |
| On the scale below, CIRCLE the number that best describes the loudness of your usual tinnitus | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Very quiet | | | | Intermediate | | | | | Very loud |