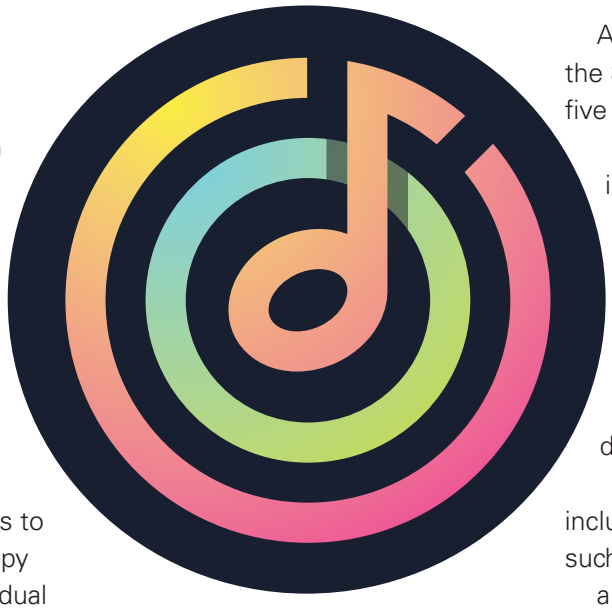
Sound-Therapy Research Points to Personalization, Rather than Clear Guidelines

Summary by John A. Coverstone, AuD



Many people with tinnitus are treated with sound therapy, which involves using some type of sound to mitigate the loudness of tinnitus or even to reduce the severity of tinnitus when sound therapy is not present. However, the term "sound therapy" may include numerous different types of therapies and even more varied approaches for each type. There are few published guidelines to inform clinicians as to which therapy is most appropriate for each individual and how it is best used for varying degrees and types of tinnitus.

A team of researchers from the University of Auckland in New Zealand performed a literature review to determine whether more personalized approaches to tinnitus therapy could be developed. The primary question they sought to answer was, "How do current sound-based therapies for tinnitus adjust for tinnitus heterogeneity?" or, in laymen's terms, "How are different therapies used for different types and presentations of tinnitus?"

The researchers considered studies published within a 10-year span (2006-2016), to establish a current catalogue of research to review. They used the following key words to perform their search: "tinnitus" AND "sound" AND "therapy" AND "guidelines" OR "personalized" OR "customized" OR "individual" OR "questionnaire" OR "selection." The search was stopped once two full pages were read without any relevant articles. The search resulted in 199 articles that were determined to meet the search criteria. After reading abstracts to ensure relevant content and reviewing citations in those articles to find other relevant studies, 165 articles were read completely. Of those, 83 were found to contain specific information about personalization methods. These articles were selected for study.

After cataloging information from the 83 articles, the authors identified five themes:

1) Hearing compensation, which is a treatment based on amplifying sounds, and was administered either to compensate for hearing loss, or, when tinnitus management was the primary goal, to raise the audibility for environmental sounds and reduce the perception of tinnitus;

2) Pitch-based therapies, which included a variety of methodologies, such as:

a. altering the synchronized firing of auditory nerves near the tinnitus pitch,

b. changing the phase of sound at the tinnitus pitch,

c. passing sound except around the tinnitus pitch (notch therapy),

d. using pitch-matched sound embedded in nature sounds;

3) Maskability, which involves the use of sound to reduce or eliminate the perception of tinnitus;

4) Reaction to sound, which is sound therapy targeted toward changing the individual's response or sensitivity to sounds; and

5) Psychosocial factors in sound therapy, which the authors defined as "social moderators and individual thoughts and behaviors that determine the treatment approach."

It should be noted that many studies included or addressed multiple therapeutic strategies, therefore, these themes are not exclusionary.

The authors found that the majority of studies described "customized therapy" as being the selection of the treatment sound based on audiometric threshold or pitch of tinnitus. Some treatment approaches used tinnitus severity, sound sensitivity, or hearing acuity to categorize patients with tinnitus who were seeking treatment. Others used a stepped approach, in which less resource-intensive methods were employed first, and individualized therapies were employed when the more general approaches failed.

The literature found no comprehensive guidelines for selection of sound-therapy treatment, although the authors believe that many sound therapies might be effective when selected for the correct patient at the correct time and in an appropriate context. They also advocated for clinicians to consider counseling and psychological therapy when appropriate for a patient. Based on their review, the authors recommended clinicians first perform a comprehensive assessment when treating a patient for tinnitus. Their recommendation includes a hearing exam and tinnitus matching to define the condition. It also includes a questionnaire to assess how tinnitus affects quality of life so that the clinician may determine impact of tinnitus and establish a baseline for future assessments.

They also recommend, when indicated by clinical history, that assessment include an evaluation for anxiety and depression to help with decision-making about appropriate treatments and an evaluation of cognition, which may affect amplification strategies. Their final recommendation is an assessment of personality to help identify those patients who may be at risk of distress from tinnitus.

While the authors' literature review ultimately found that there are no clear guidelines for the use of sound therapy, they found there is potential for guidelines to be created with additional research in this area. They believe that part of the problem is the broad range of individual treatments that are described as "sound therapy." They also hoped to see further research into combined therapies and studies seeking to refine current approaches to make them more effective. Research into any of these areas may give clinicians better tools to treat patients earlier and achieve better outcomes more quickly.

Searchfield, G., Durai, M., & Linford, T. (2017). A state-of-the-art review: personalization of tinnitus sound therapy. *Frontiers in Psychology.* September 20, 2017. https://www.frontiersin.org/articles/10.3389/fpsyg.2017.01599/full

Management of the Tinnitus & Hyperacusis Patient Conference

The 26th Annual International Conference, *Management of the Tinnitus & Hyperacusis Patient*, will be held June 14-15, 2018, at the University of Iowa.

The conference is intended for otologists, audiologists, hearing-aid specialists, and other healthcare professionals providing clinical services for tinnitus patients. Topics will include an overview of current evaluation practices, management strategies, and research. Presentations include the latest developments and understanding in the areas of patient-centered counseling, tinnitus treatments, and neuroscience.

Since its inception, the conference has been designed to increase knowledge and skills of clinicians. People with tinnitus are welcome to attend, with the understanding that no individual diagnosis/treatment will be offered. The American Tinnitus Association is a Diamond Sponsor of the event.

For further information, the University of Iowa's website: https://medicine.uiowa.edu/oto/education/conferences-and-events/international-conference-management-tinnitus-and-hyperacusis