

Telemedical Approach to Tinnitus Treatment: Customized Harmonic Sound and Music Therapy

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Background: We have developed a validated web-based software that is capable of identifying the tinnitus frequency, loudness, and interaural difference of tinnitus. In addition, we have developed harmonic sound therapy, a patent-pending sound therapy protocol which has been found to be effective in temporarily reducing the perception of tinnitus when used short term. The patient is able to access the site, find his/her tinnitus and based on the characteristics of the tinnitus, a customized sound therapy file can be delivered to the patient via the web. The patient is able to use the web-based software to mix their own music with the sound therapy file. This allows the patient to listen to their own music while the therapy sound is working in the background. The objective of this study was to evaluate the efficacy of a customized harmonic sound and music therapy using a web-based protocol in the treatment of tinnitus.

Methods: Twenty-eight patients with tinnitus (minimum duration of 6 months), were enrolled in the study. The therapy consisted of 2 stages: In the sound therapy stage, the subjects listen to the customized harmonic sound therapy file on a commercial MP3 player for 2 weeks for a minimum of 2 hours per day using open ear headphones. The second stage involves listening to a mixture of the harmonic sound therapy with music for a minimum of 2 hours a day for the next 5.5 months. Outcomes were assessed using a VAS for loudness and annoyance as well as the Tinnitus Handicap Inventory (THI).

Results: Overall, 24 of the 28 patients (89%) showed a significant improvement in loudness, annoyance, and THI. The mean reduction of tinnitus loudness changed from an average of 6.7 to 3.4 on a scale of 0 to 10. Tinnitus annoyance showed a reduction of 52% on the average (range, 0 to 89%). THI score was reduced in 75% of patients by at least 30%. In the entire cohort, the mean difference in THI was 20 (range -2 to 52).

Conclusion: Customized harmonic sound and music therapy is an effective method of tinnitus treatment in patients with tinnitus. The software that has been developed will allow this treatment to be delivered in a telemedicine approach via the web to anywhere in the world. This treatment is suited for forward field applications as well as for veterans located in remote parts of the U.S. or world. An audiologist based in a medical center can help a servicemember in the field or in a remote location with delivery of customized sound therapy over the web. The servicemember or veteran can also use their own music to develop customized music therapy files using the web-based protocol. The use of open-ear headphones allows for the user to hear outside sounds while listening to therapy sounds.