

Heterogeneity in response to treatment across tinnitus phenotypes.

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Abstract:

Background: Tinnitus is the perception of a phantom sound when no corresponding external sound is present. It is estimated that approximately 15% of the adult population is affected. Severe tinnitus (1–2%) is associated with a considerable impairment in quality of life and an immense socioeconomic burden. Because tinnitus is a symptom of possibly multiple underlying conditions and different accompanying comorbidities, a detailed medical examination and assessment of the clinical history of the tinnitus patient is pivotal. Clinical evaluation is challenging due to patient heterogeneity in several factors, including tinnitus perception (e.g., laterality, pitch, noise characteristics, frequency, duration, chronicity), risk factors (including hearing loss, age), comorbidities (including hyperacusis, depression, sleep disorders), perceived distress, predisposing psychological state, and response to treatment.

Methods: Patients underwent a comprehensive seven-day multimodal intervention program integrating three primary approaches. Firstly, there was a psychological intervention, centering on Cognitive Behavioral Therapy (CBT), conducted daily in group sessions and three times in personalized individual settings. The second focus involved listening exercises aimed at guiding perception, reducing avoidance, and fostering mindfulness within the listening room. These exercises took place daily in group sessions and through individual homework training. The third focus was on body-related procedures, encompassing daily muscular relaxation exercises within group settings and 3–4 individual physiotherapy sessions. These daily interventions were complemented by counseling from medical professionals during admission, discharge, and daily ward rounds. Furthermore, psychologists and audiology specialists

were available throughout the day to address any patient queries. Two concentrated information sessions were delivered through lectures. The program also included psychoeducation sessions designed to tackle sleep difficulties and explore the intricate connections between hearing and emotional stimulus processing. Admission diagnostics were conducted on the first day of inpatient therapy using a tablet. On the day of discharge, post-treatment diagnostics were conducted using the same tools, immediately before the patient left the program.

Results: Results demonstrated large within-phenotype heterogeneity in treatment response. Across phenotypes, i.e., irrespective of health burden, psychological characteristics (distress indicators, attitudinal factors, subjective stress, quality of life, pain experience, and additional somatic distress expressions) were highly intercorrelated and largely independent from tinnitus characteristics (localization, sound, etc.). This finding echoes previous investigations on the independence of tinnitus characteristics and subjective distress. It further underscores the importance of affective factors, partially pre-existing, that influence the processing of the tinnitus stimulus and potentially facilitate a trajectory towards 'tinnitus disorder.'

Conclusion: The intensive multimodal treatment approach offers a nuanced balance of advantages and drawbacks. In the short term, these intensive multimodal treatments emerge as the preferred choice for addressing somatoform and psychosomatic challenges, such as chronic tinnitus. They have demonstrated compelling efficacy, notably in chronic pain treatment.

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