

Sustained Benefit of Mindfulness-Based Tinnitus Stress Reduction (MBTSR) in Adults with Chronic Tinnitus: a Pilot Study

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Roughly 50 million people in the USA experience tinnitus at some point in their lives, with two to three million so severely affected that their ability to function is greatly impaired (Shargorodsky et al. 2010). Defined as auditory perceptions not produced by external sound (Baguley 2002), tinnitus and its treatment have become the focus of much recent interest. This is partly because it is the most common service-related disability for veterans returning from military service (Department of Veterans Affairs 2010). As tinnitus is a multimodal disorder with many potential causes, it is a challenge to treat, and current interventions often result in limited levels of success (Meikle et al. 2007).

Bothersome tinnitus is most commonly associated with symptoms of anxiety, sleep disturbance, and depression (Andersson et al. 2005; Lockwood et al. 2002). Poor attention and concentration, interference with work, and negative impact on personal relationships are also commonly reported (Heller 2003; Sanchez and Stephens 1997). Almost all patients indicate that stress makes their tinnitus worse (Hebert and Lupien 2007; Mazurek et al. 2010).

Cognitive behavioral therapy (CBT) has been shown to be a helpful treatment for some (Martinez Devesa et al. 2010). CBT focuses on addressing maladaptive appraisal, avoidance, selective attention, and other psychological mechanisms that may be influencing tinnitus-related distress (Folmer and

Griest 2000). Another approach is through the applied use of mindfulness. Unlike CBT, mindfulness is not a structured psychotherapy but a discipline involving a willful, non-judgmental shifting of one's perceptual awareness. Thoughts, emotions, and body sensations including tinnitus symptoms are seen as mental events not to be analyzed or manipulated but rather simply noticed as the mind is repeatedly brought back to the present. As such, mindfulness practice may help those with tinnitus to reappraise their sensations as impermanent rather than unbearable or unending, thus alleviating some of the co-occurring distress.

One of the most common approaches to mindfulness training currently employed in Western medicine is Mindfulness-Based Stress Reduction (MBSR), an 8-week group course that teaches exercising control of one's attention in the context of adverse circumstances (Kabat-Zinn 1982). Mindfulness-Based Tinnitus Stress Reduction (MBTSR) is designed after the MBSR program, but the curriculum is specifically tailored to the management of bothersome tinnitus. Content is directed towards those with chronic tinnitus, and emphasis is placed on exploring the sensation of hearing and sounds.

A recent pilot study showed that MBTSR can serve as an effective intervention for tinnitus (Gans, O'Sullivan, and Bircheff 2013). Results from the pilot study indicated a clinically significant effect size (ES) in decreasing the perceived annoyance and perception of tinnitus. Pre- and posttreatment questionnaires provided both quantitative and qualitative indications that MBTSR helped participants decrease tinnitus annoyance and its impact on their daily lives, improve social functioning, increase non-judgmental mindfulness, and decrease their levels of depression and anxiety.

Eight participants completed the original MBTSR program (defined as attendance of six or more of the eight MBTSR classes). The average age of participants was 58 (38–70, SD=±19). Six (75 %) of the participants were male and two

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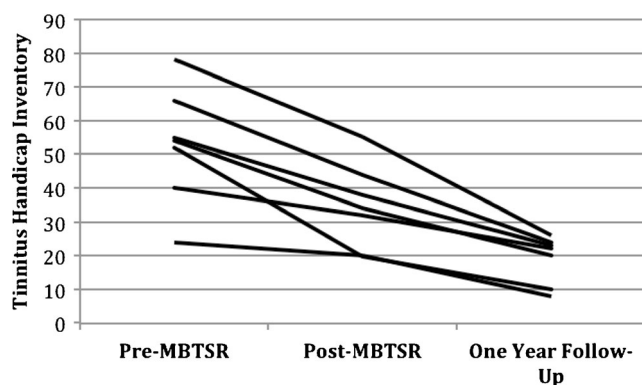


Fig. 1 Observed means on the primary outcome for MBTSR subjects over time

(25 %) were female. The purpose of this 12-month follow-up is to determine whether gains observed in the prior pilot study were maintained over time.

The central focus of MBTSR addresses psychoeducation related to commonly co-occurring distress in people with tinnitus. Additional class time was focused on guided mindfulness practices emphasizing awareness of sound and tinnitus perception and providing skills to increase overall well-being as it relates to living with tinnitus. In class and home practice, mindfulness exercises emphasized becoming aware of the tinnitus sensation with spaciousness and curiosity instead of reacting in habitual ways. Participants were instructed to practice mindfulness at times when tinnitus is perceived to be loud and troubling, including while eating meals, before sleeping, during social interactions, and during periods of quiet.

Twelve months after completion of the MBTSR course, study participants met for a follow-up session held in the same location as the initial study. Following an initial 30-min meditation, each person spoke about their personal experience with their meditation practice over the past year, any barriers to their practice, and any changes noted in tinnitus distress. This was followed by an open discussion by all group members on their experience with tinnitus at present, the MBTSR intervention's usefulness over time, and whether these skills were practiced over the past 12 months.

The primary outcome measure for the present follow up study was the Tinnitus Handicap Inventory (THI), a 25-question self-report measure that can be used to quantify the perceived impact of tinnitus on daily living. The THI is grouped into emotional, functional, and catastrophic subscales and yields excellent internal consistency reliability (Cronbach's $\alpha=0.93$). From this follow-up, we found that all subjects had sustained and continued reduction in tinnitus handicap after participation in the MBTSR course as noted by responses on the THI (See Fig. 1). Seven of the eight participants from the initial pilot study (88 %) were available for follow-up data, six of whom reported a continued practice of

mindfulness skills taught in the MBTSR group during the 12-month period after completion of the group.

These findings demonstrate that the benefits of MBTSR training may be sustained for at least 12 months in adults with chronic bothersome tinnitus. In such individuals, MBTSR provides participants with the ability to change their perception of tinnitus handicap and without medical or drug intervention. No adverse effects were reported during or following the intervention indicating that MBTSR may be a safe and effective long-term treatment for tinnitus relief.

These findings should be considered in the context of several study limitations. The small number of participants, lack of an active control group, and use of only subjective-report measures all impede generalizability and preclude any definitive statement about long-term effectiveness of MBTSR at this time. It is possible that the decline in THI scores during the 12 months follow-up period resulted from other factors such as the passage of time and other tinnitus interventions tried. While six of the seven (85 %) of participants at 12 months follow-up reported a continued and regular practice of some form of mindfulness, details as to frequency, amount, and type of practice were not specified, thus leaving questions as to the mechanisms of such healing effects. Future studies may look more specifically at the mechanisms that mediate reduction in tinnitus handicap through mindfulness practice, investigating the role that changes in response to tinnitus perception directly relate to mindfulness factors including acceptance, non-judgmental awareness, and self-compassion.

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