

## Research Article

# Brief Report on the Outcomes of an Integrated Approach on Stress, Anxiety, and Persistent Pain for Veterans; Mindful Yoga and Auricular Acupuncture

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## Introduction

Stressors have a major influence on mood, sense of well-being, behavior, and health [1]. Research shows positive associations between stress and the development of psychological conditions such as major depressive disorder and Post Traumatic Stress Disorder (PTSD), as well as health disorders such as cardiovascular and inflammatory disease [2].

Research shows there is a high prevalence and severe impairment associated with Generalized Anxiety Disorder (GAD) in Veterans [3]. Studies have found Veterans to have an elevated rate of generalized anxiety disorder, with 9.7% of Vietnam Veterans and up to 15% of Iraq and Afghanistan Veterans reporting symptoms consistent with GAD, compared to 1.6% to 3.5% in the general population [4-6].

Post-traumatic stress disorder affects approximately 5-8% of

the general population [7,8], but it is estimated that approximately 30% of Vietnam theater Veterans have PTSD during their lifetime [9] and 18-20% of Veterans that served in Iraq met screening criteria for PTSD [10]. The incident rate of PTSD in deployed Veterans is more than three times the rate of those not previously deployed [11]. Research also shows that the prevalence of mental health disorders in the Veteran population increase over time [12].

An important aspect of healing from trauma is to find ways to better regulate the nervous system, by reducing the hyperexcitability of the autonomic nervous system associated with PTSD. Studies have demonstrated that not all trauma survivors benefit from conventional psychotherapy [13] or medication [14]. Hence the scope of available treatments needs to broaden for Veterans diagnosed with PTSD and other mood disorders.

Yoga has been used for thousands of years to help calm the

mind and body by teaching self-regulation skills through guided breathing, mindful movement, and meditation. Mind-body practices, such as yoga, are increasingly used in the treatment of PTSD and are associated with positive impacts on stress-inducing illnesses such as depression and PTSD [15]. Research also shows that yoga-based interventions have a statistically significant effect as an adjunct treatment for major psychiatric disorders [16].

Auricular Acupuncture (AA) has been used for approximately 2500 years [17], but has been studied more thoroughly in recent decades since Dr. Nogier published his research in 1956 [18,19]. As a subset of traditional acupuncture, AA follows the basic principles of the traditional Chinese medicine model. Acupuncture treats various conditions or disorders by stimulating specific points on the body including points on the ear [20]. AA has proven to be a convenient method of treatment that is particularly effective for pain and anxiety [21-23].

The purpose of this clinical program was to provide an integrated treatment approach, including mindful yoga and auricular acupuncture, for Veterans that may complement their current mental health treatments. We hypothesized that Veterans that completed the program would report decreased levels of stress, anxiety, and pain.

## Methods

### Setting and participants

Participants were Veterans who met the following inclusion criteria: 1) Currently being treated by a mental health provider in the Roudebush VA Medical Center (RVAMC) for any mental health disorder; 2) Agreement to participate in weekly sessions for 12 weeks; 3) Ability to get up and down independently and safely from a chair or the floor determined by chart review and patient interview. Participants were excluded if they were unable to be in a group setting as determined by their mental health provider or if they had any cognitive impairment or medical illness that could interfere with treatment (Table 1).

Twenty-seven Veterans completed the 12-week Yoga program within a one-year period, with fourteen Veterans being male, and thirteen being female. We defined completers as individuals that attended at least seven out of twelve sessions, and were present at the first and last sessions, when outcome measures were obtained.

Once all outcomes were obtained, a retrospective chart review was completed in order to determine which disorders were most prevalent within the Veterans that completed the program. Seventy eight percent of Veterans had a depressive disorder classification, while sixty seven percent of Veterans had been diagnosed with a trauma and stress related disorder. It is also noted that most Veterans in the program had multiple psychiatric (93%) and persistent pain (70%) co-morbidities, which was found by reviewing active problem list in medical records. See table 1 for further demographic and disorder classification details.

### Procedures

Participants were referred to this clinician developed program through their mental health providers at RVAMC. The program was marketed to providers as a trauma sensitive mindful yoga program plus auricular acupuncture for Veterans currently undergoing mental

**Table 1:** Demographics.

	N = 27	Percentage of Veterans
<b>Gender</b>		
Male		52
Female		48
<b>Age</b>		
20-30		4
30-40		4
40-50		15
50-60		52
60-70		26
<b>Disorder Classifications</b>		
Depressive		78
Trauma and Stress Related		67
Substance-Related		37
Anxiety		30
Pain co-morbidity		70

health treatment. During the first session, participants were provided an overview of the program which included a take-home manual and CDs for home practice of breathing and guided meditation. Outcomes were assessed 1 week before treatment and at the end of the 12-week program for all participants. AA was offered as an option for those interested but was not a requirement to participate in the Yoga program. Participants of the AA signed a written consent form.

The 12-week yoga series was a progressive program that lasted 90 minutes per session, 75 minutes of structured class then 15 minutes for discussion. Each class included three primary principles of breathing, mindful movement, and guided relaxation. During the first sessions, Veterans were also encouraged to utilize home practice skills, including breath work, a gratitude journal, and were provided with a manual of the physical practice, along with audio recordings of guided relaxation and breathing. Dr. Brosmer is a certified instructor in Mindful Yoga for Trauma Recovery through Veterans Yoga Project and based the program and general structure on their curriculum.

AA was offered 30 minutes prior to each yoga class in a group setting for those that were interested. The intervention used five acupuncture points on each ear: Shen Men, Point Zero, Sympathetic Autonomic Point, Thalamus Point and Endocrine Point. The treatments lasted for approximately 20 minutes. During this time, a quiet atmosphere was provided for participants to relax and meditate.

### Outcomes

Stress was measured using the Perceived Stress Scale (PSS). Scores can range from 0 to 40 with higher scores indicating higher perceived stress. This easy to use questionnaire has established acceptable psychometric properties [24].

We also measured anxiety using the Generalized Anxiety Disorder-7 (GAD-7). Research supports the validity and reliability of the GAD-7 as a measure of anxiety for the general population [25]. It is an efficient and effective tool to screen for GAD, panic disorder, social anxiety disorder and post-traumatic stress disorder

**Table 2:** Outcome Measures.

Measure	N	Baseline		12 week		t-test	p value	Effect size
		Mean	SD	Mean	SD			
PSS	27	24.33	8.06	16.63	7.7	3.5894	0.0007	0.98
GAD-7	27	12.63	5.3	8.37	6.23	2.7063	0.0093	0.74
PEG	27	4.86	2.39	3.893	2.07	1.5892	0.1183	0.42

and assessing their severity [26,27].

Pain was measured using the PEG, a validated three-item version of the Brief Pain Inventory [28].

In addition, patients were asked to complete a course evaluation to gather further feedback.

### Treatment conditions and fidelity

Treatment was delivered in a group setting by doctoral level clinicians. Yoga was taught by a physical therapist with additional training in trauma-sensitive mindful yoga for veterans, through Veterans Yoga Project. Acupuncture was administered by a chiropractor who had completed an acupuncture diplomate program.

### Data analysis and results

Pre and post intervention mean scores were calculated for PSS, GAD-7, and PEG. After the 12 week intervention, mean scores of PSS dropped from twenty four to seventeen (with an effect size of 0.98), GAD mean scores dropped from thirteen to eight (with an effect size of 0.74), and PEG score dropped from five to four (with an effect size of 0.42). Statistically significant improvements were noted in both perceived stress ( $P=0.0007$ ) and anxiety ( $P=0.0093$ ). Improvements were also noted in pain, although not statistically significant ( $P=0.1183$ ) (Table 2).

### Discussion

On average, Veterans who completed the 12-week intervention improved on all outcome measures. In particular, perceived stress and anxiety scores showed the most overall improvement, with statistically significant changes noted. Clinically significant, the mean GAD-7 score for Veterans from baseline to week twelve moved from a score of twelve (moderate anxiety) to a score of eight (mild anxiety).

Although pain scores only modestly improved, Veterans that completed the intervention were able to participate in weekly movement-based activity without flaring their persistent pain symptoms.

This brief report does have some limitations. Although those that completed the program showed improvements, several of the Veterans that started the program did not complete it and follow up with those Veterans was not obtained. If this program were to be implemented on a larger scale through future research, further investigation in dropout rate would be warranted and measures could be taken to promote retention, such as reminder calls and check-ins if a class were missed.

The absence of a control comparison group is another limitation to this study and supports further research in this area.

In retrospect, an outcome that assessed depression could have also been utilized and would have provided additional beneficial

information.

Although this brief report was limited, the results are promising and warrant further research, such as a randomized controlled trial to further examine the effectiveness of combining mindful yoga and auricular acupuncture in treating Veterans with overlapping mental health disorders and pain.

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