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Auricular acupressure reduces anxiety and burnout in behavioral healthcare☆

Michelle Olshan-Perlmutter (PMHCNS, FNP)[a,*], Kenneth Carter (MD, MPH, Dipl.Ac)[b], Jonathan Marx (PhD)[c]

[a] Atrium Health- Behavioral Health Center, 501 Billingsley Road, Charlotte, NC 28105, United States of America
[b] UNC School of Medicine, 321 S Columbia Street, Chapel Hill, NC 27516, United States of America
[c] Winthrop University, 334 Kinard Hall, Rock Hill, SC 29733, United States of America

1. Introduction

Healthcare providers are at risk of physical and emotional problems as a result of work-related stressors which can result in anxiety, burnout and other health issues. The American Nurses Association has joined with the National Academy of Medicine in an initiative to explore and address burnout in response to compelling evidence that burnout leads to increased medical errors, decreased patient satisfaction, greater provider turnover, reduction in work effort and higher healthcare costs (ANA joins National Academy of Medicine Call to Explore and Address Burnout, 2017). Mean stress levels of hospital employees have also been shown to correlate with the number of hospital malpractice suits (Jones et al., 1988). Further raising alarm, the US Department of Health and Human Services has recognized that burnout is also viewed as a significant threat to patient safety (Lyndon, 2016).

Healthcare providers who experience high levels of stress and burnout are more vulnerable to apathy, rigidity, anxiety, fear, depression, insomnia, hopelessness and negativity (Maslach, 2003; Cocker & Joss, 2016). Burnout is associated with increased mental fatigue, physical fatigue, interpersonal conflict, and can induce feelings of hopelessness in healthcare providers that their situation cannot be changed (Buchanan, Reilly, Vafides, & Dykes, 2018a). Nonetheless, an expected consequence of caregiving by all healthcare providers is an element of stress and anxiety (Buchanan et al., 2018a). Anxiety is characterized by an unpleasant array of psychological and physiological responses to stress that include anticipatory distress, worry, fatigue, muscle and/or jaw tension, trouble sleeping, rapid heart rate and sweating (Au, Tsang, Lin, Leung, & Cheung, 2015).

Many studies have examined the impact burnout and compassion fatigue have on nursing and other healthcare providers' experience and effectiveness in providing healthcare. Compassion fatigue has been defined as a combination of physical, emotional and spiritual depletion associated with caring for patients in significant emotional pain and physical distress (Lombardo & Eyre, 2011). A study by Mealer and colleagues examining 332 inpatient and outpatient nurses found that symptoms of anxiety, depression, PTSD or burnout were present in 87% of the participants (Mealer, Burnham, & Goode, 2009). Compassion and empathy for others can be negatively affected by the emotional exhaustion associated with burnout (Espeland, 2006). Burnout can also cause emotional exhaustion which can affect compassion and empathy for others. Burnout is common among healthcare providers and can negatively impact mental fatigue, physical fatigue, and a lack of energy that can affect all nursing specialties (Espeland, 2006). Estimates for the prevalence of burnout ranged from 10%–70% among nurses, and 30%–50% among physicians, nurse practitioners and physician assistants (Lyndon, 2016). The American Medical Association and the Mayo Clinic have highlighted addressing burnout as a core priority but improvement in burnout rates over the past several years has been incremental, inconsistent across disciplines, and symptoms of burnout remain a pervasive problem for healthcare providers (AMA, n.d.; Shanafelt, West, Sinskey, et al., 2019).

Burnout and compassion fatigue can impact provider performance and patient safety (Lyndon, 2016). A Swiss research team published a compelling study in 2015 and another in 2016 examining the impact of burnout on nurses and physicians working in 54 intensive care units (Welp, Meier, & Manser, 2015; Welp, Meier, & Manser, 2016). The first study reported that a rise in mean levels of emotional exhaustion in the nurses and physicians correlated with a rise in patient mortality ratios (Welp et al., 2015). Similarly, the second reported a rise in perceived deterioration of interpersonal teamwork in conjunction with a rise in mean levels of emotional exhaustion in the nurses and physicians (Welp et al., 2016). Together these studies strengthened the links between burnout and impairment of a healthcare providers' ability to maintain safe practices, to detect emerging safety threats, and to work optimally within the healthcare team. Emotional exhaustion is considered the core dimension of burnout (Maslach, Schaufeli, & Leiter, 2001). Other

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* Corresponding author.
E-mail addresses: michell.olshanperlmutter@atriumhealth.org (M. Olshan-Perlmutter), medicinewheelhealing@gmail.com (K. Carter), marxj@winthrop.edu (J. Marx).

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studies have also concluded that emotional exhaustion could exert its negative effect on patient safety due to decrease in physical and cognitive ability to perform one's duties. The cognitive processes such as executive functions, attention and memory are impaired in burnt-out individuals (Deligkaris, Panagopoulou, Montgomery, & Masoura, 2014).

2. Literature review

Studies have suggested auricular acupuncture can be beneficial in reducing stress and anxiety. In Reilly's study, auricular acupuncture was offered to healthcare workers on the inpatient surgical burn/trauma intensive care and step-down units. Intervention consisted of five auricular acupuncture sessions over a 16-week period. Results indicated auricular acupuncture was an effective intervention for the relief of stress/anxiety, burnout and secondary traumatic stress (Reilly, 2014). Significant increases were noted in courage and patience, two dimensions of the Caring Ability Inventory (Reilly, 2014).

Auricular acupuncture significantly reduced state and trait anxiety as well as improved engagement for hospital staff working in the cardiovascular division; it also improved engagement in these providers (Buchanan, Reilly, Vafides, & Dykes, 2018b). This intervention consisted of five auricular acupuncture sessions over a 16-week period (Buchanan et al., 2018b). State anxiety is identified as unpleasant emotional, physical, and/or cognitive responses to the immediacy of perceived dangers or threats of a physical or psychosocial nature. On the other hand, trait anxiety refers to the enduring tendency across time to perceive certain situations in an anxious manner. Auricular acupuncture has been studied and shown to be an effective treatment in reducing anxiety in healthy volunteers (Wang & Kain, 2001). It has also been shown to reduce preoperative anxiety (Wang, Peloquin, & Kain, 2001).

A study of 133 nursing staff employees with high or moderate levels of anxiety according to the State-Trait Anxiety Inventory participated in receiving either auricular therapy with seeds; or auricular therapy with needles; or auricular therapy with adhesive tape; or were in a control group with no intervention. Participants received twice weekly sessions over five weeks. The auricular protocol, when applied with the nursing staff, achieved significant positive differences in the reduction of anxiety and reduction in pain levels. The needle group presented a 17% reduction in anxiety and a 34% reduction in pain. The seed group had 13% decrease in anxiety and 24% decrease in pain (Kurebayashi, Turrini, Marques, Rodrigues, & Charlesworth, 2017).

One theory suggests acupressure reduces anxiety by reducing 5-hydroxytryptamine and adrenocorticotropic hormone concentrations in nerves and also by adjusting the concentrations of neurotransmitters (Kao, Chen, Lin, Chiao, & Hsieh, 2012). The auricular acupressure Shenmen acupoints are located bilaterally in the auricles' lateral triangular fossa. These regions are innervated by a branch of the vagus nerve, and are associated with anti-inflammatory and calming actions (Li et al., 2015). Notably, the auricular Shenmen acupoint is one of the National Acupuncture Detoxification Association (NADA) protocol bilateral auricular points (National Acupuncture Detoxification Association (NADA), 2011).

During the postoperative period in patients who had undergone hemicolectomy, investigators detected that the use of occlusive press needles at bilateral auricular Shenmen and Point Zero locations increased parasympathetic nerve activity as measured by an electrocardiographic unit recording low frequency/high frequency (LF/HF) ratio (Arai et al., 2013). The LF/HF ratio is thought to reflect sympathetic/parasympathetic balance. Under various conditions such as physical and mental stress, a variance in sympathetic/parasympathetic balance is reflected by variance in the LF/HF ratio. Shenmen is associated with increased parasympathetic nerve activity which is consistent with studies associating this point with pain relief, relaxation, autonomic nervous system, hormonal and other effects (Arai et al., 2013). The Shenmen point has been shown to have a calming effect, promoting relaxation and alleviating pain and anxiety (Helms, 1997). A study of the effect of acupressure in cancer patients undergoing bone marrow biopsy and aspiration revealed that acupressure was effective in decreasing anxiety and pain severity. This study also concluded that cost effectiveness and short-term simple education make auricular acupressure useful in clinical settings for different illnesses (Moloud, Abbas, Fatemeh, Shahrbanoo, & Bahram, 2017). Shenmen auricular acupressure reduced the need for sedatives and anti-anxiety medication in post-menopausal women with anxiety (Kao et al., 2012), and alleviated anxiety in elderly patients before hip surgery (Barker et al., 2006).

A recent study showed that improvements in sleep quality, anxiousness and depressed mood in a population of nursing students are associated with the application of a magnetic pellet on the Shenmen ear acupoint (Ke-Hsin, Chia-Chuan, & Mei-Ling, 2018). A systematic review and meta-analysis was conducted on the effects of acupressure on anxiety. The combined results of the five trials showed a greater overall reduction in anxiety in the acupressure group than in the sham controls (Au et al., 2015).

The National Acupuncture Detoxification Association (NADA) was established in 1985 and is a clinically eclectic blend of bilateral acupressure pellets, one-to-five bilaterally placed acupuncture needles, and a uniquely crafted cordial tea (National Acupuncture Detoxification Association (NADA), 2011; Beamis, 2015). The NADA protocol process is clinically flexible, and practitioners can choose which protocol components or mixture of components they may want to utilize depending on clients' needs and clinical setting. The NADA auricular acupressure Shenmen acupoint is one of the classical NADA auricular acupoints and was used in this study. The NADA protocol has been efficacious in engagement and retention of patients in a therapeutic process across the acute and chronic phases of a treatment continuum (National Acupuncture Detoxification Association (NADA), 2011; Center for Substance Abuse Treatment, 2006; Stuyt & Voyles, 2016).

The purpose of this study is to evaluate the effectiveness of auricular acupressure utilizing Shenmen acupoint on improving behavioral healthcare providers' anxiety and burnout.

3. Methods

3.1. Study design and sample

This study uses a correlated-sample design (repeated measures) with a *t*-test analysis. The design also incorporates elements of a temporal crossover between groups. Behavioral healthcare employees working in a large healthcare systems' psychiatry department in North Carolina were eligible to participate in this study. The psychiatry department worksites include emergency room, inpatient services, outpatient services and consult-liaison services. Participation was open to direct-care employees (e.g., nurses, physicians, nurse practitioners, physician assistants, therapists and behavioral healthcare technicians) as well as support staff (e.g., registration, security and pharmacy). Eligible staff were informed about the study by their managers during staff meetings, flyers and by word of mouth. Participants were primarily those who worked or rotated to dayshift schedules because the trained practitioners administering the treatment worked dayshift schedules. Of the 98 people who completed the study (Group 1, $N = 51$) received treatment in the first six weeks, and (Group 2, $N = 47$) received treatment from week 7 to week 13. The original number consenting to participate was 141. (See Appendix A: Flow Chart Participants.)

All participants were screened according to the following criteria: full-time employees who had worked for at least six months and were involved in patient care. Participants were randomized to receive auricular acupressure Shenmen acupoint right away (Group 1) or be waitlisted (Group 2) to begin auricular acupressure Shenmen acupoint after initial group (Group 1) completed treatment. For the purposes of

this study each participant was assigned by a random number table to enter into the initial treatment group (Group 1) or the waitlist group (Group 2). An informed consent form was completed by each participant, and these forms were kept in separate files from the questionnaires. Numerical codes were used to identify the informed consent and questionnaire documents. The numerical codes are only going to be accessible to the members of the research team and no other personnel at the medical facilities will have access to this information. The study is not blind. Magnetic pellets were possibly visible to coworkers even though they were placed behind the ears to maximize anonymity of the study participants.

The study primarily utilizes a pre-test/post-test construct. In addition, qualitative data was obtained and "thematic content analysis" performed on three open-ended questions at study completion. Each participant was asked to complete the Generalized Anxiety Disorder (GAD-7), a 7-item questionnaire measuring correlates of anxiety, and a Professional Quality of Life (PQOL), a 30-item questionnaire measuring compassion satisfaction, trauma/compassion fatigue and burnout when entering the study.

Participants in the initial treatment Group 1 completed the GAD-7 and PQOL questionnaires before receiving auricular acupressure Shenmen acupoint treatment and completed GAD-7 and PQOL questionnaires again after six weeks of treatment. Participants in the Group 2 (waitlist group which acts as control group during first six weeks) completed questionnaires at start of study, at end of six weeks when treatment Group 1 completed auricular acupressure Shenmen acupoint treatment, and again after their (Group 2) completion of six weeks of treatment. Both Group 1 and Group 2 completed post-treatment work stress questionnaires right after completing auricular acupressure Shenmen acupoint treatment.

All participants when in the treatment condition had a magnetic pellet with hypoallergenic tape applied to the reverse Shenmen acupoint. Magnetic pellets remained in place for one entire week and then magnetic pellets were removed and replaced. The reverse Shenmen is located at the lateral wall of the triangular fossa behind and mirroring the anterior Shenmen acupoint, The participating behavioral healthcare providers completed at least three auricular acupressure Shenmen weekly treatments in order to be included in the sample for statistical analysis (Fig. 1).

3.2. Instruments and measures

3.2.1. General anxiety disorder questionnaire (GAD-7)

This tool is widely recognized as valid and reliable in primary care and mental health settings. It is a screening tool and as such has symptom severity measures for the four most common anxiety disorders: generalized anxiety disorder, panic disorder, social phobia and post traumatic disorder. Using a cutoff score of 8, the GAD-7 has a sensitivity of 92% and specificity of 76% for diagnosis of general anxiety disorder. The following cutoffs correlate with level of anxiety score: score 5–9 mild anxiety, score10–14 moderate anxiety, score 15–21 high anxiety (https://www.researchgate.net/publication/232108522_Validation_and_Standardization_of_the_Generalized_Anxiety_Disorder_Screener_GAD-7_in_the_General_Population, n.d.).

3.2.2. Professional quality of life questionnaire (PQOL)

This is the most used measure of the negative and positive effects of helping others that experience suffering and trauma. It has subscales for compassion satisfaction, burnout and compassion fatigue. The burnout subscale is our primary focus in this study. The scale's creator, Stamm B, defines burnout as a "feeling of hopelessness and difficulties in dealing with work or doing your job effectively. These negative feeling usually have a gradual onset. They can reflect the feelings that your efforts make no difference or they can be associated with a very high workload or non-supportive work environment," alpha scale reliability 0.75. The other subscales, compassion satisfaction and trauma/compassion fatigue have an alpha scale reliability of 0.88 and 0.81 respectively (Stamm, 2009-2012).

3.2.3. Work stress questionnaire post treatment

This consists of three open-ended response questions compiled by the investigators to illicit qualitative feedback on participants' positive as well as negative auricular acupressure experience.

3.3. Interventions

Auricular acupressure using 800 gauss low magnetic intensity ear pellets are used in this study. There is no documentation that the weak Ferrite ear magnets used in this study have ever been associated with significant injury. These magnetic pellets were placed at the reverse

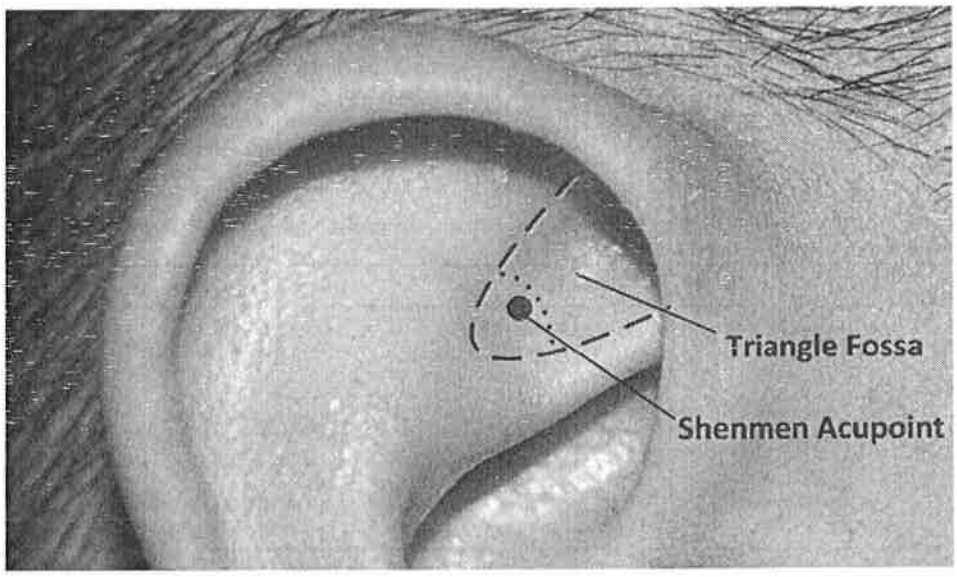

Fig. 1. Shenmen acupoint is located in the lateral wall of the triangular fossa. This study used reverse Shenmen located behind and mirroring the anterior Shenmen acupoint.

Table 1
Health care providers characteristics.

	Total Health Providers (N = 98)	Group 1 (N = 51)	Group 2 (N = 47)
Gender			
Male	30%	22%	38%
Female	70%	78%	62%
Ethnicity/race			
African-American	37%	42%	32%
Caucasian	50%	44%	55%
Other	13%	14%	13%
Marital status			
Married	57%	47%	68%
Single	35%	45%	23%
Divorced	6%	6%	6%
Other	2%	2%	2%
Job categories			
Advanced practitioners	21%	14%	28%
Nurses	46%	54%	37%
Therapies	14%	14%	15%
Support staff	19%	18%	20%
Area hospital			
Inpatient	43%	48%	38%
Emergency room	10%	12%	9%
Outpatient clinic	17%	14%	19%
Outpatient services	30%	26%	34%
Age			
Years ± SD	45 ± 11.3	42.4 ± 12	47.5 ± 9.4
Range	22–74	22–74	27–64
Education			
Years ± SD	17.5 + 3.2	17.2 + 2.7	17.9 + 3.6
Range	12–28	12–23	12–28
Years profession			
Years ± SD	4.5 ± 10.5	13.6 ± 11.6	15.5 ± 9.1
Range	1–45	1–45	2–38
Years provider			
Years ± SD	8.3 ± 8.2	7.6 ± 9.1	9.0 ± 7.3
Range	1–40	1–40	1–28
Anxiety			
GAD-7 ± SD	6.0 ± 4.8	6.0 ± 4.8	5.9 ± 4.9
Range	0–21	0–21	0–18
Burnout			
PQOL ± SD	21.8 ± 5.22	22.4 ± 5.11	21.1 ± 5.25
Range	12–36	14–35	12–36
Compassion satisfaction			
PQOL ± SD	40.0 ± 5.4	38.9 ± 5.8	41.3 ± 4.8*
Range	21–50	21–49	30–50
Trauma/compassion fatigue			
PQOL ± SD	20.6 + 5.3	21 ± 5.2	20 ± 5.3
Range	12–34	12–30	12–34

* Significant difference between group means ($p < .05$).

Shenmen, located at the lateral wall of the triangular fossa. It is behind and mirrors the anterior Shenmen acupoint. The magnetic pellets were replaced weekly every Monday for six weeks for participants receiving auricular acupressure. When participants were not available on Monday due to work schedule, accommodations were made for them to have their magnetic pellet replaced the following day. All magnetic pellets were applied by advanced clinical practitioners and by physicians trained by a NADA Registered Trainer. Participants were encouraged to remove the magnetic pellets the morning prior to having their weekly scheduled replacement (Table 1).

3.4. Results

Of the 98 healthcare providers completing the study, only age and compassion satisfaction were statistically different between those receiving the treatment in the first six weeks (Group 1, $N = 51$) and those receiving treatment between week seven and week 13 (Group 2, $N = 47$. These differences have little impact on our results because we are preforming a correlated-sample design (repeated measures) with a t-test analysis. (Since the pre-test and post-test scores for each person are paired, each person acts as their own control).

GAD-7 and PQOL pre- and post-survey results are summarized in Table 2.

Table 2 and Figs. 2–3 illustrate Group 1 (received treatment during first six weeks) and Group 2 (began treatment in week 7) improving statistically significantly ($p < .05$) in anxiety and burnout levels directly following auricular acupressure Shenmen acupoint treatment completion. Table 2 and Figs. 2–3 also shows that Group 2 did not show significant change in anxiety and burnout during the first six weeks of the study when these healthcare providers did not receive auricular acupressure Shenmen acupoint treatment (the crossover element of study). This non-finding significantly increases the external validity associated with the positive finding for Group 1 (receiving treatment) during the same time frame.

The same general pattern was found for the secondary subscales of PQOL: compassion satisfaction and trauma/compassion fatigue. In the first six weeks, statistically significant improvement was shown in the auricular acupressure Shenmen acupoint treatment group, while no improvement was noted for the control group. During the second 6-week treatment when Group 2 received auricular acupressure Shenmen acupoint treatment, we noted improvement but did not quite reach statistical significance.

The post-treatment work-stress questionnaire was provided to both Group 1 ($N = 48$) and Group 2 ($N = 46$). Overall, 60% of the respondents indicated perceived benefits. Most commonly specific benefits included less stressed, more patience with patients, sleeping better and being more mindful. The majority of the completing respondents

Table 2
Paired Repeated measure t-test for Gad-7 anxiety Scores and PQOL subscales (Burnout, Compassion Satisfaction and Trauma/Compassion Fatigue)[#] by time for Health Care Providers with Auricular Acupressure Treatment.)

	Gad-7	Burnout	Compassion satisfaction	Trauma/compassion fatigue
Group 1 ($N = 49$) Initial-6 weeks (treatment group)	$M_1 = 6.14$; $M_2 = 3.65$ $t = 4.6$; $p < .01$	$M_1 = 22.3$;$M_2 = 20.42$ $t = 3.53$; $p < .01$	$M_1 = 39.12$;$M_2 = 40.89$ $t = -2.57$;$p < .05$	$M_1 = 20.9$; $M_2 = 19.32$ $t = 2.3$;$p < .05$
Group 2 (N = 46) Initial-6 weeks (control group)	$M_1 = 5.91$; $M_2 = 5.65$ $t = 0.38$; NS	$M_1 = 20.8$;$M_2 = 21.56$ $t = -0.16$; NS	$M_1 = 41.26$;$M_2 = 40.54$ $t = 0.94$; NS	$M_1 = 19.61$;$M_2 = 20.10$ $t = -0.68$; NS
7 weeks–13 weeks (treatment group)	$M_1 = 5.91$;$M_2 = 4.00$ $t = 3.2$; $p < .05$	$M_1 = 21.56$;$M_2 = 20.1$ $t = 2.1$;$p < .05$	$M_1 = 40.4.43$;$M_2 = 41.81$ $t = -1.8$;$p = .07$	$M_1 = 19.59$ $M_2 = 18.88$ $t = 1.2$;$p = .23$

[#] A positive sign for Gad-7, Burnout and Trauma/Compassion Fatigue indicates improvement between pre-test and post-test. A negative sign indicates improvement in Compassion satisfaction, because of the direction of this subscale.

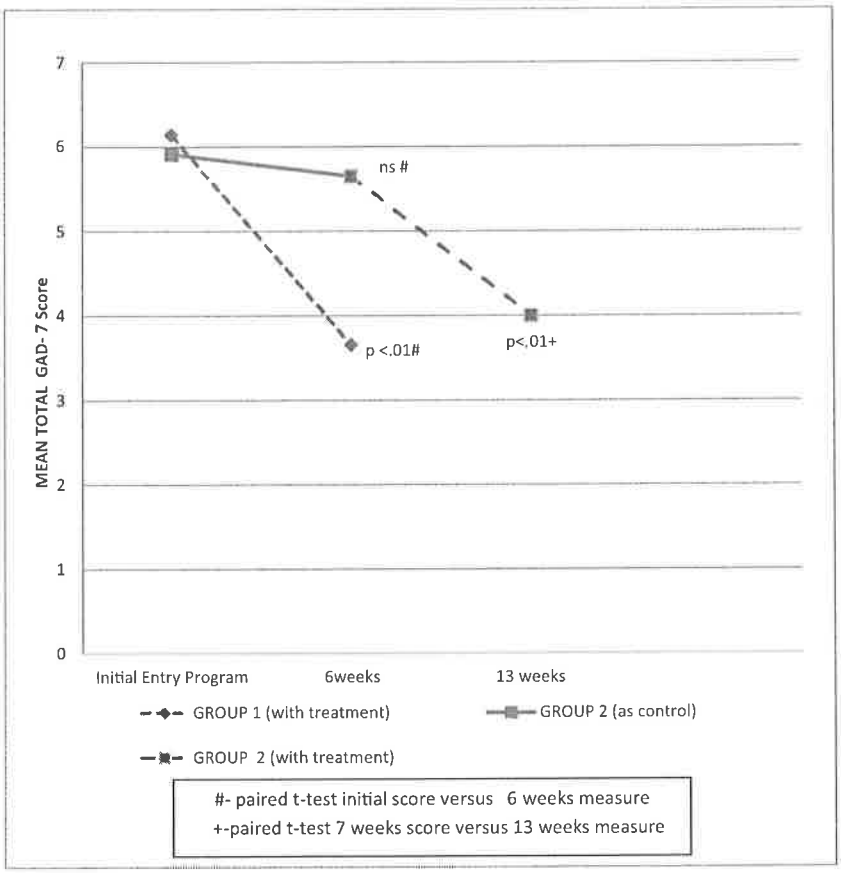

Fig. 2. Mean GAD-7-General Anxiety scores before auricular acupressure Shenmen acupoint and after six weeks of treatment for two groups of healthcare providers.

indicated no noticeable drawbacks from the treatment. Some respondents (N = 30) mentioned minor discomfort with glasses and tape relating to issues such as irritation and loosening of site adhesion. A few mentioned headaches (N = 3). However, only five participants dropped out of the study due to skin irritations from the tape and two due to headaches. (see Appendix A).

4. Discussion

The purpose of this study is to evaluate the effectiveness of auricular acupressure Shenmen acupoint on improving behavioral healthcare providers' anxiety and burnout.

Burnout was assessed using Professional Quality of Life (PQOL) questionnaire consisting of the three subscales: burnout, compassion satisfaction and trauma/compassion fatigue. Anxiety was assessed using the Generalized Anxiety Disorder (GAD-7) questionnaire. In order to gain a broader understanding of participants' experience with auricular acupressure Shenmen acupoint, they were asked to complete three open-ended post-treatment questions. Our results indicate anxiety measured using the GAD-7 improved statistically significantly ($p < .05$) following auricular acupressure Shenmen acupoint treatment compared to each participants' baseline. Additionally, Group 2, during the first six weeks of the study when they did not receive auricular acupressure Shenmen acupoint treatment, did not show significant change in anxiety from baseline.

The PQOL subscale for burnout also reveals statistically significant improvement from each participants' baseline ($p < .05$). The other two 2 subscales: compassion satisfaction and trauma/compassion fatigue improved statistically significantly for Group 1 after treatment, but they did not improve statistically significantly in Group 2 after treatment, though outcomes trended in the predicted direction.

The post-treatment work stress questionnaire indicated 60% of participants mentioned positive experiences from auricular acupressure Shenmen acupoint. They reported less stress, more patience with patients, sleeping better and being more mindful. Some respondents (N = 30) mentioned minor discomfort with glasses and tape relating to issues such as irritation and loosening of site adhesion. A few mentioned headaches (N = 3). However, only five participants dropped out of the study due to skin irritations from the tape and two due to headaches.

The authors did not anticipate the discomfort that arose for respondents who wore glasses and reported skin irritation from the glasses when they come in contact with magnetic pellets. In these cases, the position of the magnetic pellet could be changed to suit the eyeglass wearer within the area identified as the auricular acupressure Shenmen acupoint. Also, a different type of bead or vaccaria seed could be used. The authors felt it was important to understand benefits experienced that are not captured from the standardized questionnaires used in this study. These findings correlate with the anecdotal experiences of NADA practitioners from patients receiving NADA treatments including auricular acupuncture and acupressure. These have included a sense of calmness, improved sleep and a greater sense of greater wellbeing including improved physical and emotional distress (Stuyt & Voyles, 2016; Carter, Olshan-Perlmutter, Norton, & Smith, 2011).

These results are consistent with other studies that have shown auricular acupressure to be effective for reducing anxiety (Kao et al., 2012; Moloud et al., 2017; Ke-Hsin et al., 2018). Reilly was the first study that showed auricular acupuncture was effective for improving state and trait anxiety, burnout and secondary traumatic stress scores for healthcare providers; Reilly, 2014). A study exploring self-reported

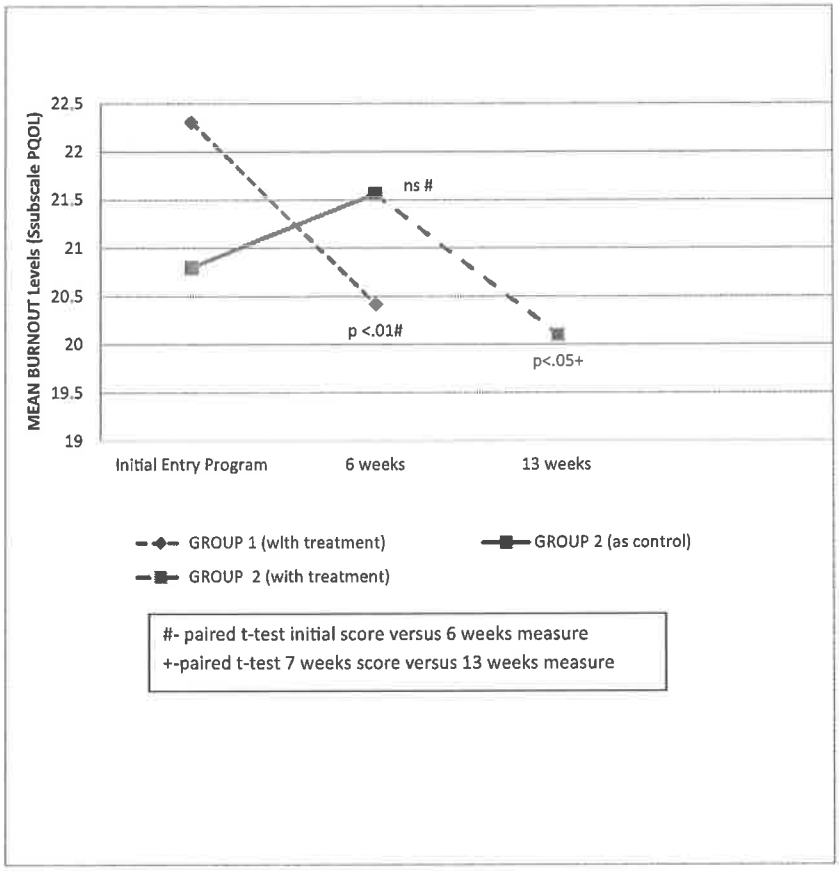

Fig. 3. Mean burnout levels (subscale from PQOL) before auricular acupressure Shenmen acupoint and after six weeks of treatment for two groups of healthcare providers.

benefits of auricular acupuncture among veterans with posttraumatic stress disorder identified four themes that emerged: improved sleep quality, increased relaxation, decreased pain and veterans liked/loved the auricular acupuncture treatments; King, Moore, & Spence, 2016).

It would be interesting to see what added value may occur through combined use of acupressure points with auricular acupuncture. Further research is also needed to determine for which symptoms and for which group or subgroups of persons differential responses may be elicited through the use of auricular acupressure, auricular acupuncture or a combination of both. It is important to note that auricular acupressure is noninvasive, and easier to implement and then auricular acupuncture.

The investigators have identified clear benefit from using auricular acupressure Shenmen acupoint to address anxiety and burnout. An area needing further exploration is the impact improving anxiety and burnout has on engagement and a sense of wellbeing for behavioral healthcare workers.

5. Limitations

The study has several limitations. Participants were only evaluated for six weeks of active consecutive treatment. There was no longitudinal follow-up to determine whether there is a lasting benefit even in the absence of continued treatment. Due to lack of resources, there was no follow-up for Group 1 after Group 2 completed auricular acupressure treatment. In addition, this study did not examine a dose response as it is not known whether one needs to have continuous treatment or whether maintaining the magnetic pellet in place for one or two days a week would have produced the same positive outcomes. The participants were healthy behavioral healthcare providers, and this might limit the generalizability to other healthcare populations.

6. Conclusion

This study is the first to show that auricular acupressure Shenmen acupoint reduces symptoms of anxiety and burnout in behavioral healthcare providers. In addition, 60% of respondents subjectively experienced benefits including less stress, more patience with patients, sleeping better and being more mindful. Our study indicated the auricular acupressure Shenmen acupoint was well tolerated. The authors recommend this therapeutic option be offered to healthcare providers as viable resource to address anxiety and burnout. Additional research is needed to replicate and expand on these findings in other healthcare environments.

Appendix A. Participant flow-chart

Randomized (*N* = 141)

Allocated Group1	Allocated Group2
Initial treatment	Control Group T1
(*N* = 72)	(*N* = 69)
Received allocated	Control stage
Intervention through week 6	Through week 6
(N = 51)	(*N* = 55)
Failed to Complete	Stage intervention through week 13
(*N* = 21)	(N = 47)
	Failed to complete through week 13
	(*N* = 22)

Withdraw Reasons Stated:

	Frequency (N = 21)	Frequency (N = 22)
No specific reason	4	9
Never participated	8	9
Allergic	2	1
Shoulder pain	1	0
Discomfort	1	1
Could not be located/PRN	2	1
Headaches	1	1
Anxious, Weird, strange	2	0

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