

Transcendental Meditation and Reduced Trauma Symptoms in Female Inmates: A Randomized Controlled Study

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ABSTRACT

Context: Compared with the general population, trauma experiences are higher among incarcerated women.

Objective: To evaluate the effects of Transcendental Meditation (TM) on trauma symptoms in female offenders.

Design: Twenty-two inmates at the Coffee Creek Correctional Facility in Wilsonville, OR, with at least 4 months left of incarceration were enrolled in this randomized controlled pilot study. Subjects were randomly assigned to either the TM group (n = 11) or a wait-list control group (n = 11).

Main Outcome Measures: Subjects were measured at baseline and 4-month post-test using the Posttraumatic Stress Disorder Checklist-Civilian version (PCL-C; primary outcome) with intrusive thoughts, avoidance, and hyperarousal subscales (secondary outcomes). Twenty of the subjects (10 in each group) took part in their treatment assignment and completed posttesting.

Results: Significant reductions were found on total trauma (p < 0.036), intrusive thoughts (p < 0.026), and hyperarousal (p < 0.043) on the PCL-C. Effect sizes ranged from 0.65 to 0.99 for all variables. Eighty-one percent of the TM subjects were compliant with their program.

Conclusion: The results of this study indicate feasibility of the TM program in a female prison population and suggest that TM may be an effective tool for decreasing trauma symptoms. Future large-scale research is warranted.

INTRODUCTION

Women have become the fastest growing population in prisons, nearly double the rate of increasing male incarcerations.¹ Along with the increasing confinement of female offenders, researchers have found that women carry the burden of proportionally high amounts of traumatic experiences, with higher rates of emotional trauma and sexual abuse than do men.²⁻⁵ Rates of childhood abuse among incarcerated women also are elevated compared with women in the general population.^{4,6,7} One estimate indicates 75% to 90% of incarcerated women as having a trauma event during their lifetime.⁸

High levels of trauma contribute to poor lifestyle choices, psychological and

physical comorbidities, and increased risk of recidivism.⁹⁻¹² Research further shows an association between traumatic stress exposure and various forms of cancer in a predominantly female population.¹³

Meditation has been shown to significantly improve psychological, behavioral, and physical health.¹⁴⁻¹⁶ Systematic reviews of meditation in various prison settings generally have shown positive effects of meditation on a wide range of psychosocial stress factors.¹⁷ The Transcendental Meditation (TM)³ program, in particular, has shown consistent reductions in psychological distress and recidivism in inmate populations.¹⁷ The TM program has further shown reductions in symptoms

of trauma, burnout, perceived stress, and depression in predominantly female populations outside a correctional setting.¹⁸⁻²⁰

To our knowledge, there has been no research to date with this stress reduction program focusing on trauma symptoms in female prison inmates. Therefore, a randomized controlled pilot study was conducted to determine the feasibility and effects of the TM program on trauma symptoms in female inmates.

METHODS

Subjects

Twenty-five female inmates in the Coffee Creek Correctional Facility, a primarily medium-security prison in the northern part of Oregon (Wilsonville), attended a 45-minute presentation on a project to evaluate the effects of the TM program on inmate stress levels. Inmates heard about the presentation through word-of-mouth and prison postings. The presentation described the study and provided information on the TM program. Those who were interested were asked to stay behind and complete written informed consent and baseline testing forms.

Twenty-two inmates were interested in participating in the research project and were randomly assigned to either the TM group (n = 11) or a wait-list control group (n = 11). To be eligible for the study, inmates had to have at least 4 months left of incarceration.

Measures

The primary outcome for this study was the Posttraumatic Stress Disorder Checklist-Civilian version (PCL-C) total trauma scale. Secondary outcomes included

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PCL-C subscales: intrusions, avoidance, and hyperarousal. Test administration was at baseline and four-month posttest.

The PCL-C is a 17-item self-report questionnaire of trauma symptoms, using a 5-point Likert scale (“not at all” to “extremely”) with a range of 17 to 85 severity points.^{18,21} Subjects are asked to respond to a list of problems and complaints that people sometimes have in response to stressful experiences, indicating how much they have been bothered by that problem during the past month. Test items include the following: “repeated, disturbing memories, thoughts or images of a stressful experience,” “suddenly acting or feeling as if a stressful experience were happening again (as if you were reliving it),” “avoiding activities or situations because they reminded you of a stressful experience,” “feeling emotionally numb or being unable to have loving feelings for those close to you,” and “loss of interest in activities you used to enjoy.” The PCL-C has been used in prior research on meditation and has been found to be sensitive to change owing to TM practice.¹⁸

Scores on the PCL-C correlate highly with scores on the Clinician-Administered Posttraumatic Stress Disorder Scale ($r = 0.93$).²² For this study, Cronbach α equaled 0.91. The PCL-C contains 3 subscales: intrusions, avoidance, and hyperarousal.²³ Cronbach α for these subscales ranged from 0.75 to 0.91 in this study. The full PCL-C appears online.²⁴

INTERVENTIONS

Transcendental Meditation Program

The TM technique is a simple technique for reducing mental stress and is practiced twice daily for approximately 20 minutes. Performed while sitting in a comfortable position, the technique allows the mind to experience finer levels of the thinking process and to achieve a state of deep restful alertness.²⁵ Unlike some meditation programs, the TM technique does not involve “guided meditation” procedures, visualization practices, or any other external mechanisms as part of the practice.

The TM program was used in this study because it includes a standardized and reproducible instruction format, a thorough certification program for instructors

and widespread availability of instructors, and prior research findings in the area of mental health¹⁹ and has been found to be especially effective in correctional settings because of ease of practice.^{17,25,26}

The TM program was taught to study participants by certified teachers, using the same standardized procedures for teaching. After initial introductory and preparatory lectures and a brief personal interview with the teacher, subjects participated in an individual personal instruction session, followed by group meetings to verify the correctness of practice and to provide additional knowledge about the practice. The personal instruction and follow-up group meetings were held over four consecutive days (about an hour each day).

This program differs from other meditation programs in terms of electroencephalographic (EEG) activity during the practice.²⁶ Concentration techniques generally involve the purposeful focusing on objects and typically corresponds to gamma (20-Hz to 50-Hz) EEG waves, which is involved in attention-related activities. Open monitoring, or mindfulness,

techniques produce theta (4-Hz to 8-Hz) waves, corresponding to inward monitoring of thoughts and maintaining a non-judgmental attitude toward them.

Self-transcending through the TM technique involves the effortless thinking of a sound without meaning (mantra), which allows the mind to settle to quieter levels of thought until it achieves the silent state of transcendental consciousness, a process called transcending. The TM technique does not involve trying to alter one’s breathing or other metabolic processes; the body more spontaneously gains a more balanced state of functioning. Practice of TM primarily increases EEG alpha-coherence and synchrony, especially in the prefrontal cortex, and is associated with deep relaxation and improved executive functioning.²⁷ Meta-analyses have found that the TM technique was more effective than other meditation and relaxation techniques for reducing trait anxiety.²⁸

Participants were encouraged to practice their meditation program individually in their prison cells, sitting with eyes

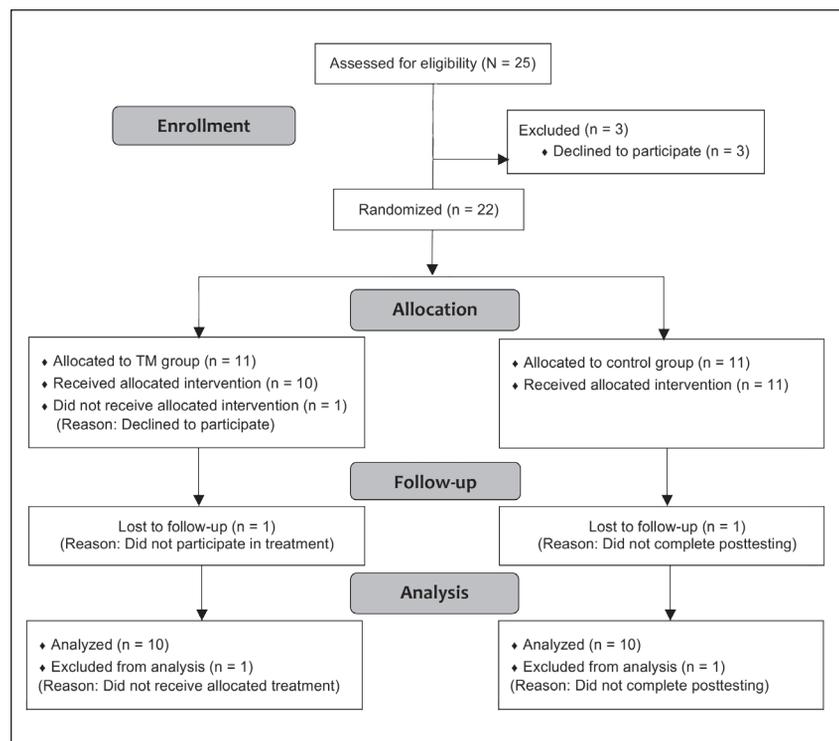


Figure 1. Consolidated Standards of Reporting Trials (CONSORT) flow diagram.

TM = Transcendental Meditation.

closed, twice a day for 20 minutes each session. They also were encouraged to attend 30- to 40-minute group meditation sessions, supervised by a TM teacher, twice a week during the 4-month intervention period.

Wait-List Control

Subjects in the control group continued with their usual daily schedule and did not participate in the TM program during the intervention period. They were given the option to learn TM after 4-month posttesting.

All subjects in both groups continued to receive standard care. There was no cost to any of the participants for learning the TM program.

Statistical Analysis

Analysis of covariance, adjusting for baseline dependent scores, was used to determine change in PCL-C total scores. Subjects who did not complete posttesting or did not attend any TM program instruction sessions were excluded from analysis. Cohen's *d* (mean posttest score difference between groups divided by pooled posttest standard deviation) was used to determine effect sizes for each variable. Alpha was set at 0.05, two-tailed.

Evaluation of Adherence to Transcendental Meditation and Follow-up of Participants' Experiences

Compliance with TM was assessed by self-report. Adherence was defined as practicing TM at least once a day on average. As part of the study's qualitative component, TM participants were asked to provide written personal experiences, with an open-ended format, twice during the four-month treatment period.

RESULTS

Of the original 22 randomized subjects, 20 took part in their group assignments and completed 4-month posttesting (Figure 1). One subject assigned to TM chose not to learn the TM program, and 1 control subject did not complete PCL-C posttesting. The average age of the women was 44.5 years, and 80% were white (Table 1). The average score on the PCL-C was 52.70, placing most of the women in the range of clinically significant posttraumatic

Table 1. Background and demographic characteristics by group at baseline

| Variable | Transcendental Meditation (n = 10) | Control (n = 10) | p value |
|-------------------------|------------------------------------|------------------|---------|
| Age, years, mean (SD) | 44.50 (11.20) | 44.64 (8.45) | 0.975 |
| Race/ethnicity, no. (%) | | | |
| White | 9 (90.00) | 7 (70.00) | 0.578 |
| Other | 1 (10.00) | 3 (30.00) | |
| PCL-C scores, mean (SD) | | | |
| Total trauma score | 53.00 (17.35) | 52.40 (13.05) | 0.931 |
| Intrusions subscale | 17.30 (6.24) | 14.90 (5.88) | 0.388 |
| Avoidance subscale | 19.50 (7.29) | 22.90 (4.36) | 0.221 |
| Hyperarousal subscale | 16.20 (5.63) | 14.60 (5.30) | 0.521 |

PCL-C = Posttraumatic Stress Disorder Checklist-Civilian version; SD = standard deviation.

Table 2. Four-month adjusted posttest PCL-C scores by group^a

| Variable | Transcendental Meditation (n = 10) | Control (n = 10) | p value | <i>d</i> ^b |
|-----------------------|------------------------------------|------------------|---------|-----------------------|
| Total trauma score | 29.08 (2.63) | 41.02 (5.17) | 0.036 | 0.85 |
| Intrusions subscale | 9.00 (0.92) | 13.30 (1.55) | 0.026 | 0.99 |
| Avoidance subscale | 11.97 (1.16) | 15.83 (2.20) | 0.139 | 0.65 |
| Hyperarousal subscale | 8.14 (0.87) | 11.86 (1.77) | 0.043 | 0.82 |

^a Data are mean (standard error).

^b *d* = effect size based on Cohen's *d*.

PCL-C = Posttraumatic Stress Disorder Checklist-Civilian version.

stress. No statistically significant differences were found between groups on any demographic or baseline factors.

Table 2 shows 4-month adjusted posttest scores in total trauma symptoms and subscales, as measured by the PCL-C. There was a significant reduction in total trauma symptoms in the TM group compared with controls ($F_{1,17} = 5.18$, $p = 0.036$; TM posttest adjusted mean = 29.08, standard error [SE] = 2.63; control posttest adjusted mean = 41.02, SE = 5.17). Significant decreases were also found in the TM group compared with controls for the subscales for intrusions ($F_{1,17} = 5.96$, $p = 0.026$; TM posttest adjusted mean = 9.00, SE = 0.92; control posttest adjusted mean = 13.30, SE = 1.55) and hyperarousal ($F_{1,17} = 4.76$, $p = 0.043$; TM posttest adjusted mean = 8.14, SE = 0.87; control posttest adjusted mean = 11.86, SE = 1.77). Change in the avoidance subscale did not reach statistical significance ($F_{1,17} = 2.41$, $p = 0.139$; TM posttest adjusted mean = 11.97, SE = 1.16; control posttest adjusted mean = 15.83, SE = 2.20).

Eight of the TM subjects showed a clinically meaningful change in total trauma symptoms (>10 points). Effect

sizes were medium to large, ranging from 0.65 to 0.99.

Qualitative evaluation of participants indicated benefits ranging from reduced trauma and psychosocial stress to greater sense of inner freedom and resilience. The following are excerpts of three of these experiences:

- It has been difficult to find peace and happiness in such an environment [prison] ... Meditating twice a day has helped lessen my stress levels, allowed me to connect to and center myself at deeper levels, and to retreat, reflect, and problem solve. ... Meditating helps facilitate my mental clarity, while at the same time calming me. TM has not only helped me mentally, my physical health has also improved. My blood pressure has gone down and my sleep, though I have insomnia, is deeper and more relaxed. I feel more energized.
- I feel so open and have gained such a deep sense of surrender to my life and the feelings surrounding my incarceration. I no longer feel imprisoned. I now feel my freedom from the inside of me. My relationships have blossomed and grown so much since I began using TM.

• Before I learned TM I was waking up several times a week with night terrors—literally screaming. I would only sleep a few hours per night because I was so frightened of my dreams. I had horrible flashbacks, nightmares, and severe PTSD [posttraumatic stress disorder]. Almost immediately I saw the beneficial effects of TM. ... I am able to fully focus throughout the day and have an inner peace and understanding. Compliance with TM treatment was 81%, with 9 of the original 11 randomized subjects practicing TM at least once a day (the criterion for compliance) during the 4-month intervention period. Nine subjects practiced the TM program twice a day, 1 practiced less than once a day, and 1 never learned the TM program.

DISCUSSION

Results of this randomized controlled pilot study showed significant reductions in total trauma symptoms in female prison inmates practicing the TM program compared with wait-list controls. Participants in the TM group exhibited significant decreases on the intrusions subscale, which assesses repeated disturbing memories and thoughts, disturbing dreams, repeatedly reliving the trauma, and physical reactions when being reminded of the trauma experience. A significant reduction on the hyperarousal subscale, which includes trouble falling or staying asleep, difficulty concentrating, being superalert or on guard, and feeling jumpy or easily startled, was also observed because of TM practice.

Results showed medium to large effect sizes for all study outcomes, with approximately 80% of the TM participants showing clinically meaningful reductions in total trauma symptoms. Compliance with the TM program was good, with 81% practicing twice a day.

Very few interventions exist that target the unique needs of female prisoners, and even fewer programs are trauma informed.^{29,30} This study suggests that TM may be a viable alternative treatment for reducing trauma symptoms in incarcerated women. Prior studies indicate that practice of the TM program reduces psychological and physiologic response to stress factors, including decreased

sympathetic nervous system and hypothalamic-pituitary-adrenal axis, and reductions in elevated cortisol (stress hormone) levels.³¹⁻³³ Research also shows a more coherent and integrated style of brain functioning, evidenced by EEG imaging, which is associated with lower stress reactivity.^{34,35} This research may provide possible explanations for how TM practice may reduce trauma symptoms in incarcerated women.

A significant reduction on the hyperarousal subscale, which includes trouble falling or staying asleep, difficulty concentrating, being superalert or on guard, and feeling jumpy or easily startled, was also observed because of TM practice.

The current research was undertaken as a pilot study, carried out in a difficult setting and targeted toward a challenging population. It is in this context that the study makes an important contribution to the fields of mental health and corrections. Strengths of the present study include a high adherence to the study intervention. A randomized controlled design was used, with subjects allocated to either immediate start of TM or a wait-list control group. The use of self-report outcome measures may have introduced some possibility of bias, although there is substantial prior research on the TM program with physiologic and biochemical stress-related measures that supports the findings of this study and TM program efficacy.^{19,31-33}

Limitations include that this is a pilot study with fairly small numbers and conducted during a relatively short time. Future studies are encouraged to use larger numbers of subjects, be conducted over a longer period, and to include a more active control condition to account for time and attention.

CONCLUSION

Female inmates practicing the TM program showed a significant reduction in total trauma symptoms and intrusions and hyperarousal subscales of the PCL-C during a four-month period, providing

additional support for the value of TM in reducing trauma symptoms. Results of this study are consistent with prior research conducted in other populations with post-traumatic stress, including veterans and refugees, and sets a foundation for further exploration of research in female inmates with trauma symptoms. ❖

^a Transcendental Meditation and TM are service marks registered in the US Patent and Trademark Office, licensed to Maharishi Foundation, and used under sublicense.

Disclosure Statement

Blaze Compton, MA, is a part-time consultant to Maharishi Foundation USA, a nonprofit educational organization. The authors have no other conflicts of interest to disclose.

Authors' Contributions

Sanford Nidich, EdD, and Randi Nidich, EdD, participated in the study design, analysis of data, and drafting and critical review of the final manuscript. Angela Seng participated in the management of data, statistical analysis, and drafting and critical review of the manuscript. Tom O'Connor, PhD, participated in the drafting and critical review of the final manuscript. Blaze Compton, MA, participated in the teaching of the Transcendental Meditation program and critical review of the final manuscript. John W Salerno, PhD, participated in the writing and final review of manuscript and preparation for publication. All authors have given final approval to the manuscript.

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Best

He is the best physician who is the best inspirer of hope.

— Samuel Taylor Coleridge, 1772-1834, English poet, literary critic, and philosopher