



Stress Reduction with the Transcendental Meditation Program in Caregivers: A Pilot Study

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Abstract

Objective: To determine feasibility and potential effects of the Transcendental Meditation® (TM) technique on caregivers' mental health and spiritual well-being.

Methods: Twenty-three caregivers learned the TM program over five sessions and attended twice monthly group meetings over a two month period. Participants practiced at home for twenty minutes twice a day. Outcomes included perceived stress using Cohen's Perceived Stress Scale, Total Mood Disturbance using the profile of Mood States (POMS), spiritual well-being using the FACIT scale, and levels of stress and perceived physical health using the Caregiver Self-Assessment Questionnaire.

Results: Significant improvements were shown in perceived stress, spiritual well-being, Total Mood Disturbance, and POMS subscales (p values $< .001$) over the two-month study. Participants rated their current level of stress significantly lower at posttest compared to baseline ($p < .001$) and perceived physical health as significantly improved ($p < .019$). Compliance with TM home practice was $> 90\%$. Further qualitative evaluation of participants suggested improvements in energy level, feeling of calmness, and resilience, and reduced anxiety and other psychosocial stress.

Discussion: This pilot study showed decreases in perceived stress, mood disturbance, including anxiety, depression, anger, confusion and fatigue, and an increase in spiritual well-being (faith in the future and purposefulness). These findings suggest that further research is warranted on the role of the TM technique in managing the mental and physical health of family and professional caregivers.

Keywords

Caregiving, Stress reduction, Meditation, Transcendental Meditation

family or non-professionals and over 60% are women [4,5]. Compared to the non-caregiving general population, caregivers who care for chronically ill relatives and friends often experience psychological, behavioral, and physiological effects that can contribute to impaired immune systems [6], coronary heart disease [7], and a higher mortality rate [8]. With regard to the US aging demographics, most Americans will be informal caregivers at some point during their lives [5]. In 2009, an estimated 21% of the US population served as an unpaid non-professional family caregiver who provided care to an elderly or disabled person over 50 years [1]. Moreover, caregiving is labor intensive, with approximately one-quarter of those caring for cancer and dementia patients spending in excess of 40 hours a week providing these services to family or friends [5]. Thus, the overall level of care required by the care recipient or patient is a major factor that directly influences the caregiver's emotional and physical health [9].

There has been a growing interest in finding alternative interventions to ameliorate the high levels of psychological distress, including perceived stress, anxiety, depression, and fatigue, in family and professional caregivers [2,10]. Prior studies on stress reduction, including that of Transcendental Meditation (TM), suggests that meditation may play an important role in reducing psychological distress in caregivers [10].

The purpose of this pilot project was to further evaluate the feasibility and potential effects of a widely-used stress-reduction program, the Transcendental Meditation (TM) technique [11] on family and professional caregivers' mental health and spiritual well-being.

Methods

Participants

Twenty-four caregivers were enrolled in the project with 23 caregivers (average age 58.71 yrs; 21 female and 2 male) learning the TM technique and completing posttest evaluation. Of these, 19 were family caregivers and 4 were professional caregivers. Caregivers were recruited from Alzheimer support groups and physician and social worker referrals in Ottumwa, Iowa, Austin, Texas, Greenwich,

Introduction

Growing evidence suggests that caregiving can adversely impact one's health [1]. As a consequence, there has now been a greater focus on the day-to-day emotional well-being and quality of life of caregivers [1-3]. Over 90% of this caregiver population are unpaid

Connecticut, and Vero Beach, Florida. These sites were chosen based on availability of TM teachers for this project. The predominant illness of the patients being cared for was Alzheimer's disease. Prior to enrollment, the institutional review board of Maharishi University of Management approved the study protocol. The study recruitment began in August, 2012 with the final subjects recruited in September, 2014. All subjects provided written informed consent prior to baseline testing.

Transcendental Meditation program

Participants learned the standard Transcendental Meditation program from a trained certified instructor over five consecutive sessions (days). These sessions consisted of introductory and preparatory lectures of one hour each followed by a personal interview with the instructor and personal one-on-one instruction [12]. The remaining three sessions were group meetings of knowledge and verification of experience. Thereafter, study participants attended twice monthly group meetings for the duration of the study period. These follow-up sessions were approximately 60 minutes in length and included both verification of correctness of practice as well as discussion of personal experiences and mechanics for tapping into the inner intelligence of the mind and body. All participants were encouraged to practice at home for twenty minutes twice a day for the entire study period.

The Transcendental Meditation (TM) program is a simple, natural, effortless technique that allows the mind to experience finer levels of the thinking process until the mind transcends and experiences the source of thought, the simplest form of human awareness. The TM program produces a state of "restful alertness" with a more integrated style of brain functioning [12].

Psychosocial measures

Outcomes assessments included standardized measures of perceived stress, using Cohen's Perceived Stress Scale, Total Mood Disturbance (anxiety, depression, anger, fatigue, confusion), using the profile of mood states (POMS), spiritual well-being (purposefulness and faith in the future), using the FACIT Spiritual Well-Being scale, and self-rated current levels of stress and physical health, using the caregiver self-assessment questionnaire. Participants were administered these measures at baseline, prior to starting the TM program, and at two-month posttest.

Perceived stress

The Perceived Stress Scale (PSS) [13] is a ten-item inventory with a total score designed to assess the self-perception of stress. Example items include "How often have you been upset because of something that happened unexpectedly?" and "How often have you felt nervous and stressed?" Responses took into account the prior four weeks, using a 5-item response set, ranging from "Never" to "Very Often." Cronbach's alpha is reported to be .85 [13].

Mood disturbance

Mood disturbance was measured using the profile of mood states (POMS) [14]. The POMS-Brief is a 30-item inventory. The main total mood disturbance (TMD) scale and five of the subscales: anxiety, depression, anger/hostility, fatigue, and confusion/bewilderment were used in this study. Participants rated the extent to which they had felt each mood during the previous week (including the day of the survey), using a 5-point response scale (ranging from not at all to extremely). Internal consistency for these scales range from .90 to .95 [14].

Spiritual well-being

The Functional Assessment of Chronic Illness Therapy Spiritual Well-Being (FACIT-SP)-This instrument was used to assess patients' sense of meaning, peace, and purposefulness in life and their faith or optimism in the future [15]. This scale has been shown to be sensitive to change due to practice of the TM technique [16].

Caregiver self-assessment questionnaire

The mental stress and physical health items from the caregiver self-report questionnaire, distributed by National Caregivers Library, were used in this study to assess overall emotional distress and perceived physical health. (http://caregiverslibrary.org/Portals/0/CaringforYourself_CaregiverSelfAssessmentQuestionnaire.pdf)

Statistical Analysis

Repeated measures analysis of variance was used for all analyses. Significance was set at $p < .05$, two-tailed, for all analyses. Effect sizes were computed by taking the mean change (posttest - pretest)/ posttest SD.

Evaluation of adherence to TM practice and follow-up of participants' impressions and experiences

TM compliance was assessed by self-report of home practice. Adherence was defined as practicing TM at least once a day on average. Percentage of subjects enrolled in the study who completed the core 7-step TM course (held over 5 separate sessions) was calculated as a further indicator of feasibility. We also conducted a qualitative evaluation of subjects' personal experiences with a subset of approximately 20% of the participants. These subjects were invited to provide written impressions of their TM practice and/or to participate in structured follow-up personal interviews.

Results

Psychosocial measures

Analysis of baseline and two-month posttest data indicated significant improvements in the following outcomes: perceived stress ($p = .001$), spiritual well-being ($p = .001$), and total mood disturbance ($p = .001$). Analyses of subscales of the profile of mood disturbance scales (POMS) indicated significant reductions in anxiety ($p = .001$), symptoms of depression ($p = .001$), anger ($p = .001$), confusion ($p = .001$), and fatigue ($p = .001$). Effect sizes using Cohen's d ranged from .78 to 1.36 for the standard psychological scales (Table 1).

Using the Caregiver Self-Assessment Questionnaire, participants also rated their current level of stress as significantly lower at two-month posttest compared to baseline ($p = .001$) and their perceived physical health as significantly improved ($p = .019$).

Adherence

Twenty-two of the 24 subjects (92%) enrolled in the study were regular with their home practice of their TM program over the two-month treatment period (adherence $> =$ once a day). Nine participants practiced their program twice a day and 13 practiced once a day, with two practicing less than once a day. Twenty-three of the 24 subjects (96%) enrolled in the study completed the initial TM course (7-step course held over 5 sessions).

TM home practice effect

Higher frequency of TM home practice correlated with improved changes in study outcomes, independent of age and gender (anxiety: partial $r = -.55$, total mood disturbance: partial $r = -.50$, vigor: partial $r = .49$; p values ranged from .044 to .067). Frequency of home practice

Table 1: Pretest and posttest scores for psychological distress scales and spiritual well-being.

Variable	Pretest	Posttest	P value	Effect Size
Perceived stress	40.83 ± 4.79	32.28 ± 7.12	0.001	-1.2
POMS total mood disturbance	2.78 ± 0.72	1.94 ± 0.54	0.001	-1.56
Anxiety	2.83 ± 0.98	1.79 ± 0.63	0.001	-1.65
Depression	2.45 ± 0.85	1.69 ± 0.67	0.001	-1.13
anger/hostility	2.43 ± 0.85	1.56 ± 0.50	0.001	-1.74
Confusion	2.86 ± 0.54	2.31 ± 0.54	0.001	-1.02
Fatigue	3.31 ± 1.10	2.34 ± 0.88	0.001	-1.1
Spiritual Well-Being	36.52 ± 9.57	45.48 ± 8.29	0.001	1.08
n = 23; mean ± standard deviation				

and changes in perceived stress and spiritual well-being were -.42 and .34, respectively (p values >.10).

Participants' impressions and experiences

Overall participants expressed satisfaction with their TM experience. The most common benefits of practice included feeling less psychological distress, especially reduced anxiety, greater calmness, and an overall sense of resilience.

The following are participants' experiences of their TM practice reported at two-month posttesting. A female participant, whose husband suffered from dementia and physical handicaps, reported that she felt "more calm", "more patience", "can focus better", and was "more in control of my situation" after learning to practice the TM technique. A caregiver for both a father with Alzheimer's and a son with cerebral palsy, stated that she felt "more energy", "more focused", "less frustrated at little things", and "more relaxed." Finally, a caregiver whose husband suffered from Alzheimer's, reported feeling more "peaceful", having "more energy", and being able to "laugh at things my husband does or says."

The following are excerpts of two follow-up interviews with study participants conducted approximately two years after posttesting. One participant, who was caregiving for her 93 year-old mother with late-stage Alzheimer's, explained that practicing the TM program helped her get through the hardest times as her mother's condition got progressively worse:

I started TM two years ago... the timing was perfect. I found it pretty easy and it made a lot of difference to me. I just felt calmer, I was much kinder to my mother, I didn't get as frustrated with her....

It's so hard when they can't do anything, they are like children and it is so frustrating because... after a while you hit times where you just want to yell at them and it was so hard not too.... Then (through TM practice) I found that I didn't get like that as often; I found that I was more equalized, more balanced about it all. It was a very helpful tool.

My mother has gotten worse but I am still able to do what needs to be done for her and be loving.... I gotta say that being able to deal with all that and not just falling apart really has to do with TM.... TM grows with you as you need more calm and more clarity of mind... you need that more and more as they get worse and worse. TM is a tool that keeps on giving more and more.

Another participant was a caregiver to her husband suffering from strokes and a debilitating automobile accident before he passed away. Due to her caregiving she experienced high levels of stress, including fatigue and severe anxiety. She described her experience with Transcendental Meditation (TM) in the following way.

I was a caregiver; it was heavy duty... I ended up in the emergency room three times and each time it was diagnosed as anxiety.... They were panic attacks that were so much like heart attacks. I know that it was due to the stress of my caregiving role. I worried about him (my husband) constantly. I was always afraid of what would happen to him. TM helped me by just calming my thoughts... it calmed me down and I could get through the day much easier. Since I have been doing TM I haven't had one anxiety attack... this was the biggest benefit. I noticed less anxiety straight away.

Discussion

Findings of this pilot study showed significant decreases in perceived stress and mood disturbance and a significant increase in spiritual well-being-greater faith in the future and purposefulness in life. In addition, participants reported a lower level of stress and improved physical health since beginning meditation. The results of this analysis were further reinforced by the qualitative data. Compliance with home practice was very good and indicated that this technique is feasible and acceptable for this population who are predominantly family caregivers.

Table 2: Caregiver specific items for overall stress and mental health.

Variable	Pretest	Posttest	P value
Caregiver stress rating	7.00 ± 1.94	3.26 ± 1.79	.001
Caregiver perceived physical health rating	5.38 ± 2.43	3.33 ± 2.56	.019
n = 23; mean ± standard deviation			

The dose-effect results provided in the results indicate that frequency of TM home practice had a salutary effect on changes in study outcomes. Prior research also has shown dose-related effects of TM practice on study outcomes [17]. Other TM studies, including randomized controlled trials, have shown significant reductions in total mood disturbance, including anxiety and depression, and overall quality of life [16,18,19].

The effect sizes shown on negative affect outcomes in Table 2, ranging from -1.02 to -1.74, differ from education/social support and other treatments reported in the literature (using the same effect size calculation as in the present study). For example, a community caregiver education and support (CCES) intervention showed a range of effect sizes of -0.04 to -0.40 in negative affect at two-month posttest [20]. In a one-group pre-posttest design with similar subjects as the present studies, central meditation and imagery therapy for caregivers (CMIT-C) showed a range of effect sizes of -0.41 to -0.53 for negative affect at 2-month posttest [21]. Two-month effect sizes with mindfulness-based stress reduction (MBSR) were -0.54 for anxiety and -1.03 for perceived stress compared with -1.65 for anxiety and -1.20 for perceived stress in the present study [20].

Previous studies indicate that practice of Transcendental Meditation (TM) reduces psychological and physiological response to stress factors, including decreased sympathetic nervous system and hypothalamic-pituitary-adrenal axis over-activation, and reductions in elevated cortisol (stress hormone) levels [22-25]. Research also shows a more coherent and integrated style of brain functioning, evidenced by electroencephalographic (EEG) imaging, which is associated with lower stress reactivity [26,27]. In addition, research shows reduced risk for mortality due to practice of TM compared to controls [28].

Research suggests that the TM program differs from other meditation programs in terms of how the brain functions during the practice [29]. Focused-attention meditation, corresponding to gamma (20- to 50-Hz) electroencephalographic (EEG) waves, aims to improve one's ability to focus attention during activity, which would be advantageous in dealing with threat. Open monitoring or mindfulness techniques produce theta (4- to 8-Hz) EEG waves. Such techniques aim to cultivate a nonjudgmental attitude toward experience. Automatic self-transcending techniques, such as TM, involve the effortless use of a sound without meaning (mantra), which allows the mind to settle to quieter levels of thought. TM increases alpha EEG coherence and synchrony, which provide long-range integration of distal cortical-neural groups necessary for sensory, motor, and cognitive behavior [29]. Meta-analyses suggest that automatic self-transcendence techniques such as the TM program may be particularly effective in reducing psychological distress, including anxiety [30].

The results of this study have potential implications for maintaining and even improving the health of family and professional caregivers. It is these caregivers who often carry the burden of caring, almost exclusively, for their sick loved ones while at the same time trying to balance other life responsibilities. Because the Transcendental Meditation (TM) technique is easily learned and practiced, it can be widely implemented into family caregiver education programs and support groups and used by nurses and other professional caregivers in institutional and home environments [11,12].

There were several limitations to this study. This was a pilot feasibility study with a small sample. Although the data on adherence and outcomes of the study are encouraging, there was no control group, and future studies with randomized controlled designs are required to demonstrate efficacy. Because all outcome measures were

self-report, future studies are encouraged to use other physiological assessments of stress, such as cortisol. In addition, stress-related inflammatory marker outcomes such as C-reactive protein would add an important dimension to study outcomes. Lastly, a short-term two-month intervention period needs additional follow-up time to ensure that high compliance and health benefits are sustainable over the longer term for this population.

Conclusion

This pilot study on caregivers showed significant decreases in perceived stress, total mood disturbance and physical health complaints along with significant increases in spiritual well-being after two months of practice of the Transcendental Meditation program. These results have potential implications for improving the health of family and professional caregivers. Future randomized controlled trials are warranted to confirm these findings.

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Conflicts of Interest

Dr. Randi Nidich is a part-time consultant and Brooke Hadfield was a fulltime employee with Maharishi Foundation, USA. There are no other conflicts of interests.

Authors' Contributions

SN and RN participated in the study design, acquisition and analysis of data, and drafting of the final manuscript. JS and BH participated in the drafting of the final manuscript. CE participated in the critical review, drafting, and submission of the final manuscript. All authors have given final approval to the manuscript.

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