

Effects of Transcendental Meditation on Academic Physician Burnout and Depression: A Mixed Methods Randomized Controlled Trial

Loiselle, Marie PhD; Brown, Carla EdD; Travis, Frederick PhD; Gruener, Gregory MD, MBA, MHPE, FANA; Rainforth, Maxwell PhD; Nidich, Sanford EdD

[Author Information](#)

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Introduction:

Burnout is pervasive among physicians and has widespread implications for individuals and institutions. This research study examines, for the first time, the effects of the Transcendental Meditation (TM) technique on academic physician burnout and depression.

Methods:

A mixed methods randomized controlled trial was conducted with 40 academic physicians representing 15 specialties at a medical school and affiliated VA hospital using the TM technique as the active intervention. Physicians were measured at baseline, 1 month, and 4 months using the Maslach Burnout Inventory, Beck Depression Inventory, Insomnia Severity Index, Perceived Stress Scale, and Brief Resilience Scale. Repeated measures analysis of covariance was used to assess adjusted mean change scores for the 1- and 4-months posttests. Qualitative interviews were conducted at baseline and 4 months and compared with the quantitative measurements.

Results:

Significant improvements were found for the TM group compared with controls at 4 months in total burnout ($p = .020$) including the Maslach Burnout Inventory dimensions of emotional exhaustion ($p = .042$) and personal accomplishment ($p = .018$) and depression ($p = .016$). Qualitative interviews supported quantitative outcomes. Physicians reported classic burnout and depression symptoms in baseline interviews. Those regularly practicing the TM technique reported relief from those symptoms. The control group did not state similar changes.

Discussion:

Mixed methods findings suggest the TM technique is a viable and effective intervention to decrease burnout and depression for academic physicians. Larger longitudinal studies with a

wider range of health care providers are needed to validate these findings for extrapolation to the greater medical community.

Physician burnout is a well-documented phenomenon with over half of US physicians suffering from it.¹ Emergency doctors are most prone (70%),^{2,3} followed by medical and surgical oncologists (30–50%),⁴ residents (18–82%),⁵ and medical students (50%).⁶ “These statistics indicate that a substantial number of our colleagues are struggling at this point in their career with personal and professional issues at a level that should be of concern to all of us.”⁷ Although overall well-being generally increases as physicians advance in their careers, one item that does not tend to improve is burnout.

Research specific to academic physician burnout is limited but has repeatedly shown these physicians to be less prone to burnout than their nonacademic counterparts.^{8–11} This finding is generally associated with the more varied work environment, that is, teaching, mentoring, and research, that academic medicine offers. However, studies also show “life stressors” such as dissatisfaction and lack of engagement as elements that often affect academic physicians' depression, anxiety, and insomnia levels,^{12,13} which in turn may promote substance abuse, medical errors, and suicide ideation.^{12,14}

Research at a large academic health center found that emotional exhaustion (EE), often considered the most important dimension of the Maslach Burnout Inventory, is associated with academic physicians' plans to leave their institution.¹⁵ With over 33% of physicians planning to either cut work hours or leave the profession entirely,¹⁶ the financial ramification for medical schools (\$100,000 to \$900,000 per faculty replacement)¹⁷ is substantial and is driving efforts to prevent physician burnout.

With the limited number of studies on interventions to relieve burnout for physicians in general, and specifically academic physicians, we determined this to be an area of need. We postulated that an intervention to successfully combat academic physician burnout would need to address its comorbidities of depression and insomnia while simultaneously increasing positive attributes such as happiness, emotional availability, and professional fulfillment. In addition, such enhancements should collaborate to move the academic physician experience from one of desperation to progress.

The Transcendental Meditation (TM) technique was chosen as the intervention because it has been shown to reduce burnout, depression, perceived stress, and insomnia with immediate and continued results improving both physical and psychological health.^{18,19} It differs from other forms of meditation, such as mindfulness, in both procedure and results. Although other meditations require contemplation (*open monitoring*) or concentration (*focused attention*), the TM practice requires neither. TM is classified in the *automatic self-transcending* category of meditation practices.²⁰ It is practiced for 20 minutes twice daily while sitting comfortably with eyes closed. Without controlling mental activity, TM uses a simple mental procedure that allows the mind to naturally

settle down to progressively finer more alert levels of thought. As the mind spontaneously becomes less active, the body correspondingly settles to a deep state of rest. This state, known as restful alertness, promotes mind and body flexibility without involving any belief or change in one's lifestyle.¹⁸

In addition, TM was chosen as the intervention because of its standardized teaching program, ease of practice, and extensive research in both general and highly stressed populations, showing reduced psychological distress and burnout while simultaneously strengthening the mind and body.^{18,19,21} This study assessed for the first time the quantitative and qualitative effects of the TM technique in addressing burnout, depression, insomnia, perceived stress, and resilience in academic physicians.

METHODS

Subjects and Setting

Approximately 150 academic physicians from a midwestern metropolitan medical school and adjacent affiliated VA hospital were invited to participate in the study by way of the institutional newsletter and/or department meetings. Forty physicians, representing 12 departments, volunteered. Four physicians were double-boarded and two were department chairs.

This was the first study conducted on physician burnout using the TM technique as a preventative intervention. The number of subjects in the study was based on practical issues including timely recruitment and funding. Institutional review boards at both the lead researcher's university and the participating medical school approved the study.

Study Design

The mixed methods design included measurement surveys taken at baseline, 1 month, and 4 months, and in-person interviews conducted at baseline and 4 months.

After an introduction to the study, completion of informed consent, and baseline testing, subjects were randomly assigned to either the experimental (TM) group or the no-treatment control group as they became available, into three cohorts of 16, 15, and 9. Random assignment was performed for each cohort using a random number generator by an off-site researcher, and allocation assignments were kept in a safe in the medical education office. The on-site researcher notified subjects of their group assignment.

Experimental (TM) Group

Five TM instructional sessions (60 minutes each) made up the core instruction. These included information on the mechanics of the TM practice followed by a brief personal interview with the instructor, personal one-on-one instruction in

TM, and three group sessions which included discussions of subjective experiences and correctness of practice. Physicians were instructed to meditate 20 minutes twice a day and attend four group follow-up sessions over 4 months (30 minutes each).

No-Treatment Control Group

Physicians randomly assigned to this group continued with their usual routines and received no additional treatment as part of the study. After the 4 months posttesting and exit interview, they were eligible to receive instruction in TM.

All study dropouts occurred before the 1 month posttest. The six experimental group dropouts gave personal reasons for not continuing which were not relevant to the intervention. The one control group dropout did not respond to contact attempts ([Fig. 1](#)).

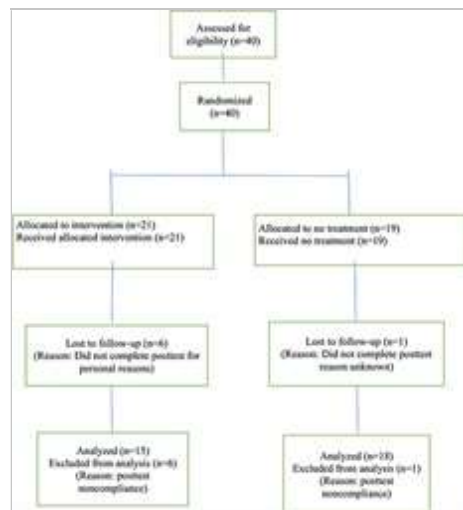


FIGURE 1.:

Flow of study as Consolidated Standards of Reporting Trials

Quantitative Test Instruments

Surveys taken at baseline, 1 month, and 4 months were the Maslach Burnout Inventory (MBI), Beck Depression Inventory-2 (BDI-2), Insomnia Severity Index (ISI), Perceived Stress Scale (PSS), and Brief Resilience Scale (BRS).

MBI is considered the gold standard for evaluating burnout in the workplace.²² It has been used repeatedly when evaluating burnout in physicians.²³ Cronbach alpha for its three dimensions are emotional exhaustion (EE) = 0.88, depersonalization = 0.71, and personal accomplishment (PA) = 0.78, respectively.²⁴

BDI-2 is one of the most widely used inventories for self-measured depression. It has repeatedly shown good validity in distinguishing between depressed and nondepressed subjects²⁵ and demonstrated excellent internal consistency. Cronbach alpha = 0.92.²⁶

Insomnia Severity Index is a reliable instrument for measuring the severity of perceived insomnia. Cronbach alpha = 0.74 to 0.78.²⁷

Perceived Stress Scale is the most applied psychological instrument for measuring nonspecific perceived stress and can measure the effectiveness of interventions to reduce stress.²⁸ Cronbach alpha = 0.82.²⁹

Brief Resilience Scale assesses one's ability to recover from stress and is reliable in measuring resilience.³⁰ Cronbach alpha = 0.93.³¹

Qualitative Test Instruments

The main researcher (M.L.) conducted 30 to 45 minutes in-person semi-structured interviews (see sample questions below) for each subject at baseline (entry) and at 4 months (exit) which were recorded and transcribed for analysis. Sample interview questions for the entry interview were as follows:

- What led you to become a physician? And to your specialty?
- How long have you been an academic physician?
- Tell me about your responsibilities as an academic physician
- What do you see as your greatest challenges?
- How have you been managing those challenges?
- Why did you decide to participate in this study?

Sample interview questions for the exit interview were as follows:

- How have things been going for you these last 4 months?
- Tell me more about...

Additional sample questions for the experimental group exit interview were as follows:

- What was it like for you adding 20 minutes twice a day TM to your daily routine?
- Do you feel it affected your professional or personal life?
- If so, in what way(s)?

Data Analysis

Quantitative

On each measure, item responses for each participant were combined into a total score according to their respective scoring scales. All outcomes were analyzed using repeated measures analysis of covariance (ANCOVA) on change scores from baseline to 1 month and 4 months posttests using age, baseline scores for the three MBI dimensions (EE, Depersonalization, and PA), and BDI-2 baseline score as covariates because baseline burnout, depression, and age strongly influence burnout.^{32,33} Baseline insomnia score was also used as a covariate. Analyses were

performed using IBM SPSS software, based on two-tailed tests of significance with alpha set at 0.05, on the 33 physicians who completed the study. There was no postintervention data either at 1 month or 4 months to be analyzed for the seven dropouts.

Qualitative

For both the entry and exit interviews, researchers M.L. and C.B. read all transcripts iteratively before attempting to identify themes. Main and subthemes were initially generated by M.L., then continuously checked, and revised with C.B. Reflexive researcher notes were written throughout the process and discussed in regular debriefing meetings. All debriefing meetings were recorded, and analytic changes documented.

Every member of the team, except M.L. and G.G., had conducted previous research with the intervention. Of those, only C.B. was involved with the qualitative analysis of this study. Both M.L. and C.B. had previous application experience with the intervention. To counter any possible biases, they engaged in journaling and rigorous discussions on being open to the true outcomes of the intervention. Blinding was not possible for the analyzer because the subjects' answers often included references to their intervention practice (experimental group) or their need for stress reduction (control group).

Triangulation was achieved by having multiple subjects in each group, using qualitative and quantitative methods, and interviewing each subject twice (pre and post).

RESULTS

Quantitative

Demographics and Baseline Scores

All subjects were MDs; two also had PhDs. There was a significant difference between the experimental and control groups on insomnia scores at baseline ($p = .027$). No other significant differences were found (p values $>.05$) between the experimental and control groups in demographics and baseline testing ([Table 1](#)).

TABLE 1. - Demographic and Baseline Data by Group

Variable	Experimental (n = 15)	Control (n = 18)	<i>p</i>
Age in years	42.1 (8.1)	47.6 (11.8)	.123
Sex (female)	10 (66%)	13 (72%)	.730
Marital status (% married)	11 (73%)	13 (72%)	.973
Race (%)			.706
African American	1 (6.50%)	2 (11%)	
Asian American	6 (40%)	7 (39%)	
Caucasian	7 (47%)	9 (50%)	

Variable	Experimental (n = 15)	Control (n = 18)	p
Other	1 (6.50%)	0 (0%)	
Work hours/wk			.462
<40	0 (0%)	2 (11%)	
40–49	4 (26.50%)	5 (28%)	
50–59	4 (26.50%)	7 (39%)	
60+	7 (47%)	4 (22%)	

Baseline Measures (Range)*	Mean Total Score (SD)	Mean Total Score (SD)	p
Burnout (MBI)			
Total (0–132)	68.31 (10.97)	68.86 (11.07)	.887
EE (0–54)	31.33 (6.98)	31.35 (7.26)	.996
DP (0–30)	14.33 (3.98)	14.72 (3.34)	.762
PA (0–48)	25.35 (3.16)	25.20 (3.38)	.898
Depression (0–63)	13.97 (7.40)	10.61 (6.71)	.181
Insomnia (3–28)	13.23 (5.36)	8.61 (5.95)	.027
Perceived stress (0–40)	18.66 (5.93)	18.80 (6.33)	.948
Resilience (6–30)	20.78 (3.35)	18.80 (4.19)	.149

*The range of scores for each scale is defined by the minimum and maximum possible values for the total scores.

DP, depersonalization; EE, emotional exhaustion; MBI, Maslach Burnout Inventory; PA, personal accomplishment.

One- and 4-Month Findings

Repeated measures ANCOVA showed significant improvements for the experimental group at 4 months relative to the control group on total burnout ($p = .020$), EE ($p = .042$), PA ($p = .018$), and depression ($p = .016$). One-month findings showed the experimental group having larger decreases than the control group for total burnout, EE, depression, insomnia, and perceived stress and a larger increase in resilience. Perceived stress decreased and resilience improved for both experimental and control groups at 1 and 4 months. However, there were no significant group differences on those two measures ([Table 2](#)).

TABLE 2. - Adjusted Mean Change from Baseline to 1 Mo and 4 Mo in Each Group Based on Repeated Measures ANCOVA

Measure	TM 1 Month	Group 4 Months	Control 1 Month	Group 4 Months	P*	d*
MBI (total)	-8.84 ± 1.59	-8.20 ± 1.52	-4.54 ± 1.43	-3.47 ± 1.37	.020	0.44
EE	-4.90 ± 1.05	-4.35 ± 1.02	-3.01 ± 0.95	-1.19 ± 0.92	.042	0.45
DP	-1.16 ± 0.73	-1.64 ± 0.48	-1.26 ± 0.66	-1.45 ± 0.43	.948	0.05
PA	2.79 ± 0.67	2.22 ± 0.65	0.27 ± 0.61	0.82 ± 0.59	.018	0.43
BDI-2	-7.30 ± 1.02	-6.61 ± 1.31	-2.34 ± 0.92	-3.68 ± 1.18	.016	0.41
ISI	-3.49 ± 1.26	-3.24 ± 1.14	-1.17 ± 1.14	-1.53 ± 1.03	.232	0.28
PSS	-2.71 ± 1.20	-4.45 ± 1.53	-3.01 ± 1.08	-5.15 ± 1.38	.769	-0.12

Measure	TM 1 Month	Group 4 Months	Control 1 Month	Group 4 Months	P*	d*
BRS	2.04 ± 0.84	1.27 ± 0.88	1.07 ± 0.75	2.56 ± 0.80	.887	-0.33

*P value calculated on change from baseline to 1 mo and from baseline to 4 mo.

*P and d calculated on change from baseline to 4 mo.

BDI-2, Beck Depression Inventory; BRS = Brief Resilience Scale; DP, depersonalization; EE, emotional exhaustion; ISI, Insomnia Severity Index; MBI, Maslach Burnout Inventory; PA, personal accomplishment; PSS, Perceived Stress Scale..

Perceived stress and resilience showed significant improvement for within group changes from baseline to 4 months for both the TM group: PSS: $t(14) = -3.44, p = .002$; BRS: $t(14) = 1.77, p = .049$; and the control group: PSS: $t(17) = -3.33, p = .002$; BRS: $t(17) = 2.55, p = .01$.

Qualitative

Baseline (Entry) Interviews

These interviews explored the challenges faced by academic physicians and how they viewed their ability to handle them in the context of their work and life. The physicians described pervasive burnout from work caused by systemic issues, for example, long work hours and extensive medical charting. This influenced their ability to self-care, which facilitated pressures, work overload, and depression.

Note: The quotes below are followed by a subject number in parenthesis.

Pervasive Burnout

Their challenges as teachers, clinicians, and their personal lives were similar across specialties. Innumerable pressures to constantly perform had led some to burnout and others to worry about the possibility.

One physician observed that colleagues experiencing burnout were inclined to quit the profession but usually stay because they had *“graduated with a quarter of a million dollars of debt and have to pay it off somehow. Most people keep their head down to make their way through it and find joy in the parts of the job that they went into it for—the patient care— and grit their teeth through the rest.”* (#13)

A department chair quantified those who are depressed, *“One-third of physicians are depressed—clinically depressed.”* (#16) A surgeon noted, *“I cannot pinpoint one person in our department who is happy with current medicine. I honestly do not know a single happy physician attending in here.”* (#7)

Self-Care Issues

Related personal concerns raised by all respondents centered around a desire to increase or improve balance of work–life. Physicians were seeking greater peace, calm and happiness, improved sleep, motivation to exercise, increased mental clarity and efficiency, and better connections with patients. One expressed their motivation to join the study:

“I like the idea of being more productive and efficient when I am doing things so that I am not doing my absolute least favorite thing, which is being unproductively busy.” (#13)

Four-Month (Exit) Interviews

At the 4-month interview, there was a noted contrast between the two groups.

Note: Numbers in parenthesis indicate the number of physicians reporting on that item within the group.

Control Group

This group's interview comments were similar across specialties. Most (15/18) reported either an increase of stress or increased work levels and/or hours. At the same time, less than half (8/18) claimed no major changes had occurred in their lives during this period. All (18/18) continued to strongly reference stressful systemic issues.

Experimental Group

These physicians reflected on their previous 4 months of practicing the TM technique. Their unprompted responses characterized the following changes as meaningful:

Calmer, more relaxed, less stress and anxiety (11/15). They were calmer, interacted more positively with patients and colleagues, and felt more relaxed at home.

“I am more relaxed about things overall, more accepting, calmer, not as revved up by things. I think that is the biggest change.” (#15)

Before TM instruction, several physicians had noted an experience of daily prevalent anxiety, described as “free-floating anxiety.” They contrasted that with a notable reduction in anxiety after starting the technique.

“If I meditate, that [free-floating anxiety] is just not there.” (#10)

Better relations and increased emotional availability (12/15). They reported improved team-building skills and increased tolerance with their patients. *“I am more patient with people I work with, or even patients if they are being ridiculous or crazy.” (#9)*

"I feel more positive and slightly more confident where I realize that I do not control much of anything, but I can control my reaction." (#11)

They described improved relations with patients and colleagues and an increased ability to "focus on home" at the end of a bothersome day. One explained the contrast of better relations and increased emotional availability from baseline to 4 months:

Baseline: "As a physician it is really important to be able to connect. I am not always good at this, but I believe it is critical. People come to us, and they are very vulnerable, and there are many times I miss what is really going on. I just treat it like work and miss the real experience."

Four months: "There have been some work things that have come up that I have been able to respond to differently. Because I already feel content, I am more interested in hearing what people have to say." (#3)

Increased mental energy and stamina (10/15).

"It is getting me more mentally rejuvenated on those days where I am just mentally exhausted." (#2)

Another described being better organized and productive due to greater objectivity and a broader perspective:

"I am finishing things with people because I am a little bit more organized. I think that to manage people, you have to be a little bit detached and see the big picture, and I have that ability now. (#3)

Greater energy, increased exercise (8/15). Increased energy had allowed them to accomplish more, including establishing or enhancing exercise routines.

"I feel like I have more energy to deal with things." (#14)

"I started exercising regularly and I started it because of the meditation. This is the first time in twenty plus years I have exercised regularly for more than a week." (#10)

I have gotten a lot more work done at work. I have probably written four manuscripts in the last four months. I do not just get into a panic about something that is overdue. I cannot explain it, but I am better. I know what to do to be productive in a day." (#3)

Compliance

All 21 initial experimental group subjects completed the 4-day TM instruction. By the 1-month posttest, six had dropped out because of personal reasons. Compliance necessary for inclusion in final data analysis was practice of TM at

least once a day. At 1 month, all 15 remaining physicians (100%) practiced at least once/day. At 4 months, 14 (93%) practiced at least once/day.

Several physicians described the TM technique as easy and unique:

“It is definitely a lot easier to do than the other meditations and more relaxing.” (#10)

“I think with this particular technique, that low pressure attitude about it made it easier for me to do.... I think the style of this particular meditation is well suited for physicians.” (#11)

“We have all tried to meditate [previously]. This is so different. It is a method to do it that makes it so easy.... It is the difference between going on a 100-mile bike ride [alone] and going on one where there is rest and food and you do not have to bring your own bike. It is very, very different.” (#3)

Mixed Methods Comparison

Baseline Findings

Quantitative baseline measurements revealed subjects were experiencing midrange burnout, mild depression, subthreshold insomnia, moderate perceived stress, and a normal level of resilience. Their entry interviews identified stressors affecting their physical and mental health; patient, colleague, and family relationships; and ability to perform at work. They observed that the current culture of medicine promotes physician burnout when it is conducted primarily as a business even in a hospital/medical school setting ([Table 3](#)).

TABLE 3. - [Baseline Quantitative/Qualitative Comparison](#)

Quantitative Measure (Score Range)	Average QN Score of Both Groups on the Measure at Baseline	Related Themes from QL Analysis at Baseline
Burnout (0–132)	69.58	• Experiencing anxiety, stress, and burnout
Depression (0–63)	12.28	• Depressed
		• Lack of happiness
Insomnia (0–28)	10.91	• Insomnia
Perceived stress (0–40)	18.73	• Disconnect with patients
		• Impatience with colleagues
Resilience (6–30)	19.79	• Dissatisfaction with system
		• Lack of work–life balance

Four-Month Findings

At 4 months, there were significant quantitative improvements in the TM group on total burnout, emotional exhaustion, personal achievement, and depression. They also showed a greater, although insignificant, improvement in insomnia. Qualitative findings supported quantitative outcomes. The controls reported little change in their lives and continued citing the medical system as the reason for their problems. The TM group reported positive changes in both life and work during the study (Table 4).

TABLE 4. - Experimental Group: Quantitative and Qualitative Changes Compared at 4 Months

Quantitative Measure	Experimental Group Quantitative Scores at 4 months	Experimental Group-Related Qualitative Themes at 4 months
BURNOUT	-8.20 (1.52), $p < .020$	Reduction in anxiety, bothersome situations, stress, and fatigue
		Increases in positive experiences, e.g., productivity, confidence, positivity, happiness, control of their actions, mental clarity, and improved relationships
DEPRESSION	-6.61 (1.31), $p < .016$	Greater happiness and a positive attitude
		More emotional availability
INSOMNIA	-3.24 (1.14), ns	Fall asleep quicker
		Stay asleep longer
		Improved quality of sleep
PERCEIVED STRESS	-4.45 (1.53), ns	Less stressed with patients
		Increased receptivity to colleagues
RESILIENCE	1.27 (.88), ns	Increased flexibility
		Increased work-life balance

DISCUSSION

Reduction in Burnout

At 4 months, there was a significant effect of the TM practice on total burnout ($p < .020$) and two of its dimensions, EE ($p < .042$) and PA ($p < .018$).

EE is generally considered the most important of the three MBI dimensions. A reduction in EE would mirror the effectiveness of the TM practice in relieving burnout, which was demonstrated by previous studies showing significant reductions of the psychological and physiological impact of stress (including lower sympathetic nervous system tone and cortisol levels).^{34,35} Reductions in burnout after 4 months of TM practice were also reported in randomized controlled trials of secondary school teachers and staff, another highly stressful profession.^{19,36}

PA, a second key MBI dimension, significantly increased after 1 month of TM practice and remained significant at 4 months. PA is synonymous with professional fulfillment, currently believed to be as central to physician well-being as reducing burnout.³⁷

Physicians in the TM group described a lessening or disappearance of the causes of burnout from preinterviews to postinterviews, that is, reduction in anxiety, bothersome situations, stress, and fatigue. Their reported experiences included increased productivity, confidence, happiness, control of their actions, mental clarity, and improved relationships, that is, enhanced professional fulfillment.

Their comments on positive outcomes, corroborated by quantitative increases in personal achievement scores, indicate a simultaneous development of mind and body to more satisfying and productive levels.

“Doing better and managing my stress has helped me quite a bit.... It has been an overall very positive experience for me.” (#11)

Reduction in Depression

This was the first known randomized controlled trial (RCT) to significantly reduce physician depression ($p < .016$) with a nonpharmacological intervention. Regular practice of the TM technique is well-documented to reduce depression.²¹ Previous research included schools, high security government agencies, prison inmates, and PTSD veterans.³⁸⁻⁴¹ The most severely depressed physicians are those experiencing the highest levels of burnout.³² Burnout can lead to depression, depression can then lead to further burnout, making them cyclically impactful. Finding depression and burnout significantly reduced in this study further corroborates their connections and the effectiveness of the intervention in reducing both.

“The biggest change is that I am just happier.” (#3)

Reduction in Insomnia

When sleep is disturbed, so is problem solving, reasoning ability, and attention to detail,⁴² which can easily lead to medical errors. Connections have also been found between sleep disorders, anxiety, and depression, all of which are increasing for physicians.⁴³⁻⁴⁵ Lowering insomnia levels for physicians was consistent with findings for TM practitioners in previous research.⁴⁰

“It has helped me sleep significantly. Sleep alone would have been enough for this to be worthwhile.” (#11)

Compliance

The intervention for the treatment group was established as twice-daily practice of the TM technique. Previous research on the effects of TM practice 1/day versus 2/day found increased benefits for those practicing 2/day. A study on the effects

of TM practice reducing cardiovascular disease used Cox regression analysis on the TM group and discovered an inverse association between regularity of practice and primary clinical events. Those who practiced regularly had an overall risk reduction of 66% versus 48% for the overall sample. In addition, increased survival was associated with regularity of TM practice.⁴⁶ Another study measuring the effects of TM on alcohol abuse found a significant correlation between high adherence to 2×/day TM practice and increased outcomes in several measures including stress, psychological distress, craving, and alcohol use.⁴⁷

Owing to the intense work-time requirements of subjects in this study, compliance for inclusion in the data analysis was based on practicing at least once/day. By the 1-month posttest, the number of experimental group subjects practicing the technique twice/day was 10 (67%), whereas once per day was 5 (33%). Compliance, based on at least one session per day, was 100% (15 subjects). By the 4-month posttest, 6 (40%) reported practicing twice/day, 8 (53%) once/day, and 1 (6%) not practicing, making compliance at 4 months 93% (14 subjects).

Divergent Findings

There were two notable unexpected findings from the data. Three of the measures did not show significant results as hypothesized, and a small number of physicians expressed disappointment in their perceived results although their quantitative scores showed improvements.

Previous studies using TM as an intervention showed significant improvements in both perceived stress and resilience.^{19,48} It is possible that lifestyle changes in the control group (not mentioned by the experimental group), e.g., anticipated retirement from the profession, reduced work hours, and extended vacation time, could have contributed to their increases in these measures. A larger sample size may have controlled for these influences.

The three physicians who expressed being underwhelmed by the intervention's impact showed quantitative improvement in all five measures. This could be due to the gradual nature of changes generally produced by TM.

Strengths

The research strengths include a randomized study design which controlled for testing and seasonal effects, regression to the mean, and other nonspecific factors. Results were consistent with previous studies with the same intervention on other populations except as mentioned above. Using mixed methods provided the “story” behind the numbers, revealing the physicians' lived experiences before and after the intervention which would not be available from the quantitative results alone.

Limitations

One limitation of the study was that it was not possible to blind the subjects. Having an additional time-and-attention control arm may have lessened the experimental groups' expectations for improvement.

By testing all subjects at both 1 and 4 months, we attempted to mitigate the placebo effect.

A second limitation was the absence of a longer follow-up period to assess extended stability of change and sustainment of meditation practice.

CONCLUSIONS

Physician burnout, along with its related complications, is both an individual and a systemic problem. On the individual level, we conclude that TM provides an effective antidote against burnout and depression: subjects who practiced TM had significant reductions in both.

This study laid the groundwork for future research using the TM technique to alleviate physician burnout and to enhance professional fulfillment. Although this research was conducted before the COVID-19 pandemic, its implications are highly relevant to the challenges physicians are currently facing. We recommend future research be pursued with the TM technique using larger numbers of subjects in a variety of medical settings.

Lessons for Practice

- ■ Academic physician burnout, as well as its related complications of depression, insomnia, perceived stress, and resilience, is both an individual and a systemic problem.
- ■ Regular practice of the TM technique significantly alleviates academic physician burnout and depression.
- ■ Larger longitudinal studies should be conducted in a variety of medical settings to further verify these results.

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