MEDITATION-BASED PROGRAM FOR ANXIETY DISORDERS

FIGURE 1. Mean Beck Anxiety Inventory Ratings Before, During, and After Treatment of Patients in a Meditation-Based Stress Reduction Program

- The numbers of subjects for successive assessments were as follows: pretreatment, 4, 5, 7, 11, 12, 16, 21; treatment, 20, 22, 22, 21, 22, 21, 21, 19; posttreatment, 21, 19, 21.

- The mean pretreatment Hamilton panic score was 8.36 (SD=12.68) (t=4.07, df=10, p<0.005). The mean number of panic attacks registered on the Hamilton anxiety scale and their severity also declined significantly between pretreatment and posttreatment assessments in both groups, and these declines were maintained at 3-month follow-up (data not shown).

- The pretreatment and posttreatment scores of the subjects receivingpsychotropic medication did not differ significantly from those of the subjects not receiving medication during the study. Twelve patients were taking medication for anxiety before treatment and 13 after treatment; 11 were taking medication at follow-up. Two patients were able to decrease their use of medication between the posttreatment and follow-up assessments, and one increased the use of medication during the same period.

- The pretreatment and posttreatment scores on the SCL-90-R and the Medical Symptom Checklist of the study participants in the stress reduction and relaxation program were compared with the scores on these scales of the nonstudy participants in the program who had met the initial screening criteria for the study to assess possible biasing effects from the more intense assessment protocol on the study participants. As can be seen in table 2, the mean pretreatment and posttreatment scores on the total Medical Symptom Checklist, the anxiety items of the Medical Symptom Checklist, the general severity index of the SCL-90-R, and the anxiety subscale of the SCL-90-R for the 22 subjects in the study were comparable to those of the nonstudy participants in the program. The two groups showed statistically significant and equivalent symptom reduction on

When changes from before to after treatment in anxiety scores and in the number of panic attacks were examined on an individual basis, 20 of the 22 study subjects showed marked improvement (only one patient still had a score over 20 on the Beck Anxiety Inventory after treatment), making it difficult to examine predictors of differential outcome. Consistent with this uniformity of response, no demographic or baseline variables were significantly predictive of outcome. Expectancy ratings also failed to serve as a meaningful predictor of outcome. Self-reported amount of practice (compliance) was also not significantly correlated with any outcome measure. Furthermore, there were no statistically significant differences in outcome between patients with generalized anxiety disorder and those with panic disorder with or without agoraphobia, nor was the diagnosis of major depressive episode associated with outcome.

Adherence to the meditation practices taught in the stress reduction and relaxation program was assessed at 3-month follow-up. In response to the question “Have you been keeping up practice of the stress reduction techniques?” 91% (20 of the 22 subjects) replied in the affirmative, with a relatively homogeneous distribution between single meditation techniques and combinations of methods. Eighty-four percent (N=16) of the 19 who responded to this item were practicing formally three or more times per week; 42% (N=8) were practicing for 45 minutes or more at a time, 16% (N=3) for between 30 and 45 minutes at a time, and 37% (N=7) for between 15 and 30 minutes at a time. Twenty-one subjects reported continued use of mindfulness of breathing (an informal mindfulness practice) in their daily lives, with 77% (N=17) using it “often” and 18%
DISCUSSION

The rate of completion of the program among the study subjects was high (22 of 24 subjects, or 92%), consistent with previous studies of the stress reduction and relaxation program (18). Twenty of 22 subjects showed marked improvement in both anxiety and depression after the intervention. This improvement was maintained at 3-month follow-up. Improvement was observed both in patients' self-ratings (Beck anxiety and depression scales) and in interviewers' ratings (Hamilton anxiety and depression scales).

Of considerable importance is the statistically significant reduction from pretreatment to posttreatment assessment in the number of subjects reporting one or more panic attacks, an improvement that was maintained at follow-up. There was a statistically nonsignificant tendency for the Hamilton panic scores to decrease between pretreatment and follow-up, suggesting that for the subjects who continued to have panic attacks during and after the intervention, the severity of those attacks declined.

Fear survey and mobility inventory scores also improved significantly, but these changes began during the pretreatment period, suggesting both an effect of the general expectancy of participation and an effect of the exposure to a therapeutic milieu during the evaluation visits.

The uniformly positive response to treatment among the subjects in this small study precluded a successful analysis of predictors of outcome. Compliance was also uniformly reported as moderate to high, indicative of the subjects' positive response to the intervention approach and the successful adoption of a range of new behaviors, including both formal and informal meditation practice.

A major strength of this study was the careful diagnostic assessment procedure we used to obtain DSM-III-R diagnoses. Previous studies investigated the use of meditation with normal populations or populations identified by using only nondiagnostic criteria. Such studies may therefore have included patients who would not have met the DSM-III-R criteria for generalized anxiety disorder or panic disorders. The results of this study, which focused specifically on patients with generalized anxiety disorder or panic with or without agoraphobia, suggest that mindfulness meditation used in a group format may be a useful treatment approach for these diagnostic groups.

It is also clear that the improvements in panic and anxiety which we observed cannot be attributed solely to participation in the study itself. This is established by the comparison showing that the subjects who participated in the study and the patients in the stress reduction program who met the screening criteria but were not subjected to the intensive research protocol achieved similar reductions in anxiety scores on the SCL-90-R and the Medical Symptom Checklist. This comparison also demonstrates that the results obtained the much larger group of patients who met the initial criteria for the study.

The strong reductions in panic symptoms and frequency of panic attacks observed in this study are consistent with the cognitive model of panic (30) and with clinical outcomes from studies of panic disorder in which well-established cognitive (31) and cognitive-behavioral (32) intervention approaches were used. The meditative approach used in the stress reduction and relaxation program shares some attributes with both cognitive and behavioral therapeutic approaches used to treat anxiety and panic. It also differs structurally and theoretically from them in a number of noteworthy respects, as has been noted in a different context by others (33, 34).

In particular, the meditative, cognitive, and cognitive-behavioral approaches share an emphasis on noting sensations and thoughts without viewing them as catastrophic and the use of stress-inducing situations as cues to engage in new behaviors. They also have in common the use of homework assignments to reinforce what was learned in the group sessions. However, the stress reduction and relaxation program differs from cognitive and cognitive-behavioral models in the following important respects.

1. Emphasis is not placed on distinguishing thoughts as positive, negative, or faulty, as in cognitive therapy. Rather, the emphasis is on identifying thoughts as "just" thoughts and acknowledging the potential inaccuracy and limits of all thought, not just thoughts that

<table>
<thead>
<tr>
<th>Measure</th>
<th>Study Participants in Program</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Nonstudy Participants in Program</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
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<tbody>
<tr>
<td>Total score</td>
<td>Pretreatment</td>
<td>32.05</td>
<td>13.33</td>
<td>30.97</td>
<td>11.53</td>
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<td>Posttreatment</td>
<td>23.10</td>
<td>17.75</td>
<td>19.59</td>
<td>12.66</td>
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<td>Anxiety score*</td>
<td>Pretreatment</td>
<td>16.95</td>
<td>0.51</td>
<td>15.96</td>
<td>4.67</td>
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<tr>
<td></td>
<td>Posttreatment</td>
<td>11.10</td>
<td>8.50</td>
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<td>SCL-90-R</td>
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<td>Pretreatment</td>
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<td>0.62</td>
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<tr>
<td></td>
<td>Posttreatment</td>
<td>1.56</td>
<td>1.08</td>
<td>1.27</td>
<td>0.79</td>
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<td></td>
<td>Anxiety subscale score</td>
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<td>0.68</td>
<td>0.70</td>
<td>0.62</td>
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*All within-group differences between pretreatment and posttreatment scores were significant (p<0.05) in the two-tailed paired t tests. None of the pretreatment scores differed significantly between study participants and nonstudy participants in the unpaired t tests, except on the anxiety subscale of the SCL-90-R, for which p=0.05.

*Mean number of symptoms out of the 37 identified as characteristic of patients with anxiety disorders.
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odds of formal meditation practice, as well as in informal mindfulness practiced in the course of daily activity.

2. The formal meditation is taught as a daily discipline to be practiced regularly, independent of one’s state of anxiety. The emphasis is on meditation as a way of being, as a way of living one’s life, and as a way to develop alternative “generic” strategies for coping with stress and pain, rather than as a technique for coping with a specific problem such as panic.

3. The intervention takes place in a nonpsychiatric medical setting with a heterogeneous group of patients who have a wide range of medical and psychological problems. This is a significant departure from the model of cognitive-behavioral therapy, which is typically provided to individuals or groups of patients with a single disorder. Moreover, the focus of the intervention is on the meditation practice itself rather than on a specific disorder or diagnosis or constellation of symptoms.

4. Unlike Barlow’s cognitive-behavioral approach, in which subjects are systematically exposed through specific induction exercises to feared internal sensations associated with panic, such as cardiovascular symptoms, hyperventilation, dizziness, and chest muscle tightness (35), there is no attempt at systematic desensitization through the induction of symptoms of any kind during the stress reduction and relaxation program. Although stressful or anxiety-related symptoms are not intentionally evoked, when these experiences arise, either during formal meditation or in the course of daily living, patients are encouraged to see them as opportunities to engage in mindful coping strategies as an alternative to more habitual patterns of emotional reactivity. In this respect, the program utilizes a cognitive restructuring that overlaps with other cognitive and cognitive-behavioral approaches.

5. The observational skills cultivated through mindfulness training differ substantially from those developed by behavioral monitoring techniques. Participants in the program are trained initially to develop concentration (one-pointed attention) through systematic and continued focusing on a restricted field of observation such as breathing or proprioception. Concentration lends stability to one’s capacity to observe fearful thoughts and feelings in a nonreactive way. Coupled with mindfulness, concentration gives rise to a nondiscursive, nonanalytical, direct experiencing of the object of attention. This is in contrast to the external data gathering involved in behavioral analysis of antecedents and consequences.

Patients who are able to identify anxious thoughts as thoughts, rather than as “reality,” report that this alone helps reduce their anxiety and increases their ability to encounter anxiety-producing situations more effectively. The insight that one is not one’s thoughts means that one has a potential range of responses to a given thought if one is able to identify it as such. This increased range of options is associated with a feeling of

With regard to treatment validation, it should be noted that the duration of meditation practice in the weekly classes becomes incrementally longer over the course of the intervention. By the eighth week, most patients sit in silence in class, with little overt movement for periods of up to 45 minutes. This is a profound behavior change for most patients with panic disorder or anxiety. Such extended periods of stillness serve as an observable behavioral indicator of an individual’s increasing ability to concentrate and achieve a degree of calmness over the intervention period. The all-day silent intensive session in the sixth week of the program, involving over 150 patients in one large room, is also an empirical indicator of the development of new behavior. It can be a substantial challenge for patients with panic disorder to sit still for long periods of time, attempting to observe anxious thoughts and impulses as they arise and working with them mindfully rather than succumbing to impulses of reactivity and panic.

A salient limitation of this pilot study is that it did not have a randomly selected comparison group. It also lacked a control for concomitant treatment. However, the group of patients receiving medication showed symptom reduction equivalent to that of the group not receiving any medication, a finding which suggests that the mindfulness approach may be equally useful for patients who receive pharmacotherapy and those who do not. As in treatment studies comparing imipramine and alprazolam (36, 37) and a study of nonpharmacological therapies (6), patients with generalized anxiety disorder and patients with panic disorder responded equally well to the program intervention. However, the number of patients in these two diagnostic categories was small, and a larger, randomized study would be required to determine whether the stress reduction and relaxation program is equally effective in each case or in the case of patients who are receiving pharmacotherapy compared with those who are not. A larger randomized study would also be valuable for comparing the mindfulness-based intervention with other cognitive and cognitive-behavioral therapies.

We observed parallel changes in anxiety and depression scale scores after the meditation program that were similar to those noted by Borkovec et al. (5). However, the presence of comorbid depression in eight subjects in our study was not associated with a statistically significant difference in outcome, as was previously reported (38). This result could mean that the intervention was helpful in alleviating depressive as well as anxiety symptoms. Alternatively, it could have been an artifact of the small size of the study group.

In summary, this pilot study of the efficacy of training in mindfulness meditation in the context of a group stress reduction clinic for medical outpatients showed statistically and clinically significant reductions in symptoms of anxiety and depression in patients with the three core anxiety disorders (generalized anxiety
ticipation in the research protocol and were maintained at 3-month follow-up.

ADDENDUM

A recently completed long-term follow-up conducted with 18 of the 22 subjects in this study found that after 3 years, the 3-month follow-up levels of anxiety and depression reported here had been maintained.

REFERENCES

17. Kabat-Zinn J: An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness medi-