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Original Article

Effect of Mindfulness Based Stress Management on Reduction of Generalized Anxiety Disorder

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Abstract

Background: The aim of this study was to evaluate whether an eight-week group mindfulness-based stress reduction program would be an acceptable and effective treatment for patients suffering from GAD.

Methods: Eligible subjects with generalized anxiety disorder were recruited to Parsa Hospital and Shahid Rajaee Counseling and Social Work Center from June 2009 to October 2011. An experienced psychiatrist diagnosed these patients with a structured clinical interview for axis I disorders and a clinical psychologist conducted a clinical interview for in order to confirm the diagnosis. Subjects were randomized to an eight week course of group mindfulness based stress reduction program (16 subjects) or a control group (15 subjects). Subjects completed measures of anxiety, depressive symptoms and worry at baseline and end of treatment. To investigate the relationship between anxiety, depression and worry symptoms and mindfulness based stress reduction as well as controlling pretest effect, data were analyzed with analysis of covariance.

Results: There were significant reductions in anxiety ($P<0/001$), depressive ($P<0/001$) and worry symptoms ($P<0/001$) from baseline to end of treatment.

Conclusion: Mindfulness- based stress reduction may be an acceptable intervention in the improvement of generalized anxiety disorder symptoms. Future trials include development of randomized clinical trials of MBSR for GAD.

Keywords: Mindfulness**,** Stress reduction, Anxiety, Disorder

Introduction

Generalized anxiety disorder (GAD), characterized by long term, and excessive worry, is a chronic, relatively common disorder with high rates of co-morbidity (1). The estimated prevalence rate for GAD is 5.7% (2), and diagnosis is associated with considerable distress (3). The prediction of course and prognosis of GAD faces with complexity because of high rates of co-morbidity (4). GAD symptoms typically persist over long periods of time, with a majority of patients describing an unremitting course of illness (5).

Historically, pharmacotherapy had been a first line intervention for GAD. It has been showed that two thirds of patients remain symptomatic after intervention (6). In the few last decades attention has been paid towards psychological treatments. Although CBT is effective in treating the disorder, GAD nonetheless remains the least successfully treated of the anxiety disorders (7). Nearly twice as many patients in treatment for GAD achieve partial remission as those who achieve full remission and indicate the persistence of residual symptoms in many who respond to treatment (8).

One rationale for introducing new interventions for GAD is related to the fact that despite effective therapies, the persistence of residual GAD symptoms in treatment responders is a problem. Existing research on mindfulness based stress reduction has demonstrated that intensive training in mindfulness meditation reduces anxiety symptoms and improves the quality of life of patients (9). Mindfulness based stress reduction helps patients achieve mindfulness through intensive training in mindfulness meditation. MBSR is an intensive, structured, client-centered approach that has been used successfully in a range of clinical settings, hospitals and schools. Mindfulness is cultivated through the regular practice of mindfulness meditation and emphasizes an open awareness to the contents of the mind (9).

Since the nature of worry is future directed, training in present-moment mindful awareness may provide a useful alternative way of responding for individuals with GAD (9). The researchers found that patients who received a treatment combining CBT and learning and practicing mindfulness and acceptance-based strategies experienced significant reductions in symptoms and improvement in quality of life (10). Patients who received mindfulness based stress reduction showed a significant decrease in anxiety and depressive symptoms (9).

The aim of this study was to evaluate whether an eight-week group mindfulness-based stress reduction program would be an acceptable and effective treatment for patients suffering from GAD.

Materials and Method

Subjects

The participants in this interventional study were patients referred to the Center of Parsa Hospital and Shahid Rajaee, Counseling and Social Work Center from June 2009 to October 2011. Thirty seven patients ranging in age from 25 to 39 (M = 32.19, SD = 2.21) participated in the treatment. A psychiatrist screened eligible patients. All of the 37 subjects in this sample were male. Nearly half of the sample (n = 18) had earned a high school diploma, five subjects had graduated from a two-year college program and fourteen had not complete high school. Patients were eligible to participate in the study if they met the following criteria (a) age18 or older, (b) Persian speaking, (c) medically stable, (d) met criteria for GAD determined by the modified version of the Structured Clinical Interview for DSM IV (11). Exclusion criteria were any of: (a) substance abuse and/or dependence, (b) psychosis, (c) suicidal and/or homicidal ideation and (d) past participation in an MBSR group.

Procedure

At baseline and end of treatment eligible subjects completed self-report measures of anxiety, worry and depressive symptomatology. Mindfulness Based Stress Reduction (MBSR) programs have grown in popularity since their inception in the 1970's. MBRS was popularized by Jon Kabat-Zinn at the University of Massachusetts's Stress Reduction and Relaxation Program clinic (12). The MBSR program was delivered by an experienced MBSR instructor. Patients attended an initial one-to-one orientation interview with the instructor. The program included psycho education about stress and meditation techniques such as the body scan, mindful yoga and sitting meditation. Subjects met for eight consecutive weeks for two hours in a group format. Sessions typically consisted of a didactic portion, in-class teacher-led exercises, and discussions on everyday applications of mindfulness skills, mindful eating and walking. Each session focused on specific formal and informal mindfulness-based stress reduction techniques. Cognitive exercises such as observing the association between worried thoughts, mood and behavior were introduced by the leader and subjects had the opportunity to practice the techniques in the form of homework assignments. Subjects were asked to practice the formal meditation practices at least 30 min every day and to record their practice. At the end of the eight-week course, subjects completed self-report measures.

Measures

Beck depression inventory (BDI-II)

The Beck Depression Inventory-Second Edition (11) is a 21-item questionnaire that is routinely used to assess affective, cognitive, motivational, beha-

vioral, and biological symptoms of depression and has acceptable psychometric properties (13,14).

Beck Anxiety Inventory (BAI)

The BAI (15) is a 21-item scale that reliably discriminates anxiety from depression while displaying convergent validity. The respondent was asked to rate how much he or she had been bothered by each symptom over the past week on a four-point scale ranging from 1 to 3. The scale obtained high internal consistency and item-total correlations ranging from 0.30 to 0.71 (median = 0.60) and studies have demonstrated its convergent and discriminant validity.

Penn State Worry Questionnaire (PSWQ)

The Penn State Worry Questionnaire (PSWQ) is a 16-item measure that assesses the generality, excessiveness, and uncontrollability of worry without focusing on particular domains of worry (16). The reliability and validity of the PSWQ have been widely researched, and the instrument appears to have sound psychometric properties (17). It has been shown to correlate predictably with several psychological measures related to worry and has been found to possess high internal consistency and good test–retest reliability.

Statistical approach

The data were analyzed with SPSS Version 18.0. Means and standard deviations were computed for pre- and post-BAI, PSWQ, BDI for the total group. A one-way between-groups analysis of covariance was conducted to investigate the effectiveness of intervention designed to reduce participants' depressive and anxiety symptoms. The independent variable was a mindfulness based stress reduction program and the dependent variable consisted of scores on the depression, anxiety and worry measures administered after the intervention was completed. Participants' scores on depression, anxiety and worry measures in the pre-intervention were used as the covariate in this analysis.

Results

Demographic characteristics of 37 subjects who were screened for this study, 35 patients met inclusion criteria and participated in the study. Two patients who completed baseline assessment withdrew prior to the randomization. Results are reported on the 33 subjects with a mean age of 32.19 (range = 25-39) who completed the study. All subjects met the full criteria for GAD.

Table 1 presents the participants' pre-treatment BDI-II, BAI and scores. It shows that all patients were suffering from significant emotional distress. Results demonstrated that the subjects at baseline exhibited severe levels of anxiety as measured by the BAI, a pathological degree of worry as measured by the PSWQ and severe levels of depressive symptomatology as measured by the BDI.

Table 1: Scores on measures at baseline and post-intervention

Measure	Baseline		Post Intervention	
	Mean	S.D.	Mean	S.D.
Intervention Group				
BDI	33.53	5.37	14.13	3.64
BAI	31.32	6.97	12.93	3.71
PSWQ	32.22	6.94	12.20	4.8
Control group				
BDI	31.06	6.42	30.50	5.77
BAI	28.31	7.62	28.31	7.15
PSWQ	32.56	4.42	34.44	3.16

Table 2: ANCOVA summary table for effect of treatment on dependent variables

Source	df	Mean Square	F	*P*
Pre intervention BAI scores	1	91.8	4.446	0.044
Group	1	2121.51	102.74	0
Error	28	20.64	-	-
Pre intervention BDI scores	1	162.32	9.62	0.004
Group	1	2125.14	126.04	0
Error	28	16.86	-	-
Pre intervention PSWQ scores	1	224.48	18.52	0
Group	1	3736.89	308.29	0
Error	28	12.12	-	-

The effectiveness of the intervention was examined using analysis of covariance. The independent variable was the MBSR program and the dependent variable consisted of scores on the BDI-II, BAI and PSWQ measures administered after the intervention was completed (Table 2). Participants' scores on the pre-intervention were used as the covariate in this analysis. After adjusting for pre-intervention scores, there was significant difference between the two groups on pre-test and post-intervention scores on the depression [*F* (126.04, *P*=.000], anxiety [*F* (102.74), *P*=.000] and worry symptoms [*F* (308.29), *P*=.000].

Discussion

This study evaluated effectiveness of a stress reduction program based on mindfulness meditation practices for generalized anxiety disorder. Most participants experienced reductions in depression, anxiety, and worry as a result of participating in the MBSR course. We found that MBSR produced clinically meaningful changes on measures of anxiety, mood, and worry. These findings are comparable to that reported in other studies of MBSR for generalized anxiety disorder (9). Because, the techniques of mindfulness meditation helps a person to develop a nonjudgmental stance of observation towards the anxiety and depressive symptoms they may be a useful cognitive behavioral coping strategy. In another study indicated (18) the effect of MBSR on anxiety symptoms as compared with the usual therapy. Results showed that the experimental group in comparison with the control group experienced greater improvement in anxiety symptoms. In a study (19) an 8-week course of MBSR produced significant decreases in anxiety and depressive symptoms. Another study (20) which compared the effects of MBSR to a waiting-list control condition showed that, compared with the control group, the intervention resulted in significantly stronger reductions of perceived stress and vital exhaustion and stronger elevations of positive affect, quality of life, as well as mindfulness. MBSR may have some benefit in the treatment of generalized SAD (21).

Supporting our first hypothesis, analysis demonstrated the relations between mindfulness- based stress reduction and anxiety symptoms. Specifically, patients reported lower stress appraisals and engaged in more adaptive coping, more mindful individuals experienced higher symptoms reduction. These findings are consistent with other studies (9,10).

The second hypothesis claimed that MBSR results in reduction of depressive symptoms in patients who participated in this course. These findings are consistent with the results of the previous studies (22). Thus this study provides further support for the claim that mindfulness is conducive to more adaptive stress processing and, in turn, higher well-being on a day-to-day basis.

Patients' anxiety over the course of the intervention reduced significantly. Such decrease in level of wariness and anxiety of our participants is consistent with the results of Evans et al. (9). This finding adds further support to the thesis that mindfulness is conducive to well-being, manifest here in lower levels of mental health symptoms and higher levels of positive psychological experience. The results of this study demonstrated that more mindful individuals were less likely to appraise their day-to-day experiences as stressful.

There were certain limitations with the present study. The results are based on a relatively small number of cases and so caution should be used in interpreting the data. A reliance strictly on self-report measures of treatment outcome is a limitation for interpreting the present treatment effects. The results of this preliminary study appear encouraging and support the continued evaluation of MBSR, which should now be compared with active treatments such as applied relaxation or standard cognitive behavior therapy.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

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