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The effectiveness of mindfulness-based stress reduction model in reducing pathologic worry

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Abstract

Introduction: This study aimed to determine the effectiveness of mindfulness-based stress reduction model in reducing pathologic worry about non-clinical population.

Materials and Methods: The statistical population of this research consists of all undergraduate female students in all faculties of the Shahed University of Tehran, Iran. After selection of qualified participants, the individuals were divided into two groups of mindfulness-based stress reduction ($n=11$) and control group ($n=9$). The experimental group participated in the course which was held at the faculty of humanities of Shahed University for two months (eight sessions), while the control group did not receive training at all. The Pennsylvania State Worry Questionnaire and the meta-worry subscale of Wells' Anxious Thought Inventory were given to both groups before and after training. The data were analyzed using the U Mann-Whitney and Wilcoxon signed-rank tests, via SPSS software.

Results: The mindfulness-based stress reduction model reduces the level of pathologic worry ($P<0.05$) and meta-worry ($P<0.05$) in the experimental group than the control group. Also observed differences were significant with comparison the mean of pre-test scores with post-test, first follow-up, and second follow-up in the variables of pathological worry and meta-worry ($P<0.05$).

Conclusion: Based on the results, the mindfulness-based stress reduction model is effective in reducing the pathologic worry.

Keywords: Mindfulness, Stress, Worry

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Introduction

The component of worry can be considered both as a cognitive activity and symptomatic of psychological disorder. Depending on its severity, this component can be a marker. Kelly is considered at the risk of anxiety or as a sign of clinical disorders, such as that found in generalized anxiety disorder (1). The initial research on worry was raised by Borkovec et al. (2). So far, multiple definitions but similar have been raised for worry. Borkovec expresses most used definition which worry is described as a chain of thoughts and images, negatively affect-laden and relatively uncontrollable. In other words, worry is based on the activity of negative thoughts, thinking about the events and the adverse events that we are afraid of in the future (3). However, worry is often feared about adverse events but sometimes also beneficial, for example, of worry our daily routines lead to this, as a result of these worries, it leads to a solution the problem (4). In most cases, this mechanism results in a reversal. It seems that constant thinking about potential disasters that may occur in the future seems to be avoided. Although this avoidance, distress, and stress function will reduce internal experience in the short term, it will excite these emotions by interfering with long-term emotional processing (5). Responding to inner experiences by trying to suppress or avoid these thoughts and feelings probably increases these reactions.

Furthermore, a negative state, an experience that makes the cycle of concern permanent (6). Therefore, if the worry solves the problem, a beneficial process that cannot be concentrated on the problem or find the right solution is a damaging process (4). According to Wells suggestion, worry can be a form of coping (2). This metacognitive model has tried to explain the similarities and differences between pathologic worry and normal worry. This suggestion emphasizes the central role of metacognitive factors in forming and sustainability of anxiety disorder (2). According to the Wells model, when negative beliefs arise about worry, the person is willing to evaluate the worry negatively (meta-worry) and possibly take control efforts to control the worry. Therefore, it

becomes an abnormal phenomenon that emerges from worrying. Meta-worry is greater than normal worry but is lesser than pathologic worry (7). In non-clinical populations, people with a high level of worry are more likely to stop their worries than others (8). Several therapeutic approaches have been developed to treat general anxiety and anxiety disorder, including "cognitive therapy and relaxation", "cognitive behavioral therapy that targets uncertainty", "meta-cognitive therapy", "medicinal treatments", and "third wave therapies" (9). In the 1990s, Wells and Matthews introduced the concept of "detached mindfulness" to reduce their worry. The detached mindfulness is to separate thoughts while observing them objectively. Meta-cognitive model of the realm, it is expected that the detached mindfulness will encourage individuals to be aware of the primary triggers of worry without engaging in worry themselves (10). Today, the application of mindfulness to mental health issues is well-known through a range of mindfulness-based approaches, such as Mindfulness-Based Stress Reduction (MBSR), Mindfulness-Based Cognitive Therapy (MBCT), Acceptance and Commitment Therapy (ACT), and Dialectical Behavioral Therapy (DBT) (11) and its beneficial effects in a wide range of areas, such as the treatment of psychological disorders and worried about it (8,12-23). Increasing the awareness and non-judgmental acceptance of the instantaneous experience that occurs in mindfulness is considered as an effective antidote against all sorts of psychological disturbances-rumination, anxiety, worry, fear, anger, and the like (13) and have a meaningful role in predicting the psychological and emotional well-being of individuals (24,25). Recent advances in understanding worry and generalized anxiety disorder point to the potential benefits of mindfulness elements in their treatment. Mindfulness exercises for people with worry can be beneficial because these exercises lead to expanding awareness of internal and external syndrome is present at the moment and increases the acceptance of internal experiences, which, in turn, can lead to reduced judgment, reaction, or attempt to control affairs

(6). Various types of research show that training two key components of mindfulness (focused awareness and acceptance) reduces the emotional response to negative stimuli and increases the tendency to keep contact with these triggers. Conscious observation and acceptance of emotional responses that occur in mindfulness may be regarded as an effective strategy in reducing mental anxiety and avoidance behavior (13). In mindfulness and acceptance-based approaches, therapists, instead of challenging maladaptive models of thoughts, feelings, or behaviors, help them change their relationships with individual experience. In treatment process, patients often feel saddened by what they feel or how they behave - they want to experience less worry - the therapists, with a curious admission and momentary experience of the unpleasant, seek to change the patient's relationship with his/her problem (26). The particular aspect of the mindfulness approach is the gradual change of an individual's relationships with anxiety; that is, the avoidance and anxiety-afflicting relationship changes into a friendly relationship. People learn in this approach not to be afraid and avoid until the fear subsides (27). As stated, thought worry is one of the essential factors in most emotional disorders it should be taken into account that staffing levels are also found in the non-clinical population. The studies by Tallis, Davey, and Capuzzo showed that among non-clinical people, those with high levels of worry have a more significant problem with stopping them than people with low levels of stress when worries begin (8).

This research is significant, both theoretical and practical. First, there is a worry both in psychological disorders and non-patients, and the need to repair it is essential. Another is that one of the methods of psychological restoration is mindfulness. Therefore, any research of this kind can provide an appropriate body of study in Iranian culture and provide the opportunity to compare the results with other types of research. In particular, there is a lack of research findings to assess the efficacy of treatment on a non-clinical population in our country. On the other hand, the clinical effort in this direction provides a more accurate understanding of the clinical

findings on worry, mindfulness, and its application. The present study aimed to assess the effect of mindfulness-based stress reduction on pathologic worry in a non-clinical population. Eventually, we aimed to determine the effectiveness of mindfulness-based stress reduction on pathologic worry and meta-worry in people with worry.

Materials and Methods

The statistical population of this study consisted of all female undergraduate students studying at the faculties of Shahed University. The sampling of this research has been carried out in two stages: In the first stage, 408 female students were chosen according to the cluster sampling method and were surveyed using the Pennsylvania State Worry Questionnaire (PSWQ). Then their worry was checked, and the students with a worrying score higher than the cut-off point were selected. In this study, based on previous research, a score of 50 was considered a caveat for more precaution. Among those who scored higher than the cut score, 75 were selected, of whom 55 were in the first stage. Accordingly, was done with each of these individuals, an individual diagnostic disorder generalized anxiety based on DSM-IV (28), the GAD-7 (29) scale also performed on them. Inclusion criteria: bachelor's degree studies, female gender, aged 18-24 years, having a score above the cut-off point on the PSWQ scale, not receiving pharmacological, psychological, and/or counseling in the last year, the absence of general anxiety disorder and other psychological disorders. In the second stage, two groups of people had the criteria, and they were ready to cooperate in the present study. Considering the ethical considerations before doing research, explain to participants about goals and method of work and were assured to them that will remain confidential their information thoroughly and if they did not want at each stage in research, can give up.

Research instrument

A) *Pennsylvania State Worry Questionnaire (PSWQ)*: This 16-item questionnaire was used to measure generality, severity, and uncontrollable of a worry. In Iran, Shirinzadeh Dastgiri (30) and Khanipour et al. (31) examined its reliability

and validity. In the present study, the Coincidence coefficient of this test with Cronbach's alpha equal to 0.88 and Spearman Brown's coefficient is equal to 0.89. This questionnaire was used to assess the clinical worry of non-clinical participants and examine the pathological worry.

B) Generalized Anxiety Disorder Scale-7 (GAD-7): Spitzer et al. aimed to develop a short scale to diagnose generalized anxiety disorder and to measure the severity of clinical symptoms. Each question is scored from 0 to 3, and the scale is from 0 to 21. Spitzer et al. reported the internal consistency of this scale by using Cronbach's alpha 0.92, and test-retest reliability is equal to 0.83. The sensitivity and specificity of the scale at a cut point of 10 or more are from %81, and the correlation of this scale with the subscales SF-20 of 0.39 to 0.91 and correlation with scales of Beck Anxiety Inventory 0.72 with subscale in SCL-90-R was reported 0.74. In the study of Nainian et al., in order to study the psychometric properties of this scale on the Iranian population, Cronbach's alpha was 0.85, and the correlation obtained from the double implementation of the result for this one, which indicates the reliability test in this sample is equal to 0.48, which is acceptable for scale in the Iranian sample. The concurrent validity of the scale was measured by its correlation with the state-trait anxiety inventory (for the state anxiety $r=0.71$ and the trait anxiety $r=0.52$) and through the 12-item anxiety subscale of clinical symptoms checklist (SCL-90-R), $r=0.63$, which indicates the acceptable validity for this scale in the Iranian society (29). This questionnaire is used to differentiate people with general anxiety disorder among non-affected individuals among the evaluated samples to enter the second stage of the study.

C) DSM-IV-TR Structured Interview: A structured interview based on the symptoms listed in the DSM-IV diagnostic criteria table used to the differential diagnosis of the disorder

and ensure the lack of generalized anxiety disorder in the participants (28).

D) Anxious Thought Inventory: This multidimensional scale used to measure worry involves three subscales of social anxiety, health anxiety, and meta-worry. The psychometric properties of this scale in Iranian students showed that the degree of internal consistency of the factors "meta-worry", "social anxiety", and "health anxiety" respectively is "0.81", "0.85", and "0.74". The Cronbach's alpha coefficient of the whole questionnaire was 0.91, and the test-retest reliability coefficient was 0.77, 0.82, and 0.75. The Beck Depression Inventory, Beck Anxiety Inventory, and General Health Questionnaire (32) confirmed convergent validity.

E) Mindfulness-Based Stress Reduction Model (MBSR): It includes eight weekly 2-2.5 hour sessions. In eight group sessions, more time is spent on exercising mindfulness and discussing the experiences of members of them, a wide range of mindfulness exercises are learned, and in most sessions, educational information in the field Stress is raised (33). This study used the U Mann-Whitney test to compare the difference between the two groups before and after the intervention, and the Wilcoxon test was used to examine the difference before and after the treatment and follow-up periods in the experimental group. The reason for using non-parametric tests is that there are no parametric test assumptions.

Results

This clinical trial was carried out with a pre and post-test with the control group. Twenty participants with pathologic worry were divided into the experimental group ($n=11$) and the control group ($n=9$). In this study, the comparison of the experimental and control groups was performed based on the difference between the pre-test and post-test scores in the groups. In addition, descriptive indicators for demographic features in two groups were presented in Table 1.

Table 1. Participants' demographic variables in two groups

Variable	Indicator	Group
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			Experimental	Control
Faculty	Humanistic	Abundance (Percentage)	8 (72.70)	6 (66.70)
	Engineering	Abundance (Percentage)	1 (9.1)	0
	Art	Abundance (Percentage)	2 (18.2)	0
	Nursing	Abundance (Percentage)	0	1 (11.10)
	Medical	Abundance (Percentage)	0	2 (22.20)
Address	Tehran	Abundance (Percentage)	4 (36.40)	4 (44.40)
	Township	Abundance (Percentage)	7(63.6 0)	5 (55.60)
Marital Status	Single	Abundance (Percentage)	10 (90.9)	7 (77.80)
	Married	Abundance (Percentage)	1 (9.1)	2 (22.20)
Age		Average (SD)	20.09(1.57)	21.55 (2.60)

Based on Table 2, the mean scores of the pathologic worry and meta-worry indicators in the post-test stage have decreased compared to

the pre-test, but this reduction is more pronounced in the experimental group.

Table 2. Descriptive indexes of the research variables

Index	Variable /group	Pathological worry		Meta-worry	
		Experim ental	Contr ol	Experim ental	Contr ol
Mean	Pre-test	62.27	56.22	17	13.77
	Post-test	46.09	48.55	12.42	13
SD	Pre-test	6.60	3.59	2.48	2.99
	Post-test	5.35	3.81	2.16	3.12

In Tables 3 and 4, the results of the two groups in the two variables of pathologic worry and meta-worry were compared based on the

difference between the pre-post-test scores and the U Mann-Whitney test. The results of the tables indicate a significant difference between

the two groups in both variables. The significant difference in Table 2 indicates that the mindfulness-based stress reduction model has

reduced the pathologic worry scores of the experimental group participants compared to the control group.

Table 3. The comparison of pathologic worry in the experimental and control groups

Index	Difference score pre- test, post-test M (SD)	Z	P
Variable Pathologic worry	Group Experi- mental	16.18(8.56)	-2.43 0.015
	Control	7.66(3.04)	

This significant difference is also seen in Table 4. In other words, the therapeutic program has reduced the meta-worry scores of participants in

the experimental group compared to the control group.

Table 4. The comparison of meta-worry in experimental and control groups

Index	Difference score pre- test, post- test M (SD)	z viewed	P
Variable Meta- worry	Group Experi- mental	4.55(3.43)	-2.21 0.027
	Control	0.77(3.89)	

The experimental cases were re-evaluated after the end of the treatment sessions. The first follow-up period was one month, and the second period was three months after the end of treatment, the results of which were presented in Tables 5 and 6. The results of Table 5 show that the mean of the pre-test score is higher than the post-test, the first follow-up, and the second follow-up in the pathologic worry variable. In

addition, Z observed is due to a comparison of the meanings in all three stages. Therefore, based on the Wilcoxon test, there was a significant decrease in the scores of people on the pathologic worry scale after the intervention. Moreover, this has continued to decline significantly in the one month and the three months after treatment.

Table 5. The comparison of the mean score of the pre-test with post-test, the first follow-up, and the second follow-up of the pathologic worry variable in the experimental group

Variable	Group	M (SD)	Z	P
Pathological worry	Pre-test	62.27 (6.60)	-2.93	0.003
	Post-test	46.09 (5.35)		
	Pre-test	62.27 (6.60)	-2.94	0.003
	First follow- up	39.27 (2.72)		
	Pre-test	62.27 (6.60)	-2.67	0.008
	Second Follow- up	39.66 (4.71)		

Based on the results of Table 6, the mean scores of participants in the experimental group before the intervention are higher than their mean scores after the intervention and follow-up periods. Given that the observed Z in all three

stages is significant, we conclude that this treatment model reduces the level of participants' meta-worry, and this reduction in follow-up periods is also sustained.

Table 6. The comparison of the mean score of the pre-test with the post-test, the first and the second follow-up of the meta-worry variable in the experimental group

Variable	Group	M (SD)	z	P
Meta-worry	Pre-test	17 (2.48)		
	Post-test	12.44 (2.16)	-2.67	0.007
	Pre-test	17 (2.48)		
	First follow-up	10.54 (1.96)	-2.94	0.003
	Pre-test	17 (2.48)		
	Second Follow-up	11 (2.12)	-2.52	0.012

Discussion

Conceptually, worry is a large overlap with mindfulness. It seems that both of these concepts are contradictory in several dimensions. While worry is definite with the anticipation of worrying events in the future, the continuous repetition of these negative thoughts, cognitive avoidance into the danger and uncertainty, the mindfulness emphasizes on self-control, attention to focus on the non-judgment acceptance of internal and external experiences just as they occur at the moment. The beneficial role of mindfulness is based on its two key features: focusing on experiencing the present and an acceptable attitude towards what is happening at the level of consciousness. These characteristics are contradictory to worry because habitual species worry is characterized by features such as lack of focus on the present moment and inappropriate attitude towards worry (34). Therefore, mindfulness is proposed as a method for reducing stress to modify the status of the extreme vigilance to avoid danger in the form of a permanent defensive state (as

happens in worry) (14). This finding is consistent with the results of Delgado et al. (14) and Vøllestad et al. (15). Awareness and acceptance of the internal and external aspects of

the recent experience of mindfulness are clearly in conflict with the key characteristics of chronic worry, namely, the expectation of future events, fears, a cognitive avoidance of the inner experience, and the rejection of an uncertain feeling (14). In addition, it can be as an antidote worried about the consequences of maladministration (34). Therefore, the teaching of mindfulness can be considered a potential deterrent mechanism that can help correct and address worry (14). On the other hand, mindfulness means detachment and separation from thought while observing them objectively. It is expected that this process will have the following consequences: (1) creating metacognitive insight; in which thoughts are not considered as representations of reality and viewed only as mental events, (2) to release from worrying strategies a type that is derived from maladaptive and abnormal ideas, (3) flexible responses to threats, and (4) the development of methods for controlling cognition (14). These results are achieved by the various exercises that exist in the MBSR model. Through mindfulness-based stress-reduction sessions, individuals learn to interact in a way differently with their experiences- seeing emotions, thoughts, and body feelings, with an accepter and non-judgmental viewpoint. This will gradually make people aware of the

automatic thinking models in their minds and see how these reactions will lead to continued worry during the meetings. They learn to distinguish between responsive and expert responses to issues and gradually respond responsibly to alternatives (33). Negative thoughts and meta-worry are key mechanisms in pathologic worry and generalized anxiety disorder (37). Wells believes that mindfulness helps people understand the initial trigger of worry without doing this at work. It is expected that worried people will change negative beliefs about uncontrolled worry and positive beliefs about irrational worry (37). In this regard, Mahjoub et al. also indicated that the components of mindfulness could reduce the level of sensitivity anxiety and meta-worry in clinical students (38). Considering the similarity of findings in this research and those carried out in different locations of the world and based on the mechanism of influence mentioned on mindfulness, this can explain this usefulness in non-clinical Iranian populations. As previously mentioned, the effectiveness of mindfulness-based stress reduction model on pathologic worry components outside the context of any psychological disorder has not been performed in Iran. This research is the same as all research that has many strengths and weaknesses. A sampling of almost a group of female college students at Shahed University and performing individually structured clinical interviews and validated multiple tests for screening of participants and their lack of access to psychological disorders, lack of any medical, psychological, or counseling therapy over the last year by the participants and thus the possibility of generalizing the therapeutic outcomes created for the therapeutic model and preparing the mindfulness-based stress reduction

protocol, is a well-documented and coherent approach to pathologic worry, including the strengths of this research.

However, given the novelty of this research in Iran, it has limitations such as the limited number of participants, the impossibility of randomized assignment in the control and experimental groups due to the restriction of access to people who have inclusion criteria, and willing to participate in the therapeutic program, limiting research to female gender, not setting the comparative plan with other therapeutic models, and not using the "placebo" group. Therefore, it is suggested that future studies could effectively promote this treatment by eliminating the limitations of this study. Using more samples without gender limitation and at a broader level that allows randomization of individuals to be in an experimental and control group, adding physiological parameters such as blood pressure, respiration rate, and heart rate, in order to check the effectiveness of the intervention, conduct similar research by using the "placebo" group and applying other therapeutic models to compare the effect of treatments on the worry and the sustainability of treatments, can be our suggestions for future research.

Conclusion

Based on the results, it seems that the mindfulness-based stress reduction model can decrease pathologic worry and meta-worry in non-clinical Iranian participants.

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