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Original Article

Effectiveness of Self-Help Mindfulness on Depression, Anxiety and Stress

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Abstract

Introduction: Growing evidence shows that mindfulness based on self-help interventions have advantages for physical and psychological health in different populations. The mindfulness based emotional balance is a new program and efficacy of which has not been investigated in self-help format.

Methods: This study was a randomized control trial (RCT) with wait-list control. After screening and applying inclusion and exclusion criteria eighty students of Kermanshah University of medical sciences were assigned randomly to the mindfulness-based emotional balance self-help or the wait list control group. Anxiety, depression, stress, and mindfulness were measured prior to the intervention after the intervention, and two-month after end of intervention as follow-up. DASS-21 and MAAS were used.

Results: Significant decrease in anxiety, depression, and stress in addition to a significant increase in mindfulness in the experimental group in the posttest. However, there were no significant changes in any of the aforesaid measures in the wait list control group. The resultant benefits were persistent in the two-month follow-up.

Conclusion: Based on the results of this study, this type of treatment can be used as an efficient and cost-effective method to improve psychological problems such as stress, depression and anxiety.

Declaration of Interest: None

Key words: Mindfulness based emotional balance, Anxiety, Depression, Stress, Self-help.

Introduction

Meta-analysis and review of the studies from 1980 to 2013 indicated that 1-5% of respondents met the criteria for a common psychiatric disorder during 12 months before evaluations. Moreover, 29.3% of them experienced a prevalent psychiatric disorder (1). Despite the high prevalence of mental health problems, majority of patients do not receive the necessary psychiatric therapies (2). It is mainly due to the high costs of common therapies. For instance, The cost of each cognitive-behavioral therapy session is between 40 and 90 dollars for the panic disorder (3). Other possible barriers include the absence of trained therapists, and social stigmas associated with mental health disorders (4). In addition, a large number of clients face long periods of waiting for receiving appropriate therapies (5). Thus, designing and identifying cost-effective and evidence-based therapies which can easily be provided for patients is necessary. Such therapies require less time and expenditure

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spent by therapists and researchers (6). Self-help interventions are a cost-effective method benefiting from empirical support for a wide variety of psychiatric symptom. Self-help intervention have numerous advantages such as wider access to services in rural areas, decreased logistic barriers to therapy, mobility, and improved self-monitoring (7). New reviews and meta-analyses indicate that self-help can benefit the individuals experiencing prevalent psychological symptoms such as anxiety and depression (8, 9).

Mindfulness-based therapies have become very popular in contemporary psychotherapy (10). They have been used as strategies for both preventing the recurrence of depression and reducing the symptoms of depression (11). Such interventions resulted in lower intensity and frequency of negative affect in nonclinical populations (12), reduced anxiety (13), decreased negative self-focused attention (14) and improved public welfare (15). Previous studies showed mindfulness-based interventions are valuable methods for reducing the negative consequences of mental health including psychiatric distress. Mindfulness-based interventions are powerful methods that decrease costs (16). Therefore, despite the low costs of therapies based on acceptance and mindfulness in comparison with low-intensity interventions, the resources needed for this therapies are still evaluated at a high level (17). Thus, some methods have been introduced to improve and increase the access to such therapies. An important method is to design approaches based on self-help (18).

Most of self-help studies have examined interventions that are based on the principles of cognitive-behavioral therapy (17). Some recent evidence indicates that acceptance and commitment-based self-help texts, including the principles of mindfulness, have been effective in the therapy of anxiety and depression in student (19) and community samples (20). In addition, a new study indicated that mindfulness, self-help and cognitive therapy could improve depression, anxiety, stress, satisfaction with life, mindfulness, and self-compassion among students (21). The promising evidence for the feasibility and effectiveness of cognitive-behavioral self-help approaches raise the question whether these benefits can be extended to the promotion of other evidence-based therapeutic methods such as mindfulness-based interventions (18). On the other hand, mindfulness has been used as a component of other interventions in many studies, and few studies have investigated mindfulness exclusively and independently. The only study which regarded mindfulness-based cognitive therapy as self-help did not use the comprehensive workbook and a session-by-session plan.

Mindfulness-based emotional balance (MBEB) is a new program combining the emotional components taken from the theory of emotion, practices of forgiveness, compassion, and mindfulness based stress reduction. Some studies have indicated the usefulness of this program in different groups so far (22, 23). In this study, the self-help workbook of this program (authored by Margaret Cullen and Gonzalo Brito Pons) (24). This book was selected because it is one of the most appropriates self-help mindfulness books including the theory and practice of emotion. In addition, its daily and step-by-step practices increase engagement in doing the exercises. Another advantage of this book is the availability of meditation audio files for the exercise of each chapter and the possibility of using audio and written versions of exercises. However, no studies have tested the efficacy of this program in self-help format. Therefore, the aim of this study was to investigate the efficacy of a complete and dedicated self-help workbook on mindfulness in a student sample.

Materials and Methods

This study was a randomized control trial (RCT) that has registered in Iranian registry control trial (registration number: IRCT2017022010063N6). The study was consisted of an experimental group and a wait list control group.

Participants

The statistical population included all the students studying at Kermanshah University of

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Medical Sciences in the Academic Year 2017. The means and standard deviations of previous studies were used to determine the sample size required for comparable effect sizes (21). There were 19 individuals in each group. Given the high attrition of self-help studies, 80 individuals were selected in total to compensate for the attrition of participants. The inclusion criteria were: A) studying at Kermanshah University of Medical Sciences during the conduction of study, B) being at least 18 years old, C) don't receiving any types of psychotherapy, and D) don't met criteria for a serious psychiatric disorders (such as mood and psychotic disorders). The exclusion criteria were: A) don't having necessary tools for using audio files, B) doing regular meditation practice before participating in the study (once a week or more), C) studying the workbook before participating in the study. After announcement about the study, 82 individuals were interested in participation. Before the intervention, one of the faculty members of the clinical psychology group was interviewed with the patients and asked them to complete the questionnaire related to measuring emotional problems. As a result, those who had emotional problems entered the study. Then two of them excluded from the study due to the simultaneous participation in a psychotherapy.

1) Depression, Anxiety and Stress Scale (DASS-21): This scale has 21 items. The results of a factor analysis indicated that 68% of the total variance was accounted by these three factors. The values of Cronbach's alpha were 0.97, 0.92, and 0.95 for stress, depression, and anxiety, respectively (25). The validity and reliability of this questionnaire were investigated among Iranian students. According to the results, the test-retest reliability was obtained for depression (0.80), anxiety (0.76), and stress (0.77). Moreover, the Cronbach's alpha were 0.81, 0.74, and 0.78 for depression, anxiety, and stress, respectively (26).

2) Mindful Attention Awareness Scale (MAAS): This tool is a 15-item questionnaire is a five-point Likert scale. It was designed by Ryan and Brown to measure the level of awareness and attention to the current events and experiences of daily life. MAAS includes a general score for mindfulness. A higher score indicates more mindfulness (27). Cronbach's alpha between 0.80 and 0.87 indicates a high internal consistency, and the test-retest reliability of the scale was proven in a one-month period. The Cronbach's alpha of the Farsi version of this scale was calculated 0.81 for a sample containing 723 Iranian students (28).

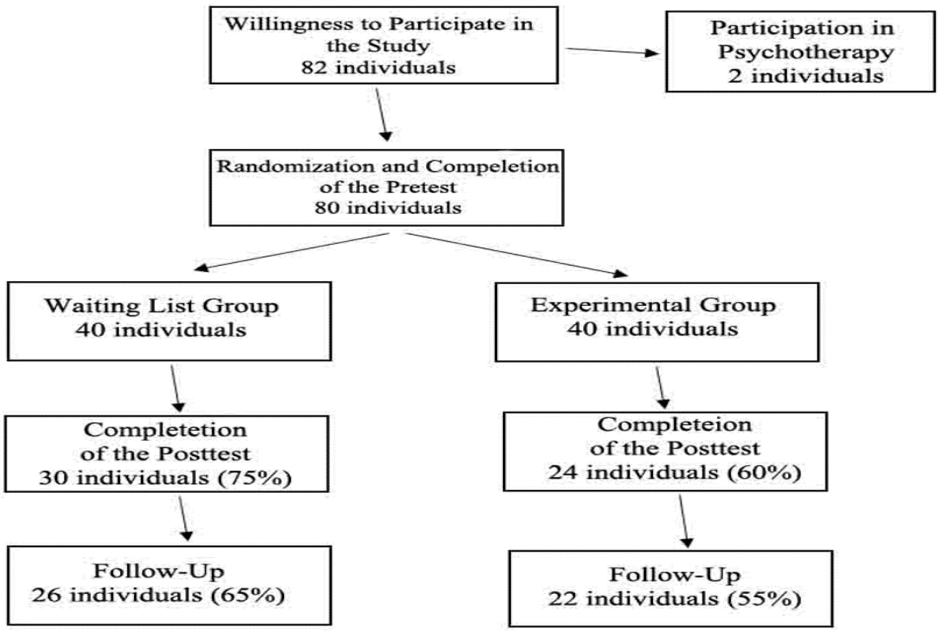

Figure 1. The Research CONSORT

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Procedure

First, the workbook and audio meditations were translated from English into Farsi. Then audio meditations were recorded. After that, the book was given to an editor to ensure that the translated text matched the original text. The book begins with a short introduction. The first section discuses mindfulness and the theory of emotion and clarifies values and intentions. The second section includes an eight-week program presented by the authors. This program includes learning how to pay attention, awareness of affect states, mindfulness of thoughts, exploring forgiveness, working with anger, kindness, working with fear, compassion. The third and final section of the book continues to deepen the program lessons and presents a continuous practice. This section was disregarded in this study. After receiving a permission from the Ethics Committee of Kermanshah University of Medical Sciences (Ethics Code: KUMS.REC.1395.657), announcements and posters were distributed in faculties, dormitories, and cyberspace to invite students experiencing stress, anxiety, or depression to participate in this study.

After 82 students expressed willingness to participate in the study, the inclusion and exclusion criteria were checked. Then two of the participants were excluded from the study due to participation in psychotherapy sessions. Information sheets were given to the participants, and they were asked for written consents. After conducting the pretest, participants were randomly assigned to experimental and control groups. Then the self-help workbook and audio files were given to the experimental group.

To make participants interested in studying the workbook and doing the exercises, they were reminded of reading the book and doing the practices by sending weekly emails. Moreover, the worksheets of exercises were received from participants in the third, sixth, and ninth weeks. The researcher's email address was presented in the Introduction of the workbook, and participants were asked to state any possible questions or ambiguities on the program and exercises via email. The research evaluations were done in three steps: A) prior to randomization, B) 10 weeks the presentation of the workbook to the experimental group, and C) two months follow up.

Statistical Analysis

The data were analyzed in SPSS-20. Means and standard deviations and tests such as the Levene test, independent *t*-test, chi-squared test, Kolmogorov-Smirnov test, *m*-box test, and ANCOVA by were conducted.

Ethical Considerations

The participants were fully aware of the research conditions. Before conducting the study, written consents were received. In addition, they were free to leave. The collected information was remained confidential in all the research steps. If participants were willing to become aware of the research results, they were provided with necessary information. Finally, a PDF version of the workbook was given to the participants of the wait list group after study.

Results

The demographic variables are summarily represented in table 1. 36 individuals were aged between 19 and 24 (57.5%), and 23 individuals were aged between 25 and 30 (28.75%). Finally, 11 individuals were aged 30 or older (13.75%). Moreover, the sample consisted of 43 women (53.75%) and 37 men (46.25%). A comparison was drawn between the experimental and control groups in age, gender, and dependent variables before conducting the study. Levene test indicated homogeneity of variance for all variables. Results of the independent *t*-test indicated that the two groups were significantly different from each other only in the level of anxiety in the pretest.

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Table 1. Comparison two Group in Target Variables in pretest

Variable	Group	Mean	Standard deviation	Comparison of Means	
				T	P
Anxiety	experimental	12.25	2/27	3.138	0.01
	Wait-list	10/85	1.67		
Depression	experimental	11.97	1.62	0.854	0.396
	Wait-list	11.65	1.77		
Stress	experimental	14.17	1.39	-	0.559
	Wait-list	14.35	1.27	0.587	
Mindfulness	experimental	36/72	6.41	-	0.268
	Wait-list	38.10	4.27	1.128	

*χ^2

Assumptions of consistency of variances and normality of data were examined to ensure the appropriateness of the aforesaid test for ANCOVA. The results indicated consistency of variances for depression (f=0.899 & p=0.160), anxiety (f=0.716 & p=0.401), stress (f=0.159 & p=0.204), and mindfulness (f=0.384 & 0.160). Furthermore, the results of the Kolmogorov-Smirnov test indicated that distribution of depression (Z=0.101 & p=0.252), anxiety (Z=0.133 & p=0.060), stress (Z=0.115 & p=0.139), and mindfulness (Z=0.109 & p=0.162) were normal. According to Table 2, ANCOVA indicated that the two groups were significantly different in anxiety, depression, and stress. In other words, the pretest score of experimental group was significantly lower than wait-list control group. In addition, the mindfulness score of the experimental group increased significantly in comparison with wait-list controls. The effect size for depression was low; however, it was medium for both stress and anxiety. Moreover, a medium effect size was observed for mindfulness

Table 2. The Mean, Standard Deviation, Effect Size, and Results of ANCOVA for Two Groups

		MBEB-SH		Wait List Control			
		Pretest Mean (SD)	Posttest Mean (SD)	Pretest Mean (SD)	Posttest Mean (SD)	F	*d* (Effect Size)
DASS-21	Depression	11.97(1.62)	8.91(1.50)	11.65(1.77)	12.23(1.92)	12.59*	0.219
	Anxiety	12.25(2.27)	7.70(1.9)	10.85(1.97)	11.56(1.75)	101.47**	0.660
	Stress	14.17(1.39)	10.33(1.34)	14.35(1.27)	13.36(1.80)	54.74*	0.518
MAAS	Total Score	36.72(6.41)	44.20(5.23)	38.10(4.27)	38.16(4.61)	49.76*	0.494

*P=0.01; **P=0.05

According to Table 3, additional analyses indicated that the changes were persistent at 2-month follow-up.

Table 3. The Mean, Standard Deviation, Effect Size, and Results of ANCOVA for two groups in Follow-Up

		MBEB-SH		Wait List Control			
		Pretest Mean (SD)	Follow up Mean (SD)	Pretest Mean (SD)	Follow up Mean (SD)	F	*d* (Effect Size)
DASS-21	Depression	11.97(1.62)	9.59(1.14)	11.65(1.77)	11.07(1.93)	10.24*	0.219
	Anxiety	12.25(2.27)	7.68(1.21)	10.85(1.97)	11.38(1.81)	71.20*	0.613
	Stress	14.17(1.39)	10.36(1.83)	14.35(1.27)	13.46(1.81)	32.88*	0.422
MAAS	Total Score	36.72(6.41)	44.59(4.62)	38.10(4.27)	39.92(4.76)	15.28*	0.254

*P=0.01; **P=0.05

There was a relatively high attrition in the number of participants in both groups. In other words, 24 participants (60%) of the experimental group and 30 participants (75%) of the wait list control group completed the posttest evaluations. In the follow-up, the number of participants reached 22 (55%) and 26 (65%) in the experimental and control

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groups. There were no significant differences between the participants who left the study and those who completed the following evaluations in term of age and dependent variables; however, they were significantly different in gender. In the posttest, 26 participants left the study (19 women and 7 men). The results of the chi-squared test indicated that the difference was statistically significant (χ^2=5.788 & p=0.05).

Table 4. Comparison of Participants Who Left the Study with Those Who Completed the Posttest dependent Variables

		Mean	Standard deviation	Comparison of Groups	
Gender				T	P
Anxiety	Experimental	7.70	1.19	0.987	0.327
	Wait-list	11.56	1.75		
Depression	Experimental	12.23	1.92	0.288	0.774
	Wait-list	12.23	1.92		
Stress	Experimental	13.36	1.80	-0.505	0.615
	Wait-list	13.63	1.80		
Mindfulness	Experimental	44.20	5.23	0.892	0.287
	Wait-list	38.16	4.61		

Discussion

This study was the first RCT to investigate the efficacy of mindfulness-based emotional balance self-help program. The mindfulness-based emotional balance program is a new workbook consisting of regular eight-week plan along with audio and written exercises for each week. Although more studies should be conducted to suggest this program as an effective method for improving mental health, this workbook can be regarded as a promising a self-help program The results indicated decreases in anxiety, depression, and stress an improvement of mindfulness. Results persistent at two-month follow-up. Effects size of the target variables was low to medium. Generally, findings are consistent with literature indicating the effectiveness of self-help interventions for prevalent psychiatric problems (29). They also support the traditional mindfulness-based interventions indicating the increased mindfulness and decreased mental distress in clinical and nonclinical samples. Previous studies indicated that the interventions consisting of the components of mindfulness and acceptance resulted in significant advantages in mindfulness, depression, and anxiety with low to medium effect size (18). In this study, the resultant effect sizes for target variables are relatively consistent with the effect sizes obtained by previous studies (21). In particular, the results of this study indicated that MBEB-SH significantly decreased anxiety, depression, and stress. These findings are consistent with previous studies. According to meta-analysis of 15 RCTs, the mindfulness and acceptance self-help decreased the anxiety and depression (18). It also completes the studies indicating mindfulness-based cognitive therapy self-help (30) and Internet mindfulness-based self-help were effective in decreasing depression, anxiety, and stress (30, 31). It appears that the mindfulness-based balance workbook is an effective self-help program to decrease anxiety, depression, and stress. However, there are some differences between this study and the previous ones. Most of the previous studies used multicomponent protocols in which mindfulness was presented as one component. In this study, a comprehensive protocol with week-by-week exercises was investigated.

Another finding was that mindfulness-based emotional balance increased mindfulness significantly in the experimental group compared with the control group. Generally, most of the previous studies were concentrated on the outcome variables related decreased symptoms (32), and few studies were conducted on changes in mindfulness in pre and post intervention. Some studies indicated that levels of mindfulness increased after short-term interventions (33). Some other studies indicated that the mindfulness-based

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self-help programs increased the levels of mindfulness (21). In this study MAAS was employed. This questionnaire was designed to determine the frequency of states which are concurrent with mindfulness over time which was done by evaluating the lack of attention and awareness of the present moment (34). The results of this study indicated that the mindfulness-based self-help program increased the awareness of present experiences and improved attention. Most of the previous studies investigated more intensive interventions in group format, something which requires the holding of sessions for two or three hours such as mindfulness-based stress reduction (35). However, the findings of this study show that the self-help interventions can increase mindfulness among participants.

There was a relatively high attrition of participants. In other words, 60% of participants in the experimental group and 75% of participants in the wait list control group completed the posttest evaluations. However, there were no significant differences in terms of target variables between the individuals who left the study and those who completed it. The attrition rate of participants was nearly 32% (ranging from 7% to 50%) in the mindfulness-based interventions (18). However, the attrition rate was smaller in workbook-based studies (36). The findings of this study are more consistent with the Internet studies (37). The large size of the workbook used in the study and the concurrency of a part of the ten-week implementation with the university final exams could be the possible reasons for the high attrition rate of participants in this study. However, the number of remaining participants in both experimental and control groups was larger than the necessary sample size (19 individuals) for each group.

Limitations

Lack of the generalizability of findings to groups exception of students. Lack of comparing between this approach and other sources of self-help. The attrition high rate of participants. The engagement of participants with the workbooks and exercise were not accurately examined.

Implications for future research and clinical practice

Investigating the usefulness of this program in other groups. Comparison of this program and other self-help interventions. Using bigger sample and other statistical methods to compensate attrition of participants. Finally, investigating the potential mediators of effectiveness mindfulness enhance our knowledge.

Authors declared no conflict of interests.

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