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RESEARCH ARTICLE

Effect of Mindfulness-based Cognitive Therapy on Psychological Sequels in Hypertensive People (HBP Patients)

Sedighe Gozal[1]*, Maryam Zeinali[2], Neda Ahmadi[3], Shirin Mirzaei[4], Rahele Azhdari[1]

[1]Department Psychometric, Center of Tehran Branch, Azad University, Iran
[2]Department Public Psychology, Guilan University, Iran
[3]Department of Psychometric, Center of Tehran branch, Azad University, Iran
[4]Department Exceptional Children Psychology, Center of Tehran Branch, Azad University, Iran

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Abstract

Hypertension is a common, chronic and relapsing disease which is indeed one of the major public health issues. In our study, we employed quasi-experimental research method.Total 30 patients were randomly divided into two groups; test (n= 15) and control group (n= 15). To collect the required information we gave some depression, anxiety and stress-related questionnaire to the members of both the groups to fill up in the pre-test, post-test and follow-up phases. The test group received the treatment program in eight sessions of 90 minutes each. The results showed that there was a significant difference between levels of depression, and stress in two groups and mindfulness-based cognitive therapy has significantly reduced depression and stress in patients within the test group. But no significant difference was observed for the component of anxiety. Thus the program could be referred as effective in reducing psychological consequences in patients with hypertension.

Introduction:

Hypertension has been identified as the third leading cause of death in the world (WHO, 2006). The results of studies conducted in Iran and around the world indicated that the prevalence of hypertension is gradually increasing in all countries and the Iran is not exceptional in it (Wang & Wang, 2004). Due to lack of apparent diagnosable symptoms and unpleasant cardiovascular side effects, this disease is known as "Silent Killer" (Alexander *et al.,* 2004). The objectives of the health project in 2010 suggested multilateral approaches to get rid of it. Although drug therapy is important in controlling hypertension, but patients' lifestyle is also an important factor which influences this process (Fan *et al.,* 2004). The disease can even increase the risk of heart failure, myocardial infarction, stroke and kidney diseases (Mularcik, 2010).

Research shows that blood pressure also increases during anger and hostility as compared to the time of happiness (Ariff *et al.,* 2011). Thus, doctors ask patients to try to stay calm, whenever they encounter a problem; but some danger lies in this recommendation. It is possible for untrained people to increase their blood pressure instead of lowering it during their efforts to stay calm Huang (2008). Because of connection between hypertension and the stress experienced by people, researchers have investigated the possibility of using stress inhibiting techniques in the treatment of hypertension (Hamidizadeh *et al.,* 2006). Reports also suggest that the stress inhibiting techniques, such as step by step muscles relaxation, biofeedback and meditation can reduce hypertension (Metelska *et al.,* 2011). Various studies revealed that almost any disease has a psychosomatic aspect and all such diseases, especially heart diseases and hypertension are affected by stressful events (Tang *et al.*, 2008; Navidian *et al.,* 2010). Thus, reducing stressful factors is one of the effective techniques in reducing hypertension. Indeed depression is more than mere sadness. By losing their interest in performing or enjoying their activities, depressed individuals may experience issues such as decreased or increased weight and appetite, insomnia, slowness of movement, fatigue, and loss of energy, feelings of worthlessness, difficulty concentration and recurrent thoughts of death or suicide. Psychological consequences of hypertension, such as anxiety and depression have been regarded very important by psychologists (Dunn *et al.,* 2010). In this regard, in health training, mindfulness-based cognitive therapy is a treatment which has been considered effective in physical and psychological diseases (Segal *et al.,* 2002).

The core of mindfulness-based cognitive therapy is

*Corresponding Author: marypapinz@gmail.com

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based on three training categories: avoiding judgment, purposeful awareness and focusing on the present moment and the last item- focusing on the present moment- facilitates processing cognitive, physiological or behavioral activities. Because through mindfulness-based techniques and their continuous practice, not only the person will become aware of his daily activities, but he will become aware of his mind's automatic function in the past and in the future, as well and he will control his thoughts, feelings, and physical conditions through continuous awareness and a mind which is focused on past and future will be released of harmful complications (Rosenzweig *et al.,* 2010). According to this approach, the mind for judgment shall lead to the creation of some levels of stress, anxiety, and depression; as such mind divides its experiences into two categories, good and bad. Further, in the same regard, it must either the fight with them or avoid them and both of these approaches will result in an emergence of psychological symptoms such as stress, anxiety, etc. (NykLèek *et al.,* 2008). The most important part of mindfulness exercises is being aware – or in other words: commitment to immediacy; so that one can transit from one moment to another, without trying to get to anywhere, with an open and non-judgmental heart and with a nonreactive mind (Bohlmeijera *et al.,* 2010). Mindfulness-based stress reduction program has led to some successes in treating physical and psychological symptoms, such as generalized anxiety, panic disorder, and eating disorders and in improving the quality of life, symptoms of stress in patients with breast and prostate cancer and fibromyalgia (Grossman *et al.,* 2004).

Here we aim to investigate the effects of mindfulness-based cognitive therapy with group therapy approach- on psychological consequences such as depression, anxiety, and stress in patients with hypertension.

Methodology:

The research was based on a quasi-experimental method with pre-Vs post- tests including follow-up design with a control group. Both the groups were measured three times during the study period. The subject included all such patients who were referred to Pasargad Hospital of Tehran during 2015. Among them, 30 of those patients who had the inclusion criteria (not receiving psychological treatment since diagnosis, hypertension of 130/80 mmHg, diploma or higher level of education, to be between 30 and 55 years old, similar drug regimen) and who didn't have the exclusion criteria (mental and physical diseases -diabetes, kidney, liver or heart attack- being pregnant, over two sessions of absence in the intervention sessions) were randomly selected as on the basis of a pilot study and then were randomly (random drawing) divided into two groups; including test group and control group. Each group consisted of 15 people. The adequacy of the sample size was examined by using preliminary statistical methods and by utilizing the results of previous studies (First *et al.*, 1997) and at the confidence level of 95%. Then, after obtaining informed consent, pre-test assessments were conducted.

Structured Clinical Interview (SCID) for the first axis disorders in DSM-IV (SCID-I / CV): it is a tool to evaluate major psychiatric disorders, based on definitions and criteria of DSM-IV which has been developed for research and clinical purposes (Zena *et al.,* 2012). Implementation of SCID-I / CV requires the clinical judgment of interviewer on interviewee's responses; so the interviewer should have sufficient knowledge and experience about psychopathology. The validity and reliability of this tool are reported acceptable in different studies (First *et al,* 1997). For example, the evaluators have reported more than 70% Kappa in their diagnostic reliability. In a study experts and professors confirmed the validity of this tool. Test-retest reliability, with one-week interval, was reported as 0.95 (Carlson *et al.*, 2007). This form has been translated and adapted in Iran by Sharifi *et al.* (2005) and its reliability and validity have been approved (Gloria *et al.*, 2008).

Demographic information questionnaire: it includes questions about criteria such as age, education, inclusions and exclusions factors etc.

Depression, anxiety and stress questionnaire (DASS-21): this questionnaire is prepared by Lovibond & Lovibondd (1995) to measure depression, anxiety, and stress (Parswani *et al.,* 2013). Also, the results of confirmatory factor analysis have confirmed the existence of three factors of depression, anxiety, and stress. Test-retest reliability coefficients of three subscales of this questionnaire, with an interval of two weeks, in a sample composed of 20 patients were reported between 0.71-0.81 (Imel & Wampold, 2008). Also, its reliability and validity were studied on a number of subjects in the UK and test-retest reliability for depression, anxiety, and stress, were reported to be 0.80, 0.76 and 0.77 respectively and Cronbach's alpha for depression, anxiety, and stress were 0.81 0.74 and 0.78 respectively.

Experiment procedure: after the pre-test, the treatment of test group was conducted during the study and in order to observe ethical considerations, the treatment of control groups was conducted after completion of the study. Group therapy of mindfulness-based cognitive therapy in this study was administered during eight 90 minutes weekly sessions. These sessions were held at Pasargad Hospital and one week after the closing session, members of both groups received post-test evaluations. Also, two months after the last treatment session, follow-up evaluations were performed. Since we considered the distribution of scores as normal and variances as homogenous, so we used multivariate analysis of

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covariance with repeated measures and data were analyzed by using SPSS 19 software.

Results:

The contents of mindfulness-based cognitive therapy sessions are presented in Table 1.

Table-1: Summary of executive guideline for mindfulness-based cognitive therapy sessions.

Sessions	Issue
1st	Introducing automatic guidance system / using awareness of sensations, thoughts and emotions at the present moment to reduce stress / eating raisins and giving feedback and discussing on the exercise / three-minute breathing space / deciding about the next week and distributing booklets of the first session and meditation CDs.
2nd	Body checking exercise / giving feedback and discussing on body checking / mindfulness meditation breathing exercise / distributing booklets of the second session and meditation CDs.
3rd	Conscious sitting, awareness of breathing (sitting meditation) / three-minute breathing space exercise / distributing booklets of the third session.
4th	Body checking exercise / five-minute "seeing or hearing" exercise / conscious sitting, awareness of breathing and body / distributing booklets of the fourth session and meditation CDs.
5th	Breathing exercise / conscious sitting (awareness of breathing, body, sounds, thoughts) / explanations on stress and identifying participants' responses to stress / studying the effect of awareness of pleasant and unpleasant events on feelings, thoughts and sensations / three-minute breathing space / distributing booklets.
6th	Conscious sitting, (awareness of sounds and thoughts / distributing booklets of the sixth session and the tape number 4 among participants.
7th	Sleep hygiene/ repeating last sessions' exercises / preparing a list of pleasurable activities / distributing booklets of the seventh session.
8th	Body checking exercise / reviewing the entire program / checking and discussing programs.

Participants were in the age range of 40-48 years old (mean-43.13± 5.04 years) whereas the mean age of the test group was 43.66± 5.14 years. Other items of demographic characteristics are listed in the table below and there was no significant difference between these characteristics in the test group and control group.

Table-2: Frequency and percentage of frequency of demographic characteristics of patients with hypertension

Indicator	Demographic characteristics	Frequency	Percentage
Gender	Female	46.7	16
	Male	53.3	14
Education	Third grade in the middle school	20	14
	Diploma	53.3	10
	Bachelor	33.3	6
Marital status	Single	0	0
	Married	100	30

Table-3: Mean and standard deviation of components of depression, stress and anxiety in two groups

Components	Test group (N=12)			Control group (N=12)		
	Pre -test	Post -test	Follow up	Per -test	Post -test	Follow up
Depression	12.83± 0.93	12.33± 1.15	13.50±	14.75± 2.13	6.66± 1.43	10.83± 1.26
Anxiety	3.66± 1.82	3.25± 1.35	3.5± 1.78	4.41± 3.02	4.25± 2.49	3.66± 1.96
Stress	14.50± 1.78	14.50± 1.50	16.08± 0.9	15.50± 1.97	9.16± 1.80	10.83± 1.64

As it is clear from Table 3, the mean of depression and stress scores in post-test phase has significantly changed compared to the pre-test phase; while this value has not changed significantly, in the control group in these phases. By checking the results of M-Box test regarding the component of stress (Sig =0.214, F = 1.391) and also the component of depression (Sig =0.265, F = 1.276) we see that the null hypothesis is not rejected and we observe that covariance matrixes of dependent variables are equal among different groups. However, in the case of the component of anxiety (Sig =0.018, F = 2.55) covariance matrixes of dependent variables are not equal among different groups.

Table-4: Analysis of covariance with repeated measures to examine components of depression, stress and anxiety

	SS	df	MS	F-Ration	SL	ES
Depression	47.227	1	47.227	17.362	0.0001	0.441
Anxiety	1.185	1	1.185	0.673	0.421	0.030
Stress	100.042	1	100.042	78.839	0.0001	0.782

* Abbreviations: SS-sum of squares; df-degree of freedom, MS-Mean Square, SL-Significance level; ES- Eta-squard

As per the results of Table 4, mindfulness-based cognitive therapy has significantly reduced depression (SL <0.0001; F = 17.362) and stress (SL <0.0001; F = 78.83) in patients with hypertension. The Eta-squared values indicate the effectiveness of intervention on depression and stress; while the results of analysis of covariance with repeated measures in examination of anxiety, in three phases of evaluation (SL < 0.67; F = 0.421) showed that there was no significant difference in two groups.

Discussion:

This study aimed to investigate the effects of mindfulness-based cognitive therapy on depression, stress and anxiety in people habitual of hypertension and it showed that this approach has been significantly effective on some specific components while comparing to pre-treatment phase. Our results resemble with the findings of Masumian *et al.* (2012); Rahimian & Besharat (2012). Researchers have shown that performing mindfulness meditations, in addition to reducing stress, will significantly increase subjective well-being and mental health and it will reduce

physical stress in patients (Siboni *et al.,* 2011). In fact, it seems that mindfulness exercises can reduce the level of stress and anxiety by increasing awareness of the present moment, through techniques such as meditations (focusing on breath and body; focusing on the present time and place), body control and consequently mind control. In this regard, mindfulness-based cognitive therapy –with group therapy approach- increases self-awareness and self-acceptance in patients. Mindfulness is not a method or technique, but it is described as an available style to reduce the unfitness (suffering) and to increase awareness, insight, wisdom and sympathy (Lochner *et al.,* 2006). Carlson & Spaca (2011) have shown that in addition to reducing stress, performing mindfulness meditations can significantly increase mental clarity; mental health and they can reduce physical stress in patients. These researchers concluded that mindfulness-based cognitive therapy plays a major role in the recovery signs and brings positive results, following the participation of subject in the treatment program (Lochner *et al.,* 2006).

In explaining effectiveness of mindfulness-based cognitive therapy program –with group therapy approach- researchers have shown that the therapeutic effects of mindfulness-based cognitive therapy program increase by factors related to the group and therefore through applying this approach, more therapeutic consequences will be affected. This study has some spcific limitations. The first limitation is the small sample size. Although the number of subjects (participants) didn't decline along the study; but the small sample size is a limitation which has prevented obtaining an accurate estimation of the degree of effectiveness of our program. The second limitation is related to applying self-report measures. These tools have some inherent problems (such as measurement error, lack of introspection, etc.). The third limitation is lack of control on underlying and personal factors. It is likely that due to some underlying factors the participants have overestimated the effectiveness of the program. Another possibility is that people have overestimated the effectiveness of the program, due to some personal desires, optimism and such factors. It is suggested to conduct pseudo treatment programs (placebo programs) on the controller in future researches to control the effect of expectations. Also, it is suggested to use larger samples to achieve true degree of effectiveness of the program. This study was conducted on patients in Pasargad Hospital, located in Tehran. It is suggested that researchers conduct stress management skill trainings with group approach in similar patients in other hospitals in order to develop the findings of this study.

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