Journal of Fundamentals of Mental Health

Mashhad University of Medical Sciences

Psychiatry and Behavioral Sciences Research Center

Original Article

Determining the effectiveness of mindfulness-based cognitive therapy on anxiety and lack of tolerance of uncertainty in patients with hypertension

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Abstract

Introduction: The present study aimed to determine the effectiveness of mindfulness-based cognitive therapy on anxiety and lack of tolerance of uncertainty in patients with hypertension.

Materials and Methods: The statistical population of this clinical study consisted of all patients with hypertension who had been extracted from Shahid Beheshti hospital in Babul during the three months from September to November 2013. Among them, 32 patients were selected using non-random sampling method and were randomly assigned to experimental and control groups. Data were collected through Beck Anxiety Scale and Uncertainty Tolerance Questionnaire. Covariance analysis was used to compare the mean scores of experimental and control groups.

Results: The results of the covariance test showed that mindfulness-based cognitive therapy reduced anxiety and lack of tolerance of uncertainty in the experimental group significantly (P<0.05).

Conclusion: The results of the study revealed that the use of mindfulness-based therapies can have a direct effect on reducing anxiety and lack of tolerance uncertainty in patients with hypertention.

Keywords: Anxiety, Hypertention, Cognitive therapy, Mindfulness, Tolerance

Please cite this paper as:
Eslami A, Barimani P, Doost-Mohammad S. Determining the effectiveness of mindfulness-based cognitive therapy on anxiety and lack of tolerance of uncertainty in patients with hypertension. Journal of Fundamentals of Mental Health 2017; 19(3-Special Issue): 355-359.

Introduction

Cardiovascular diseases such as stroke and heart attack are almost the leading cause of death in the industrialized world. The World Health Organization estimates that at least 20 million people worldwide suffer a heart attack yearly (1).

Hypertension or high blood pressure, which is one of the critical risk factors for cardiovascular diseases, causes a state of inefficiency in the endothelium and increases the stiffness of the artery (2).

The studies conducted in Iran also indicate a high prevalence of hypertension. So that the latest studies indicate a prevalence of 23.3% of this disease. If there is no proper treatment, 50% of patients with high blood pressure will die from

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Received: Feb. 13, 2017
Accepted: Mar. 15, 2017

coronary artery disease or heart failure, about 33% from stroke, and about 10-15% from kidney failure (3).

Cognitive therapy group therapy based on mindfulness teaches patients how to transform the ruminating, habitual, and automatic pattern of the mind into a thoughtful and deliberate pattern of the mind as soon as it is identified so that negative thoughts and feelings can be seen from a broader perspective as simple passing events in mind (4).

Another issue that can be a problem for these patients is the intolerance of uncertainty. Intolerance of uncertainty is a cognitive schema or filter that shows people's view of their environment. While worry can be considered as a cognitive reaction to potentially adverse events (worry as a mental act). As a result, worry is a product of uncertainty intolerance (5). People who experience high levels of intolerance of uncertainty have a greater tendency to maintain their opinions and positive attitude towards worry and the usefulness of worry than people with a milder level of it (6).

Physiological mechanisms regulating blood pressure may be affected by psychological stress. In this, the activation of the sympathetic nervous system is considered a key factor. which has many physiological consequences, including blood pressure, gastric ulcer, and migraine (7). Considering today's stressful conditions where people are always anxious, especially in people with high blood pressure, it can have irreparable consequences. Another factor that causes high anxiety in people is the intolerance of uncertainty in people, and research has shown that this emotional reaction in people can disturb the nervous system of people and cause disorders like anxiety (8).

Considering the importance of anxiety and intolerance of uncertainty in hypertensive patients, the main issue of this article is whether cognitive therapy based on mindfulness affects anxiety and intolerance of uncertainty in patients with high blood pressure.

Materials and Methods

In this clinical study, using a pre-test and post-test design with a control group, the statistical population of the research included 250 patients with high blood pressure (these patients were diagnosed with high blood pressure by cardiologists) from Shahid Hospital. Beheshti, Babol city, for three months (March to November 2014), 32 hypertensive patients (matched in terms of age, gender, and living conditions) were extracted from the files of this hospital using a non-random sampling method). Moreover, 16 patients were randomly included in the control group and 16 patients in the experimental group. People in the experimental group were given eight sessions of 2.5 hours of cognitive therapy based on mindfulness (Table 1), but the control group was not exposed to such treatment. Both groups were evaluated (pre-test and post-test) regarding anxiety and intolerance.

Research instruments

A) Beck Anxiety Inventory (BAI): This questionnaire is designed to measure the level of anxiety and contains 21 statements. Each statement reflects one of the anxiety symptoms commonly experienced by people who are clinically anxious or placed in an anxiety-provoking situation. This scale has achieved high internal stability, and the correlation of its items with each other includes a range from 0.30 to 0.71 (average equal to 0.60). This test was performed on 83 patients with an interval of one week for retesting, and a high correlation (0.75) was obtained. This questionnaire has high reliability. Its internal consistency coefficient (Cronbach's alpha) is 0.92, its reliability is 0.75 within a one-week interval, and the correlation of its questions varies from 0.3 to 0.75 (9). In the present study, Cronbach's alpha coefficient was 0.88.

B) The Intolerance of Uncertainty Questionnaire (IUS) was developed by Friston et al. 1994. It is used to measure people's tolerance for uncertain and uncertain situations. This scale has 27 questions. This scale is scored on a 5-option Likert scale. From 1 = completely false to 5 = completely true. The sentences of this questionnaire explain the type of people's reaction to life's uncertainties. If the calculated score is between 27 and 54, the level of uncertainty intolerance in a person is low. If the calculated score is between 54 and 81, the level of uncertainty intolerance in a person is medium, and if the calculated score is 81 and above Yes, the degree of intolerance of uncertainty in a person is high.

The validity of this test has been reported as satisfactory by Friston et al. (10). The initial version in French has obtained a relatively good test-retest reliability coefficient with an interval of 4 weeks (r=0.78). In addition, the original version of the French language has achieved internal consistency (Cronbach's alpha = 0.91) (11).

Table 1. Description of psychological sessions based on mindfulness

The subject of the first to fourth sessions;
Explaining the importance of being in the present moment and being here and now, opening the concept of mindfulness for members using several techniques, and learning to do everyday things and pay attention to them.
Realizing the wandering mind and practicing paying attention to the body, physical and physical feelings, and paying attention to the ego.
Calming the wandering mind by practicing breathing and reviewing the body, sitting meditation, and performing exercises that bring attention to the present moment.
Learning to stay in the present moment without avoiding people and observing the turbulence of thoughts.
The subject of the fifth session of Tahashtam;
Full awareness of thoughts and feelings and accepting them without judgment and direct interference.
Change of mood and thoughts through considering thoughts as just thoughts, not reality.
Being aware of the signs of aggression and setting up a plan to deal with possible signs of aggression.
Planning the future, using present techniques for life, and generalizing them to the whole flow of life.

Results

The findings showed that 50% of all respondents were female, and 50% were male. In both groups, the highest frequency was related to diploma education, the lowest frequency was at the postgraduate level, the age frequency was in the age range of 45 to 50 years, and the lowest was between 56 to 60 years.

Table 2. Variable indicators of anxiety and psychological well-being

Variable	Experimental		Control		Kolmogorov-Smirnov		Test of Homogeneity	
Anxiety	Mean	SD	Mean	SD	P	Result	Levene Statistic	P
Pre-test	25.30	5.13	29.43	11.81	0.783	Normal	2.999	0.098
Post-test	15.01	5.03	27.56	15.05	0.169	Normal	3.116	0.050
Intolerance of uncertainty Pre-test	83.62	14.47	84.12	13.55	0.982	Normal	0.475	0.496
Post-test	40.56	14.08	72.93	37.42	0.221	Normal	3.062	0.053

The results of Table 2 showed that between the mean scores of the post-test and pre-test of both variables in the experimental group after the variable intervention. There have been changes in each dependent variable, but the average score of anxiety and uncertainty intolerance (without intervention) in the control group did not show any apparent difference.

Table 3. Results of analysis of covariance in cognitive therapy based on presence of mind on anxiety

Source	Type III Sum of Squares	df	Mean square	F	P	Partial Eta Squared
Corrected Model	1440.174	2	720.087	5.800	0.008	0.253
Intercept	2199.497	1	2199.497	17.717	0.000	
Anxiety Pre-test	177.643	1	177.643	1.431	0.241	
group	1216.696	1	1216.696	9.800	0.004	
Error	3600.256	29	124.148			
Total	19533.000	32				
Corrected Total	5040.469	31				

As seen in Table 3, a univariate analysis of covariance (ANCOVA) showed that the effect of the independent variable is significant. After removing the effect of the pre-test, there is a significant difference between the mean scores of anxiety and the group in the post-test, so there is a significant difference between the experimental and control groups in terms of anxiety (F=124.128 and $P< 0.05$). According to the average scores, it can be concluded that cognitive therapy based on the presence of mind on the anxiety of patients with blood pressure is highly effective.

Table 4. The results of covariance analysis in cognitive therapy based on presence of mind on uncertainty intolerance

Source	Type III Sum of Squares	df	Mean square	F	P	Partial Eta Squared
Corrected Model	8436.196	2	4319.598	5.278	0.011	0.262
Intercept	4494.887	1	4494.887	5.492	0.026	
Anxiety Pre-test	254.071	1	254.071	0.310	0.582	
group	8436.092	1	8436.092	10.308	0.003	
Error	23732.804	29	818.373			
Total	135430.000	32				
Corrected Total	32372.000	31				

As seen in Table 4, univariate analysis of covariance (ANCOVA) has shown that the effect of the independent variable is significant. After removing the effect of the pre-test, there is a significant difference between the mean scores of intolerance of uncertainty and the group in the post-test. Therefore, there is a significant difference between the experimental and control groups in terms of intolerance of indecision (F=10.308 and $P< 0.05$), according to the average scores, it can be concluded that cognitive therapy based on the presence of mind on intolerance of indecision It is effective for patients with high blood pressure.

Discussion

Considering the living conditions today and the increase in mental pressure and stress, we see many people suffering from high blood pressure and, as a result, an increase in cardiovascular diseases. If there is much research in this field, this is confirmed by the present study. The problem was discussed from a psychological point of view, so the findings showed that mindfulness-based cognitive therapy reduces anxiety in patients with high blood pressure.

The findings also showed that the solutions that the patients get from the exercises, such as controlling breathing and gaining relaxation, and programs to increase concentration and reflect on daily events, control the endocrine glands at the moment of tension, and prevent mood swings. Constantly with people, the feeling of not being able to resist, not interested in life permanently or periodically, feeling of failure, feeling of not having someone to trust. This result is consistent with the research results of Dugas, Schwartz, and Francis (12,13), Loebach Wetherell and Gatz (9), and Bakhtiari et al. (7).

Also, the findings showed that cognitive therapy based on mindfulness reduces intolerance of uncertainty in patients with high blood pressure. It can be concluded that the process of mindfulness and concentration training increases internal capacities, including tolerating and waiting in situations.

It causes tension so that mindfulness in people reduces negative attitudes that can lead to a decrease in anxiety, intolerance of uncertainty may affect the evaluation of a person's ability to solve problems, which with exercises based on mindfulness, the evaluation process of done correctly and with more concentration, and this result is in line with the research results of Grandma (15), Gu (16) and Mahmoud Alilou et al. (5).

According to the obtained results, it is suggested that the hospitals consider a codified program for the patients exposed to high blood pressure to reduce one of the stress-causing factors of these patients, which also causes high blood pressure, by teaching MBCT among these patients. In addition, they should hire psychologists who are proficient in these

programs. Furthermore, nurses and paramedics who constantly work with patients with low tolerance should hold training courses to relax and control anxiety to use these programs when necessary to control patients as best as possible. It is also suggested that according to the daily public pressures of the University of Medical Sciences, with the municipality's cooperation, MBCT educational programs should be provided free of charge to the general public.

Conclusion

The findings showed that cognitive therapy based on mindfulness reduces anxiety and intolerance of uncertainty in patients with high blood pressure.

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