



# Effectiveness of mindfulness-based stress reduction on state/trait anxiety and hypertension in patients with coronary heart disease with hypertension

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## Abstract

**Introduction:** Due to its debilitating nature, coronary heart disease (CHD) creates some limitations in a person's life. This study aimed to investigate the effectiveness of mindfulness-based stress reduction on state/trait anxiety and hypertension in patients with CHD with hypertension.

**Methods:** The research method was quasi-experimental pretest-posttest with one control and a 3-month follow-up group. Thirty patients with coronary heart disease were selected from the patients referred to Hazrat Fatemeh specialized polyclinic in Urmia in the months of September to December 2020 and were randomly assigned to two experimental and control groups. The experimental group received a mindfulness-based stress reduction program in an 8-session of 120 minutes. However, the control group did not receive this intervention during the research process. Data were collected through the State/Trait Anxiety questionnaire (Spielberger, 1970) and were analyzed using repeated-measures analysis of variance in SPSS-24 software.

**Results:** The results of data analysis revealed that a mindfulness-based stress reduction program has significantly influenced state/trait anxiety ( $P < 0.001$ ) and hypertension ( $P < 0.001$ ) and significantly reduced overt anxiety, latent anxiety, and hypertension in patients with coronary heart disease ( $P < 0.001$ ).

**Conclusion:** Considering the effect of mindfulness-based stress reduction therapy on reducing overt and covert anxiety and hypertension in patients with coronary heart disease (CHD), it is suggested that the principles of this treatment be taught to counselors and psychologists in medical and hospital centers through specialized workshops.

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### Keywords


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## Extended Abstract

### Introduction

Coronary heart disease (CHD) is one of the cardiovascular disorders that is caused by damage and obstruction of the coronary arteries. In this disorder, the wall of one or more coronary arteries of the heart is wholly or partially

blocked due to the deposition of substances called plaque (fatty or fibrous material), and blood flow to different parts of the heart is cut off permanently or temporarily. Coronary arteries have been reported CHD, due to its

debilitating nature, creates some limitations in a person's life. Studies of psychological disorders in patients with cardiovascular disease have repeatedly shown that this disease is associated with depression, anxiety, and stress. Mindfulness-based therapies are one of the complementary methods used in more than 200 American hospitals, and some studies have used this treatment as the preferred psychotherapy to medical treatment to improve blood pressure in patients with hypertension. Given the high prevalence of CHD in Iran and the adverse effects of this disorder on the physical function and social, educational, and occupational status of patients, the development and expansion of therapeutic interventions that reduce anxiety and blood pressure in these patients are essential. Thus, this study aimed to investigate the effectiveness of mindfulness-based stress reduction on state/trait anxiety and hypertension in patients with CHD with hypertension.

## Methods

The research method was quasi-experimental pre-test-posttest with one control and a 3-month follow-up group. In this study, the independent variable (Mindfulness-based stress reduction) had two levels (experimental group and control group), and the research had two dependent variables (State/trait anxiety and Hypertension). A purposeful sampling method was used to select the sample size. Thirty patients with coronary heart disease (15 patients for each of the experimental and control groups) were selected from the patients referred to Hazrat Fatemeh specialized polyclinic in Urmia in the months of September to December 2020. They were randomly assigned to two experimental and control groups. Inclusion criteria were diagnosis of premature CHD and hypertension according to the criteria of the World Health Organization (WHO) in patients by a cardiologist, having a high school education, being between 40 and 55 years old, ability to participate in group therapy sessions, and willingness to

cooperate. Exclusion criteria were comorbid psychiatric disorders, drug use, and absenteeism in more than three medical counseling sessions. The participants in the experimental group received mindfulness-based cognitive therapy in eight ninety-minute sessions, and the participants in the control group did not receive training. The experimental group received a mindfulness-based stress reduction program in an eight-sessions of 120 minutes. However, the control group did not receive this intervention during the research process. Ethical considerations included all that subjects who received information about the study at any time could leave the study. They were assured that all information would remain confidential and only be used for research purposes. For privacy reasons, the subjects' details were not recorded. In the end, all of them received informed consent. The questionnaires used in this study, including the State/Trait Anxiety questionnaire (Spielberger, 1970), were completed in three stages. The data were analyzed by repeated-measures ANOVA using SPSS-24 software. In this study, a significance level of less than 0.05 was considered.

## Results

Findings from demographic data showed that the sample had a range of 20 to 45 years, among which the age range of 35 years had the highest frequency (28%). On the other hand, these people had the level of diploma to master's degree, the highest frequency of which was related to the bachelor's degree (57%), and they were all married. In order to investigate the effectiveness of mindfulness-based stress reduction on state/trait anxiety and hypertension in patients with CHD with hypertension, repeated-measurement ANOVA was used. First, the normality of data distribution was checked and confirmed using Shapiro-Wilk Test ( $P > 0.05$ ). The assumption of homogeneity of variance was also tested by the Levene's test, which showed the results for the variables of overt anxiety ( $F = 1.16$ ,

$P=0.423$ ), latent anxiety ( $F=2.13$ ,  $P=0.172$ ), and blood pressure ( $F=1.48$ ,  $P=0.254$ ) were not significant. So the assumption of homogeneity of variance was observed. Also, the results of the Mauchly's sphericity test indicated that the data sphericity assumption was observed in the variables of overt and covert anxiety and blood pressure ( $P<0.05$ ). The data analysis results showed a significant difference between the mean scores of overt anxiety, latent anxiety, and blood pressure in the studied groups in the pre-test, post-test and follow-up. Generally, considering that the amount of Eta squares in the experimental groups in all research variables is more than 0.14, based on the general rule of Eta squares, it can be said that the results of this study indicate the high effectiveness of mindfulness-based stress reduction program on state/trait anxiety and hypertension in cardiovascular patients. In addition, due to the significant interaction between time and the experimental variable and the effect size, it can be said that mindfulness-based stress reduction program causes an apparent reduction in state/trait anxiety and hypertension in c CHD patients in experiment groups compared to the control group at three months follow-up stage ( $P<0.05$ ).

## Conclusion

Considering the effect of mindfulness-based stress reduction therapy on state/trait anxiety and hypertension in patients with CHD, it is suggested that such a program be part of the codified treatments of patients with cardiovascular disease and psychologists of medical and hospital centers have sufficient knowledge in this field by holding training workshops. Like other studies, the present study has some limitations. The first limitation of the present study is the small sample size. Although this study did not yield a drop in subjects, the small sample size of this study is one of the limitations that prevented accurate estimation of the effect size of the program. The second limitation was related to the type of disease of the subjects who could not do heavy

physical activity. In future studies, it is suggested that a placebo program should be implemented on the control to control the effect of expectation. It is also recommended to use larger samples to achieve the actual effect size of the program. This study was performed on the patients of Hazrat Fatemeh specialized polyclinic located in Urmia city; it is suggested that to expand the findings of this study, researchers implement a mindfulness-based stress reduction program on similar patients in other hospitals.

## Ethical Considerations

### Compliance with ethical guidelines

This research meets guidelines for ethical conduct and report of research. The participants signed the informed consent form and had the right to leave the study at any time. They were assured that all information would remain confidential and would only be used for research purposes. For privacy reasons, the subjects' details were not recorded. It should be noted that the present article was taken from the doctoral dissertation of the first author, which has been registered in the Islamic Azad University, Central Tehran Branch, with the code of ethics, number IR.IAU.TMU.REC.1399.401.

### Authors' contributions

Parisa Kolahi and Mahdie Salehi: Defined the concepts in choosing the subject and designing the study. Mohammad Ebrahim Madahi: performed a search of the research literature and background. Parisa Kolahi Panah: Collected and analyzed data. Writing and drafting: Mozghan Sepahmansour. All authors discussed the results and participated in preparing and editing the article's final version.

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#### **Conflict of interest**

The author declared no Conflict of Interest.