



The effectiveness of emotion-regulation skills training on blood pressure control and quality of life in patients with hypertension

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Original Article

Abstract

BACKGROUND: Hypertension is a common chronic disease that is affected by several factors. The aim of this study is to evaluate the effectiveness of emotion regulation skills training on blood pressure control and quality of life (QOL) in patients with hypertension.

METHODS: The present study was a quasi-experimental design with pre-test and post-test evaluations to compare the experimental group with a control group. 60 patients with high blood pressure who received medical treatment and referred to the health centers and clinics affiliated to Isfahan University of Medical Sciences, Isfahan, Iran were randomly selected and assigned to either the experimental group (30 patients) or the control group (30 patients). The experimental group received eight training sessions (two 2-hour sessions weekly) on emotional regulation. In each group, the blood pressure was measured before and after the intervention. Data for the QOL were collected using the 36-Item Short Form Health Survey (SF-36).

RESULTS: The findings showed that in the post-test evaluation, systolic blood pressure (SBP) of the patients in the experimental group was reduced in comparison to the control group ($P \leq 0.050$). In addition, in the experimental group compared to the control group, the QOL in the patients increased after the intervention. However, the diastolic blood pressure (DBP) did not show a significant difference.

CONCLUSION: Emotion regulation skills training was effective in patients with hypertension. It is suggested that the emotion regulation skills training be considered along with medical treatments.

KEYWORDS: Emotion Regulation; Hypertension; Quality of Life

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Introduction

Hypertension is one of the most important public health problems worldwide, especially in developing countries.¹ In 2005, there were about one billion people with high blood pressure in the world, and 4 million people annually died because of the direct effect of hypertension.² In 2015, the prevalence of high blood pressure in Iran was reported to

be 22.6%.³

Considering the role of psychological factors, interest in investigating the effect of psychological interventions on patients with hypertension has increased, with the emotion regulation being one of the most famous models in the studies. Emotions involve various types of responses that vary from mild to severe, negative to positive, general to private, short term to long term, and primary (primary emotional response) to secondary (the transformation of an emotional response to another emotional response).⁴

Typically, in the emotion regulation protocol for specific diseases, emotional

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regulation is defined as a category of awareness and understanding of emotions, acceptance of emotions, the ability to control impulsive behaviors, and behave in accordance with the desired goals for achieving individual goals and positional requirements.⁵ Psychological and emotional management and physical therapy for hypertension include two-way interaction. On the other hand, the negative mental aspects of the disease affect the mental health of the patients and the severity of the disease. This psychological state affects the treatment motivation and the hope of improving the disease and interferes with the treatment. Besides, the control or improvement of hypertension also plays an important role in improving the quality of life (QOL) and mental health of patients. In a case-control study with the aim of evaluating the effect of hypertension control on the QOL of patients with high blood pressure in Iran, the score of all four physical, psychological, social, and environmental components in the control group was significantly different and low compared to those in the intervention group.⁶

Therefore, due to the importance of mental health and its attachment to physical health, as well as the extension of psychological problems in patients with hypertension, few studies have been conducted in psychological and emotional setting to help those patients in Iran. Therefore, the present study is conducted with the aim to investigate the effectiveness of emotional regulation skills training on blood pressure control and QOL in these patients.

Materials and Methods

The present study was a quasi-experimental design with pre-test and post-test evaluations to compare the experimental group with a control group. The statistical population of the study consisted of 60 patients with hypertension who received medical treatment and referred to the selected health centers of Isfahan University of Medical Sciences, Isfahan, Iran.

The study inclusion criteria were a definite diagnosis of hypertension by the physician, using anti-hypertensive medication, the willingness to participate in the study, a history of the disease for at least two years, having a minimum primary education, and age 35-65 years. Similarly, the study exclusion criteria consisted of daily physical activity limitation due to physical illness during the intervention, lack of participation in at least two educational sessions, and unwillingness to continue to participate in the study or change in the protocol of drug treatment for any reason.

60 patients were selected from four selected treatment centers affiliated to Isfahan University of Medical Sciences. Then, 30 subjects were randomly assigned to the intervention group and 30 patients to the control group. Regarding the results of previous studies,³ for gender mainstreaming, both sexes were considered equally in both control and intervention groups.

The variables in the pre-test evaluation were measured in both groups. The emotion regulation training was performed only on the experimental group and the control group did not receive any intervention. Finally, the effect of the skill training was evaluated through the post-test and was compared between the experimental and control groups. The different stages of the emotional regulation training were performed based on the Emotion Regulation Questionnaire (ERQ) was developed by Gross and John in 8 sessions of 2 hours in a group.^{7,8}

The protocol was implemented in the form of 8 sessions, and the therapist specified the assignments after each training session. The content of the sessions was as follows: Session 1: Introducing group members and sessions of emotional regulation and defining positive and negative emotions; Session 2: understanding emotions and emerging positions through teaching different types of excitement and short-term and long-term effects of excitement;

Session 3: Assessing the degree of vulnerability and emotional skills of members (function of excitements in the process of human adaptation and its benefits, the role of excitement in communicating with others, and influencing others); Session 4: making changes in emotional emerging situations (preventing social avoidance, learning problem-solving strategy, interpersonal skills training, dialogue, self-expression, and confirmation of conflicts); Session 5: changing attention (stopping rumination and anxiety and learning attention); Session 6: making changes in cognitive assessments (identifying misconceptions and their effects on emotional modes and learning strategies for re-evaluation); Session 7: changing behavioral and physiological effects of emotions (identifying the method of using an inhibition strategy and examining its emotional consequences, exposure, emotion express training, behavioral modification through environmental amplifiers, emotional discharge training, reciprocity, and inverse action); Session 8: reassessing and removing application barriers (assessing the level of achievement to individual and group goals, applying skills learned in natural outdoors, and reviewing and removing application barriers).

Blood Pressure: For clinical evaluation, the blood pressure was measured using the OMRON M6 Comfort Blood Pressure Monitor and evaluated by the physician in the sitting position. The patient did not have a severe activity for at least half an hour before measuring the blood pressure, did not take a large meal, coffee, alcohol, medicine, and stimulant drinks, did not smoke and fast for more than 14 hours, and did not experience any stress or excitation. The blood pressure was measured twice each time and its average was recorded as the patient's blood pressure.

36-Item Short Form Health Survey (SF-36): The QOL was measured using the SF-36 questionnaire consisting of 36 items, which is

the most commonly used instrument for measuring the QOL and has been designed by Ware and Sherbourne.⁹

The eight subscales of this questionnaire consisted of physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH). Moreover, based on the integration of the subscales, two subsamples were obtained called physical health and mental health. In this questionnaire, lower scores represent the lower QOL and vice versa and the score of items in each subscale varies from 0 to 100. To obtain the score of each sub-scale, the sum of scores of the items for each subscale is divided by the number of items. The internal consistency coefficients of the 8 subscales were reported between 0.70 and 0.85, and their retest coefficients with a one-week interval were 0.43 to 0.79.¹⁰

Pre-test and post-test were performed by the SF-36 QOL questionnaire during the first session and after completing the emotion regulation protocol training sessions. After data collection, descriptive and analytical statistics were analyzed by SPSS software (version 24, IBM Corporation, Armonk, NY, USA) and t-test was used to compare the mean values.

Results

The mean and standard deviation (SD) of age of the subjects in the experimental and control groups were 53.4 ± 5.7 and 52.8 ± 7.4 years, respectively. About 16% of the control group and 33% of the intervention group were married and 16.7% of the control group and intervention group had an educational level of the bachelor's degree. The significant difference was not observed between the intervention and control groups.

Given the results of the analysis, the difference in the systolic blood pressure (SBP) was significant in the intervention group, besides the mean blood pressure in the

intervention group, which was 3.4 more than the control group before intervention, decreased to 24.3 mmHg less than that of the control group after the intervention ($P < 0.001$). Therefore, the emotional regulation training did not affect the mean DBP.

The QOL variable consisted of two general subscales of physical health and mental health. According to the overall score of QOL, the effect of training in the experimental group was statistically significant ($P \geq 0.050$) and the intervention increased the QOL of patients in the post-test evaluation. The effect of education and intervention on the overall score of physical health in the experimental group was not significantly different from that of the control group ($P > 0.050$). The overall mental health score was statistically significant ($P < 0.050$) and the emotion regulation skills training increased the mental health of the patients in the post-test evaluation of the intervention group. The results are shown in table 1.

Discussion

Given the results of this study, training of the emotional regulation skills to patients with hypertension caused significant decrease in SBP and increase in QOL in comparison to the control group. The findings of this study indicate that emotional regulation can be effective in choosing coping strategies for controlling blood pressure. In the process of emotion regulation, the emphasis is placed on

tasks and skills that can be linked to a significant reduction in hypertension among the patients in this study. Cognition, learning, emotional situations, practice to stop rumination, and anxiety disorder lead people to stop inappropriate thoughts.

One of the important issues in regulating excitement is the change in individuals' cognitive assessments that improves cognitive organization and decrease blood pressure. Training the re-evaluation strategy also results in its use in high-risk situations in the natural environment and decreasing blood pressure. In a study, the results revealed that patients with essential hypertension had higher scores in the dimensions of self-blame, other-blame, rumination, and catastrophizing and had significantly lower scores in positive refocusing and positive reappraisal in comparison with the healthy individuals.¹¹

Another study showed that compared to healthy subjects, individuals with hypertension had a lower level of emotion in cognitive regulation.¹² Additionally, Suwito et al. reported that the emotion management model can improve the outcome of treatment in patients with hypertension and recommended it as a complementary therapy in patients with hypertension.¹³

Therefore, the findings of this study were consistent with those of the other studies mentioned above. Emotion regulation provides an opportunity to adjust individual emotions without changing the real environment.

Table 1. Comparison of the mean of quality of life (QOL) in patients with hypertension before and after intervention in the experimental and control groups

Variable	Control Group			Intervention Group			P
	Before	After	P	Before	After	P	
SBP	167.3 ± 2.1	167.6 ± 2.1	0.900	170.7 ± 1.9	153.3 ± 2.5	0.001	0.001
DBP	96.2 ± 2.7	93.2 ± 1.9	0.120	95.0 ± 1.3	93.3 ± 1.4	0.230	0.900
QOL	41.8 ± 2.5	43.6 ± 2.3	0.150	43.5 ± 1.9	52.3 ± 1.6	0.001	0.003
Physical health	40.8 ± 2.7	41.4 ± 2.5	0.110	42.3 ± 2.2	43.8 ± 1.9	0.290	0.460
Mental health	43.9 ± 3.0	45.7 ± 2.9	0.360	44.8 ± 11.9	60.9 ± 2.3	0.001	0.001

SBP: Systolic blood pressure; DBP: Diastolic blood pressure; QOL: Quality of life

Situations have many dimensions and extending attention to this issue points out how one changes his or her attention within the desired position in order to influence the emotion,¹⁴ however the training of excitement can improve treatment. It should be noted that medication therapy by itself can decrease high blood pressure, but this is not enough to achieve a complete recovery and improve the QOL of the patients.¹⁵

As the findings indicated, attending regular emotion regulation sessions can control high blood pressure (systolic). Regarding the results of this study and considering the importance of emotion-regulation in patients with high blood pressure, it is possible to apply measures to control the patients' blood pressure in order to counteract and regulate their emotions and also make plans for group work of physicians and psychologists. It should be noted that the limitations of this study including small sample size, intermittent follow-up after the intervention, lack of job control, and economic and cultural status that could influence the results made the authors cautious about generalizing the results. It is also suggested that further investigations be carried out taking into account the limitations of this study with large sample sizes and considering occupation and economic status and different subcultures, as well as applying parallel therapies for further control.

Conclusion

Emotional regulation skills training to patients with hypertension led to significant decrease in SBP and increase in QOL compared to the control group. It is suggested that in patients with hypertension, beside paying attention to drug treatment, mental health and emotion control skills should be considered.

Conflict of Interests

Authors have no conflict of interests.

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