

Cognitive-Behavioral Stress Management and Positive Therapy on Self-Regulation Behaviors of females with Hypertension

Running title: Hypertension Management

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Abstract

Objective: This study aimed to compare the effectiveness of cognitive behavioral based stress management training and positive therapy on self-regulation behaviors of females with primary hypertension.

Method: In this semi-experimental study with pretest-posttest and control group, 48 women with primary hypertension were randomly assigned in control (n = 16), positive therapy (n = 16) and stress management (n = 16) groups. All participants completed standard self-regulation behaviors questionnaire before and after interventions. The intervention groups received cognitive-behavioral based stress management training and positive therapy program for eight sessions. The control group did not receive any intervention during research. Data were analyzed using SPSS software and descriptive and inferential statistical methods (ANCOVA).

Results: The findings indicated that self-regulatory behaviors significantly increased in the intervention groups compared to control group ($P > 0.05$). Comparison of intervention group revealed superior effectiveness of cognitive-behavioral based stress management program versus positive therapy (Mean difference=28.13, $P > 0.05$).

Conclusion: Cognitive-behavioral stress management training and positive therapy are effective in the self-regulation behaviors of women with primary hypertension. Improvement of self-regulation behaviors through psychological programs such as cognitive-behavioral stress management training and positive therapy reduce the burden of disease and enhance treatment adherence.

Keywords: CBT; Stress; Positive; Self-regulation; Hypertension.

Introduction

Hypertension is a major chronic health condition that affects almost one billion adults worldwide and if left untreated, it can result in serious disability or death (Witten, Jansen van Vuuren, & Learmonth, 2013). Uncontrolled hypertension is the most common risk factor of stroke (O'Donnell et al., 2010). Hypertension is the reason of considerable social –individual and mental-physical problems in all countries (Egan,

Kjeldsen, Grassi, Esler, & Mancia, 2019). Therefore, WHO aimed to control the non-communicable diseases as a global target, including a 25% relative reduction in the prevalence of hypertension during 2013- 2025 (Organization, 2013).

Although the role of stress is accepted in development and maintenance of disease, the etiology of hypertension is complicated (Hu et al., 2015). Lifestyle modification is a key strategy for the prevention and treatment of this disease (Sara et al., 2018) and stress management programs is recommended for reducing the hypertension (Pires, Peuker, & Castro, 2017). Evidence showed significant interaction between daily stress and

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emotion regulation skills (Richardson, 2017). Emotion regulation improves physical health and difficulty in emotion regulation leads to physical and psychosomatic conditions (Pervichko, Zinchenko, & Ostroumova, 2014). People who are not able to express and discharge their negative emotions by using avoidance and submission mechanisms are highly affected by hypertension (Boostani, Ezadikhah, & Sadeghi, 2017).

Psychological therapists recommended intervention for hypertensives. It has been shown that stress reduction through relaxation therapies have an effect on human physiology (Blom et al., 2012). Mennin et al presented data suggesting that CBT changed emotion regulation in a mixed sample of patients (Mennin, Fresco, Ritter, & Heimberg, 2015). Hechtman et al also concluded that positive therapy is an effective method in regulating behavior in clinical and non-clinical settings (Hechtman, Raila, Chiao, & Gruber, 2013). There are rare studies to show that positive emotion influences the hypertension (Ma, Li, & Feng, 2015). However, it is not documented whether positive therapy is effective in emotion regulation of cases with hypertension. Therefore, this study aimed to compare Cognitive-Behavioral based Stress Management and Positive Therapy on Self-Regulation Behaviors of females with Primary Hypertension.

Method

Participants

This study was a semi-experimental with pretest-posttest and control group. The statistical population included all females who referred to Dr. Heshmat Hospital in Rasht, Iran during July and December, 2018. The participants were 48 women who were selected based on inclusion criteria. Then they were randomly assigned to control ($n = 16$), positive therapy ($n = 16$), and stress management ($n = 16$) groups. The inclusion criteria included women with primary hypertension, age between 30-50 years old, no cardiovascular-renal conditions, no psychiatric or other specific illnesses, and emotion regulation

scores below average.

Ethical consideration

For ethical consideration, the consent of patients was gained for the participation in the study. Also patients were assured that their information will remain confidential and their name and addresses will not be mentioned. Therapy sessions content presented after the study for the control group members.

Measures

All participants completed demographic (age, gender, education, occupation, disease duration, etc.) and self-regulation behaviors standard questionnaire before interventions. Self-Regulation Questionnaire (SRQ) of Brown, Miller, and Lawendowski (1999) was used to evaluate the participants. The questionnaire consists of 63 items with seven components of acceptance, evaluation, commissioning, review, planning, and administration which is scored in Likert criteria. The psychometric properties of this questionnaire were evaluated and Cronbach's alpha was 0.91 (Abolghasemi, karimi yousefi, & Khoshnoodnia Chomachaei, 2017). After intervention, the same questionnaire was given to all participants. It should be noted that the number of participants after dropping in each group was reduced from 16 to 14 in each group. The intervention was carried out as follows based on previous studies. Cognitive behavioral based stress management was administered once a week, each session 120 minutes based on instruction of book written by Schneiderman et al. (2012, translated by Neshatdoost et al.) (Akhteh et al, 2014). Positive therapy held once a week, each session 120 minutes based on Magyar-Moe's book (2015, translated by Foroghi et al.) (Assarzaghehan & Raiesi, 2019).

Analysis

Descriptive statistics were used to describe the characteristics of the subjects. The analysis of covariance (ANCOVA) was used to test the hypotheses of study through SPSS-20.

Table 1. Content of sessions

Groups	session	Content
Cognitive behavioral based stress management (once a week each session 120 minutes)	1	Introduction, aims, expectations and rules were presented and gradual muscular relaxation of 16 muscles was trained
	2	Stress and consciousness were explained and Gradual muscle agitation of 8 muscles was trained.
	3	- Automatic thoughts were introduced and participants completed thought identify forms - Exercise for breathing and illustration and gradual muscle spasm of 4 muscles were trained.
	4	Negative Thinking and Cognitive Distortions, evaluation of identified thoughts through forms- Replacing Rational Thoughts- Impressions and Illustrations- Passive Progressive Muscle Impairment were provided.
	5	Effective coping responses- self-medication training, how to check heart rate and body sensations were exercised.
	6	Expressions and Understanding Social Support Network- Self Learning with Self-Esteem and Self-Esteem were taught.
	7	Anger Management - Respiratory Meditation - Daily Self-Esteem were exercised.
	8	The entire program - Personal Stress Management Program - Daily self-monitoring for the following month were reviewed.
Positive therapy (once a week each session 120 minutes)	1	Focusing on the direction of the therapist in the context of positive psychotherapy, the therapist was asked to write a story about herself and make a positive statement about herself. Reviewing positive presentation stories and identifying capabilities, the custodian was asked to formulate a specific plan for implementing capabilities.
	2	the patient was helped to talk about negative emotions and discuss the effects of these excitements and focus on the structure of forgiveness, which is used as a means to eliminate negative emotions
	3	Examining the role of bad and good memories and the impact of thanksgiving the memories, participants were asked to write letters of forgiveness and thanksgiving, applying abilities in practice.
	4	Teaching Satisfaction with Perfection for the Patient
	5	Focus on the topics of hope and optimism
	6	Helping to Understand the Commitment and Meaning of Life
	7	Identifying family members' abilities and resolve misunderstandings, engage in enjoyable activities, and use empowerment to gain pleasure. Applying abilities to serve others
	8	Talking about a full life , review and summarize previous sessions

Results

At first, covariance assumptions were calculated. The Shapiro-Wilk's test statistic for experimental and control groups was not significant which mean the data distribution was normal. There was no significant difference between the experimental and control groups in the pre-test scores of self-regulation behaviors ($p > 0.05$). The F-test of Levine test was not meaningful for the variance analysis of self-regulation

($p > 0.05$). Comparison of groups shows that there is a significant difference between the two groups in both intervention groups compare to control group (Table 2).

According to the table, the mean sore of self-regulation in cognitive behavioral based stress management group (244.56) is significantly higher than the mean of positive group ($m=221.43$). It can be concluded that the effect of cognitive-behavioral

Table 2. Results of effectiveness of cognitive behavioral based stress management and positive therapy on self-regulation in comparison with control group

Groups	Sources	SS	Df	MS	F	P	eta
positive therapy	pretest	4972.34	1	4972.34	38.42	<0.01	0.60
	Groups	2065.58	1	2065.58	15.96	<0.01	0.39
	error	3235.43	25	129.41			
cognitive behavioral based stress management	pretest	2270.14	1	2270.14	10.38	<0.04	0.29
	Groups	13170.47	1	13170.47	49.36	<0.01	0.66
	error	6669.64	25	266.78			

stress management training on the overall self-regulation behaviors in women with hypertension is higher than positive therapy (Table3).

Discussion and Conclusion

The results of this study indicated that cognitive-behavioral stress management training was effective on the self-regulation behaviors of women with hypertension. The subjects reported higher self-regulatory in the intervention group after attending stress management training sessions. This implies that their acceptance increased. They could evaluate the situation and check the solving options through planning. These findings were in consistent with Scarpa & Reyes's (Scarpa & Reyes, 2011), Strauman et al.'s (Strauman et al., 2013), Kabir et al.'s (Kabir, Haramaki, Ki, & Ohno, 2018), and Forkmann et al.'s (Forkmann et al., 2014) studies.

In explanation of findings, it can be said that environmental stressors have a significant effect on the development and maintenance of hypertension. Continuous physiological stimulation increases the production of epinephrine and norepinephrine hormones followed with higher heart rate and blood pressure. This excessive physiological response ultimately increases the likelihood of hypertension (Baghianimoghadam, Aivazi, Mzloomy, & Baghianimoghadam, 2011).

During sessions, patients trained to reduce their

stress with relaxation, anger management, and cognitive restructuring. These abilities helped these people use more self-regulating strategies. Therefore, the intervention group scores increased compare to control group. Main task of cognitive-behavioral therapy is to help the person to modify the information processing system himself. The therapist tries to equip the patient with new techniques he has previously neglected (Fathi, 2015). These techniques help clients to correct and moderate their misinterpretations and perceptions of environmental events and create new perspectives. Participants learned that complexity and ambiguity are the hallmarks of most of the situations in life, and therefore they learn to tolerate this ambiguity and uncertainty with more flexible cognitive coping skills. Ultimately, clients use these new cognitive approaches and appropriate strategies to adjust themselves to life events.

The finding indicated that positive therapy program was effective in the self-regulatory behaviors of women with blood pressure. These findings indicate that creating positive emotions lead to feel more attained in evaluating, implementing, planning, and higher self-regulating behaviors. The association has been seen between positive emotion and self-regulation behaviors (Ma et al., 2015). Findings of Ostir, et al indicate association between high positive emotion and lower blood pressure (Ostir, Berges, Markides, & Ottenbacher, 2006). Reduction

Table 3. Comparison of cognitive behavioral based stress management and positive therapy

Group	Mean	Mean Diff	SE	P
positive therapy	22.43	28.13	5.16	<0.01
cognitive behavioral based stress management	244.56			

Note: Significant difference are shown in bold type.

of negative emotion and boosting emotional vitality was associated with reduced hypertension risk and higher behavior regulation (Trudel-Fitzgerald, Boehm, Kivimaki, & Kubzansky, 2014). Emotion is an important psychological reaction to individual life events and an adaptation to environmental challenges. There is direct evidence for a relationship between negative emotion and health, which is supported with the neuroendocrine and immune functions experimental studies (D'Acquisto, 2017).

Another finding of study was superior effectiveness of cognitive behavioral based stress management group compare to positive therapy in improvement of self-regulation behaviors. Geschwind et al reported same results (Geschwind, Arntz, Bannink, & Peeters, 2019). However, Chaves et al reported no difference in effectiveness of positive therapy and cognitive behavioral therapy (Chaves, Lopez-Gomez, Hervas, & Vazquez, 2017). This difference is explainable as present study emphasized on stress management beside cognitive behavioral techniques. Explanation of this finding is potentially related to comprehensive techniques of cognitive behavioral based stress management group while in positive therapy only emotions targeted. Hypertension and behavior regulation includes behavioral and emotional aspects; therefor, programs which targets several dimensions of health in the same time will be highly effective.

This study has some limitations including self-reporting of patients about the absence of psychological and physical illnesses and the researcher did not have the opportunity to examine the laboratory and receive a deep interview about mental illness. The other limitation was a small number of research samples. One of the other constraints was the difficulty of controlling demographic variables such as family relationships, income levels, and mental health. It is suggested that in the next research, exclusion and inclusion criteria considering the level of education, lifestyle, gender, income, and family relationships examine the effectiveness of this intervention and compare its effectiveness with other groups and interventions.

This study showed positive therapy and cognitive behavioral based stress management enhance behavior regulation in patients with hypertension. Behavior regulation in chronic disease such as hypertension is an important concept as regular care behaviors are needed. Higher behavior regulation leads to lower care burden and prevents from coronary disease. Therefore, findings and procedure of this study is applicable in health care system to enhance health care quality through higher self-regulated behaviors of patients.

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