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Effectiveness of Stress Immunization on Resilience, Anger Rumination, and Perceived Stress Among Women with Hypertension

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Abstract

Background: Hypertension is a chronic disease that requires long-term treatment and, which despite being asymptomatic, leads to fatal complaints and complications.

Objective: The goal of this study was to see how stress immunization affected women with hypertension's resilience, angry rumination, and perceived stress.

Methods: The pretest-posttest control group design was used in this quasi-experimental investigation. This study's statistical population included all hypertensive women in Tehran, in 2019. The samples (n=30) were randomly assigned to experimental (n=15) and control groups (n=15) using a convenience sampling procedure. The Connor-Davidson Resilience Scale (2003), Anger Rumination Questionnaire (2001), Perceived Stress Scale (1983), and a blood pressure monitor were used to obtain the necessary data. The data was analyzed using multivariate analysis of covariance and repeated measures analysis of variance in SPSS software (version 22).

Results: Stress immunization improved resilience (P<0.001), angry rumination (P<0.001), and perceived stress (P<0.001) in women with hypertension, according to the findings.

Conclusion: Stress immunization increased resilience and reduced anger rumination and perceived stress in women with hypertension, according to the findings.

Keywords: Anger, Resilience, Immunization, Hypertension, Stress

Introduction

Hypertension is a chronic disease that requires long-term treatment, which despite being asymptomatic, leads to fatal complaints and complications (1). Universally, about one billion people suffer from hypertension and seven million people die annually due to this disease (2). Hypertension, similar to cigarettes and diabetes, is one of the risk factors for cardiovascular diseases that cause one-third of deaths. High blood pressure may not be diagnosed for many years until adverse outcomes occur (3). Despite progress in the treatment, about half of patients are unable to control their blood pressure (4). Although 70% of hypertension patients are aware of their disease and 60% of them are cured, only 34% of such patients have managed to control their disease (5). This group of chronic patients experiences a lot of stress due to the need to deal with disease conditions, well-being threats, body integrity, independence, family, social and professional roles, future goals and plans, and economic instability (6).

Numerous studies have shown that stressful events have a significant impact on the emergence of physical and mental illnesses in recent years. In other words, stress is one of several factors that, alone or in combination with others, play a significant role in hypertension (7). When stressed or threatened, visceral veins contract, causing the pulse to quicken and the blood pressure to rise. Some researchers believe that different environmental and situational characteristics are effective in experiencing stress. Accordingly, accidents that create various demands and pose an imminent threat can cause a lot of stress in the individual. Moreover, researchers consider changes in environmental and living conditions stressful. Environmental factors, such as ambiguity in a situation or role and desirable or unknown situations, have also been influential in experiencing stress.

Stress is the experience of events that are deemed dangerous to an individual's bodily or mental well-being, and it is one of the factors that contribute to people's ability to adapt coping techniques in stressful situations. Perceived stress is one of the elements that can contribute to the development of a variety of diseases and disorders, as well as pave the way for disease and disorder conditions and severity. Stress is defined as one's belief in the seriousness of a situation. The body's reaction to a change that necessitates adaptation or a physical, mental, or emotional response is known as perceived stress (8).

Stress creates physical and psychological harm at the individual level, and it causes and exacerbates social issues at the societal level, according to pathology. Currently, new stress theorists are trying to break down these whole concepts into constituent components and their mechanisms, including mechanisms by which stress causes illness, intrusive thoughts, rumination, mental preoccupations, automated thoughts, and traumatic memories.

Such factors as disease labeling, dietary restrictions, changes in daily activities, lack of definitive treatment of the disease, and complications of the disease and drug therapy create psychological pressure on these patients, which consequently, reduce their quality of life and resilience (9, 10). Resilience, as a complex cultural construct, is currently important in the clinical field due to its potential effects on individuals' health, well-being, quality of life, and way of responding to various challenges (11). Resilience means the ability to successfully cope with stressful situations and adapt to problems and difficulties. Hashemi Fesharaki et al. reported that this method significantly reduced stress, anxiety, and depression in the experimental group, compared to the control group (12). Sohrabi et al. showed that stress-versus-stress immunization training was influential in reducing stress, anxiety, and depression in employed women (13).

Since finding efficient and effective short-term treatment methods is one of the necessities of research in the field of treatment and training stress coping is one of the short-term treatments, conducting research to evaluate the efficacy and effectiveness of these treatment methods is important. In general, the performance of this research was essential due to the high prevalence of hypertension, the negative impact of this disorder on different aspects of a person's life, lack of research on comparing the effectiveness of non-pharmacological treatments, using the results of this study in therapeutic and counseling environments, and providing a basis for future studies.

Objectives

This study aimed to investigate the effectiveness of stress immunization on resilience and anger rumination and perceived stress in women with hypertension.

Materials and Methods

The pretest-posttest control group design was used in this quasi-experimental study. This study's statistical population included all women with hypertension in Tehran in 2019. The samples were collected using a convenience sampling method through calling them (by the medical clinics in Tehran and hospitals active in the field of heart and blood pressure) and then randomly assigned to experimental and control groups. At first, resilience, anger rumination, and perceived stress questionnaires were administered to both groups (experimental and control); subsequently, the psychological intervention protocol of stress immunization was implemented for only the experimental group. Immediately after the completion of the intervention for the experimental group, post-test questionnaires of resilience, anger rumination, and perceived stress were administered to both groups. The sample size was calculated at 20 cases based on similar studies considering the effect size of 0.40, confidence level of 0.95, test power of 0.80, and drop-out rate of 10% in each group.

Stress immunization training was performed in ten 90-minute sessions once a week. The control group did not receive any intervention. The inclusion criteria were being 60 years old at maximum, having high blood pressure, lacking chronic physical illness with high blood pressure (e.g., diabetes), lacking severe depression, lacking mental disorders requiring immediate treatment, having the willingness to participate in the treatment intervention, having minimum reading and writing literacy, having the normal listening ability, and completing informed consent to participate in treatment sessions. Patients who refused to cooperate and missed more than two treatment sessions were, on the other hand, disqualified from the study.

In terms of ethical considerations, all participants were given written explanations of the research objectives and procedures, as well as the option to exit the study at any time. Furthermore, in this study, all participants were guaranteed anonymity and secrecy. This article was approved by the Ethics Committee of Hormozgan University of Medical Sciences, Hormozgan, Iran (IR.HUMS.REC.1398.338).

Connor-Davidson Resilience Scale

This 25-item questionnaire consists of 5 subscales, namely the notion of personal competence; trust in one's instincts and tolerance of negative affect; positive acceptance of change and secure relationships; control; and spiritual influences. The items are rated on a 5-point Likert scale. The Cronbach's alpha coefficient of resilience scale was 0.89, according to Connor and Davidson (14). Furthermore, the reliability coefficient was 0.87 using the test-retest procedure across a 4-week interval. Ariapouran et al. (15) used Cronbach's alpha coefficient to determine the reliability of this scale in Iran, which was estimated to be 0.89. In this study, the Cronbach's alpha coefficient for the resilience scale was 0.82.

Anger Rumination Questionnaire

This 19-item questionnaire developed by Sakodolski et al., (16,17), assesses anger rumination in four subscales, including angry afterthoughts, thoughts of revenge, angry memories, and

understanding of causes. The responses are scaled on a 4-point Likert scale (from one=very low to four=very high), with higher scores indicating higher anger rumination. The rumination score of total anger is obtained by calculating the scores of questions in four scales. The psychometric properties of the Persian version of the Anger Rumination Scale have been investigated and confirmed in several studies (17). The Cronbach's alpha coefficients for the whole scale, furious afterthoughts, revenge thoughts, angry recollections, and understanding of reasons were 0.95, 0.89, 0.83, 0.87, and 0.78, respectively, showing that the scale has strong internal consistency (17). The Anger Rumination Questionnaire had a Cronbach's alpha coefficient of 0.78 in this study various types of the medical barometer, mercury barometer and its hand barometer are more commonly used in Iran.

Perceived Stress Scale

Cohen et al. (1994) (18 developed this 14-item scale, which is divided into two subscales: negative perception of stress (items=7) and positive perception of stress (items=7). The responses are scored on a 5-point Likert scale (none = 0, low = 1, medium = 2, high = 3, and very high = 4). The Cronbach's alpha coefficient method was used to determine the reliability coefficients of internal consistency of this scale, which ranged from 0.84-0.86 among two groups of students and one group of smokers in a withdrawal program. Mimora and Griffith (2004) conducted a study on Japanese students and obtained Cronbach's alpha coefficients of 0.88 and 0.81 for the original and revised Japanese scales, respectively (18,19). The Cronbach's alpha coefficient of this instrument was estimated to be 0.84 in the current study.

Blood pressure gauge

A medical barometer is a device used to measure systolic and diastolic blood pressure. Among the

Stress immunization treatment was performed in ten 90-minute sessions based on the training package developed by Meichenbaum. The validity of this protocol has been approved by its creators and has a high face and content validity (20).

The multivariate analysis of covariance approach and repeated measures analysis of variance were used in the statistical analysis in SPSS software (version 22).

Results

All participants in the study (n=30), including 15 subjects in the secure group against stress and 15 cases in the control group, were evaluated before and after the training with research tools. The mean age scores of participants in the experimental and control group were obtained at 41.7±8.84 and 40.6±8.71 years, respectively. The mean and standard deviation of research variables are presented in Table 1.

Table 1- Mean and standard deviation of research variables in pre-test and post-test

Variable	Group	Pre-test		Post-test	
		M	SD	M	SD
Perceived stress	Intervention	36.46	8.06	31.73	6.62
	Control	35.06	7.08	34.86	6.99
Anger rumination	Intervention	63.86	9.86	59.60	7.02
	Control	62.80	7.75	62.59	7.60
Resilience	Intervention	73.46	10.64	79.80	11.89
	Control	75.00	11.81	77.37	12.67

Multivariate covariance analysis was used to investigate the differences between the two groups regarding resilience and rumination scores of anger and perceived stress. The results of evaluating data characteristics revealed that the statistical assumption of consistency of variance-covariance matrices for research components was established (Box's M=28.60, P>0.05), and thus the Lambda Wilkes index was used to assess the significance of the multivariate effect.

Table 2- Results of multivariate analysis of covariance on the resilience, anger rumination and perceived stress

Test	Value	Hypothesis df	Df Error	F	P	Eta squared
Pillai's effect test	0.80	2	23	88.21	0.001	0.80
Wilks Lambda	0.19	2	23	88.21	0.001	0.80
Hoteling Effect	16.4	2	23	88.21	0.001	0.80
The Roy's largest root	16.4	2	23	88.21	0.001	0.80

The Wilks Lambda index revealed that group had a significant effect on the linear composition of dependent variables (F=21.88, P<0.0001).

Table 3- Covariance analysis results of resilience and rumination scores of anger and perceived stress in experimental and control groups

Variable	SS	df	MS	F	P	Eta
Resilience	9.74	1	9.74	31.93	0.001	0.57
Anger rumination	7.25	1	7.25	49.24	0.001	0.67
Perceived stress	4.18	1	18.4	13.05	0.001	0.35

Covariance analysis statistics on each dependent variable were performed individually to determine the significant source of multivariate effect. Based on Table 3, anger rumination (F=49.24, P<0.001), perceived stress (F=13.05, P<0.001) and resilience (F=31.93, P<0.001) were effective. This finding showed that stress immunization was effective on resilience, anger rumination, and perceived stress in women with high blood pressure.

4. Discussion

This study aimed to determine the effectiveness of stress immunization on resilience, anger rumination, and perceived stress among women with hypertension. The results showed that the stress immunization was effective on resilience, anger rumination, and perceived stress among women with hypertension. These findings were in line with those of research conducted by Hashemi Fesharaki et al. on the effectiveness of group training of immunization against stress on stress, anxiety, and depression in hemodialysis patients (12). In a study looking into the effects of stress immunization training on reducing stress, anxiety, and depression among employed women, Sohrabi et al. discovered similar findings (13). Furthermore, Askari et al. (21) discovered that stress immunization had no significant effect on blood sugar, and that there was no significant difference in blood sugar levels between the experimental and control groups.

In explaining the effectiveness of stress-versus-stress immunization on resilience, anger rumination, and perceived stress in women with hypertension, it can be said that stress immunization training helps patients identify stress-causing situations, and then, teaches them coping strategies to deal with such situations. The modification of cognitive assessments and improvement of coping skills or exercises provided to combine learned techniques with real-life situations can lead to the reduction of mental stress. This program equips participants with a variety of integrated techniques that can be used to reduce stress and improve resilience and rumination of perceived anger and stress (22). Stress immunization training in women with hypertension not only makes them familiar with how stress affects themselves but also teaches them to look at stressful situations as solvable problems and educate different methods of confrontation and effective management of them (23).

Another important point that can be noted in justifying the effectiveness of the above intervention is the effect of psychological support that affects the attitude of women with hypertension in the group; in other words, being in a group with members sharing the same problems and concerns makes such individuals develop a new mentality (24). Regarding, they no longer feel lonely and do not consider their problems unique, large, and insoluble, and gain an atmosphere in which they can express their feelings and problems (24).

One of the study's drawbacks was that the samples were limited to a specific group of hypertensive women, thus generalization should be done with caution. The other limitation was associated with the research plan, which was semi-experimental and lacked the benefits of real experimental designs. Moreover, data collection in this study was based on self-reporting scales; therefore, they were susceptible to distortion due to unconscious defenses, bias in response, personal introduction methods, and general social desirability. Considering that this study was conducted on women with hypertension in Tehran, it is also suggested that a qualitative study (a grounded theory based on semi-finished interviews) be used based on experts' opinions.

5. Conclusion

Based on the findings of this study, it can be said that the effectiveness of an immunization against stress affects resilience, rumination, and perceived stress in women with hypertension.

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