



The Effectiveness of Schema Therapy on Perceived Stress in Patients with Hypertension Attending

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Quantitative Study

Abstract

Background: Hypertension (HTN) is one of the most common risk factors for cardiovascular diseases (CVDs), leading to numerous issues and complications; additionally, perceived stress results in increased blood pressure (BP) and decreased performance in these individuals. Given the significance of HTN, this study aimed to determine the effectiveness of schema therapy on perceived stress in patients with HTN attending comprehensive health service centers.

Methods: The study was applied in terms of its goal and semi-experimental in terms of method (field), featuring a pre-test, post-test, follow-up, and control group design. The research population included all patients with HTN attending comprehensive health service centers in Isfahan City, Iran, in 2023. From this population, 45 individuals were purposefully selected based on criteria including scoring two standard deviations (SD) above the mean on the Life Stress Questionnaire and other inclusion criteria. These individuals were randomly assigned to two experimental and one control group (15 people each). The experimental groups received 11 weekly 90-minute schema therapy sessions, while the control group received no intervention. The research instrument was the Life Stress Questionnaire completed by the patients at three stages: pre-test, post-test, and 3-month follow-up. Data were analyzed using repeated measures analysis of variance (ANOVA), mixed design, and Bonferroni post hoc test.

Results: Schema therapy effectively improved perceived stress in patients with HTN ($P < 0.05$, $\eta^2 = 0.56$). The effectiveness of the treatment remained stable during the follow-up period, with significant differences observed between the experimental and control groups in the post-test and follow-up stages ($P < 0.001$).

Conclusion: Schema therapy is efficacious in improving perceived stress in patients with HTN and can be utilized to reduce psychological problems in these patients.

Keywords: Schema therapy; Perceived stress; Blood pressure; Quasi-experimental study

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Introduction

Blood pressure (BP) is the force the blood exerts as it flows through the arteries generated by the heart. This force depends on two main factors: cardiac output and vascular resistance (Entesari, 2020). High BP is a significant risk factor for stroke, kidney failure, myocardial infarction (MI), and other cardiovascular diseases (CVDs) (Elliott, 2019). Age, genetics, diet, overweight, and lifestyle influence BP (Byram Lag, 2019). In the Eastern Mediterranean region, including Iran, the prevalence of high BP is approximately 26%, affecting 125 million people. In Iran, high BP and stroke account for 81000 of the 400000 annual deaths (Bakris & Ritz, 2019).

Stress plays a significant role in the factors contributing to high BP. During stressful situations, visceral vessels constrict, heart rate increases, and BP rises (Heydarian et al., 2021). Perceived stress refers to the body's response to changes requiring adaptation, which can be triggered by any stressor (Heydarian et al., 2021). Stress can cause both physical and psychological harm, exacerbating social problems and leading to symptoms such as headaches, fatigue, nosebleeds, chest pain, and sleep disturbances (Noohi, 2018).

Both pharmacological and non-pharmacological methods are used to treat hypertension (HTN). Non-pharmacological interventions have shown promise, including cognitive-behavioral therapy (CBT), yoga, meditation, and hypnosis (Asghari, 2019). Schema therapy, developed by Young, integrates cognitive, emotional, and behavioral components to address early maladaptive schemas that lead to stress and negative emotions (Yavari, 2020). High BP is influenced by numerous factors, including stress, which significantly impacts cardiovascular health (Elliott, 2019). Stress management is crucial for HTN treatment, with non-pharmacological methods providing complementary benefits to drug therapy (Yang, 2001). Schema therapy has effectively reduced stress and improved psychological well-being by addressing early maladaptive schemas (Bagherian, 2020).

Stress, the body's response to perceived threats, can significantly elevate BP and exacerbate HTN (Heydarian et al., 2021). During stress, the body's physiological responses, such as increased heart rate and vascular resistance, contribute to higher BP levels. Effective stress management is essential for controlling HTN and preventing complications (Cohen, Gianaros, & Manuck, 2020).

Schema therapy has demonstrated effectiveness in reducing perceived stress and improving mental health in various populations, including those with chronic diseases (Masley, Gillanders, Simpson, & Taylor, 2012). By modifying early maladaptive schemas, schema therapy helps patients develop healthier coping mechanisms, reducing stress and improving overall quality of life (QOL) (Young, Klosko, & Weishaar, 2003). Research has shown that schema therapy can also alleviate symptoms of anxiety, depression, and personality disorders, further supporting its utility in managing HTN-related stress (Giesen-Bloo et al., 2006).

This study aims to build on existing research by evaluating the effectiveness of schema therapy in reducing perceived stress among patients with HTN. The findings will contribute to developing comprehensive treatment strategies that integrate psychological interventions to improve cardiovascular health.

Methods

Study design: This study is applied in terms of its goal and quasi-experimental (field study) with a pre-test, post-test, follow-up, and control group design. The research

population included all patients with HTN referred to comprehensive health service centers in Isfahan City, Iran, in 2024. Based on statistical sources (23), the sample consisted of 45 patients with HTN selected purposefully. These individuals were randomly assigned to two experimental and one control group (15 people each). The randomization process involved assigning each participant a unique number and using a computer-generated random number list to ensure unbiased group assignment.

Inclusion/exclusion criteria: Participants were included if they scored two standard deviations (SDs) above the mean on the Life Stress Questionnaire (Edwin et al., 1993), had a diagnosis of HTN, and met the following criteria: no psychiatric medications, no substance use, no diagnosis of other psychological disorders, and no concurrent personality disorders. The exact cut-off score for inclusion was determined to be 50 based on the Life Stress Questionnaire. These criteria were assessed through clinical interviews conducted by licensed psychologists. Exclusion criteria included missing more than two therapy sessions and receiving other pharmacological and psychological treatments during the study period.

Perceived Stress Questionnaire (PSQ): This questionnaire, developed by Cohen et al. in 1983, has 4, 10, and 14-item versions and is used to measure general perceived stress over the past month, assessing thoughts and feelings about stressful events, control, coping, and experienced stress (Cohen, Kamarck, & Mermelstein, 1983). This scale also examines risk factors for behavioral disorders and shows the process of stressful relationships. A higher score indicates more significant perceived stress. Durán et al. calculated the Cronbach's alpha coefficient for this scale to be 0.74 (Durán, Extremera, Rey, Fernández-Berrocal, & Montalbán, 2006). Cohen et al. calculated the correlation coefficient for this scale with symptomatic measures between 0.52 and 0.76 to determine its validity (Cohen et al., 1983). Behravan et al. used Cronbach's alpha and split-half coefficients to calculate the reliability of the PSQ, obtaining 0.73 and 0.74, respectively (Pourseyyed, Motevalli, Pourseyyed, & Barahimi, 2015). Construct validity coefficients of this questionnaire were calculated at 0.63 using simple correlation with a criterion question, significant at the 0.05 level. Additionally, Cronbach's alpha coefficient in this study was 0.726.

Intervention: The experimental groups received 11 weekly 90-minute schema therapy sessions following the protocol by Young (1999) (Table 1). The rationale for choosing 11 sessions was based on previous studies indicating significant improvements within this timeframe (Young et al., 2003). Adherence to therapy sessions was monitored through attendance records, and participants were encouraged to attend all sessions through reminder calls and motivational interviewing techniques.

Ethical considerations: This study received approval from the Ethics Committee of Payame Noor University (Approval No. PNU/EC/2023/45). All participants provided written informed consent before participation, ensuring they knew the study's purpose, procedures, potential risks, and benefits. Confidentiality was maintained by assigning codes to participants' data, accessible only to the primary researchers.

Analysis: SPSS software (version 24, IBM Corporation, Armonk, NY, USA) was used for data analysis in this study. The results were analyzed descriptively using mean, median, SD, and variance and inferentially using repeated measures analysis of variance (ANOVA), mixed design, and Bonferroni post hoc test.

Results

The mean and SD of age of participants in the experimental group was 45.7 ± 11.4 , and in the control group, it was 44.2 ± 11.2 .

Table 1. Schema therapy sessions based on Young's therapeutic model (1999)

Session	Titles	Session goals	Duration (minutes)
First	Introduction and program overview	Establishing connection and empathy	90
Second	Questionnaire administration	Initial group assessment	90
Third	Definition of schema therapy	Understanding and comprehending schema therapy concepts and application	90
Fourth	Training and recognizing early maladaptive schemas	Detailed and scientific understanding of early maladaptive schemas	90
Fifth	Introducing domains of early maladaptive schemas	Comprehensive knowledge of domains of early maladaptive schemas and their identification	90
Sixth	Training and recognizing the concept of cognitive coordination and ineffective coping responses	Understanding and aligning cognitive coordination and ineffective coping responses with personal experiences	90
Seventh	Assessment and training phase of schema therapy	Recognizing and identifying early maladaptive schemas	90
Eighth	Utilizing cognitive strategies of schema therapy	Modifying schemas and ineffective coping styles	90
Ninth	Utilizing experiential strategies of schema therapy	Changing and improving the emotional and affective level of maladaptive schemas	90
Tenth	Training method for breaking patterns	Replacing healthy and effective behaviors with ineffective coping behaviors	90
Eleventh	Re-administering the questionnaire	Assessing the effectiveness of schema therapy	90

The minimum and maximum ages in the experimental and control groups were 32 and 56 years, respectively. The mean and SD of the research variables in the experimental and control groups are presented in table 2.

Repeated measures ANOVA was used to examine the significance of the difference in perceived stress scores between the experimental and control groups. The Kolmogorov-Smirnov test confirmed the normality of the data distribution. Levene's test for homogeneity of variances showed equal variances across groups in the pre-test, post-test, and follow-up stages. Mauchly's test of sphericity indicated a violation of sphericity; thus, the Greenhouse-Geisser correction was applied.

The results of table 3 indicate that the ANOVA for the within-group factor (time) was significant, as was the between-group factor. This means that considering the group effect, the time effect alone was also significant. Additionally, the interaction between group and time was essential.

The changes in the experimental group over time shown in table 4 indicate that the perceived stress variable in the schema therapy group was significant in the post-test compared to the pre-test ($P < 0.001$). Additionally, significant differences were observed in both follow-up stages compared to the pre-test ($P < 0.001$).

Table 2. Mean and standard deviation (SD) of research variables in the experimental and control groups

Variable	Group	Pre-test	Post-test	Follow-up
		Mean ± SD		
Perceived stress	Schema therapy	39.20 ± 7.86	34.46 ± 6.83	34.06 ± 5.96
	Control	39.86 ± 7.51	38.33 ± 7.48	38.46 ± 7.63

SD: Standard deviation

Table 3. Repeated measures analysis of variance (ANOVA) for comparing pre-test, post-test, and follow-up perceived stress in experimental and control groups

Scale	Source	SS	df	MS	F	P-value	Eta squared
Perceived stress	Time	219.74	1.46	150.08	461.47	0.001	0.91
	Time*Group	82.91	2.92	28.31	87.06	0.001	0.80
	Group	126.10	2.00	63.05	54.41	0.001	0.56

SS: Sum of squares; df: Degree of freedom; MS: Mean squares

However, no significant difference was observed in the follow-up stage compared to the post-test ($P > 0.01$), indicating the stability of the therapeutic effects of both treatments.

Discussion

The present study aimed to compare the effectiveness of schema therapy on perceived stress in patients with HTN attending comprehensive health service centers. The results of this study demonstrated that schema therapy significantly reduced perceived stress in patients with HTN, and this effect persisted up to three months post-intervention. These findings are consistent with previous studies indicating the effectiveness of schema therapy in reducing stress and improving mental health (Masley et al., 2012; Farrell, Shaw, & Webber, 2009). The observed reduction in perceived stress can be attributed to the schema therapy's approach of identifying and modifying early maladaptive schemas, which are often rooted in adverse childhood and adolescent experiences. By addressing these schemas, patients can change their unhealthy thoughts and behavior patterns, reducing stress and improving mental health (Young et al., 2003). Additionally, schema therapy equips patients with new practical coping skills that help them manage daily stressors better (Arntz & Jacob, 2013).

However, some studies have reported less stable effects of schema therapy over more extended periods. For instance, Nadort et al. (2009) found that the positive impact on reducing depressive symptoms in patients with borderline personality disorder (BPD) diminished after one year of follow-up. Such discrepancies may be due to variations in treatment implementation, individual differences among patients, or environmental factors influencing outcomes.

In explaining these findings, schema therapy helps patients identify and modify maladaptive schemas rooted in negative childhood and adolescent experiences, thereby changing unhealthy thought and behavior patterns (Young et al., 2003). These changes can lead to reduced stress and overall improvement in mental health. Additionally, the new and effective coping skills taught during schema therapy sessions help patients better manage daily stressors (Arntz & Jacob, 2013).

Studies consistent with the results of this research have shown that schema therapy can help improve symptoms of anxiety disorders, depression, and personality disorders (Giesen-Bloo et al., 2006; Nordahl, Holthe, & Haugum, 2018). Specifically, research has demonstrated that schema therapy can reduce perceived stress and improve the QOL in patients with chronic diseases (Masley et al., 2012).

Table 4. Bonferroni post hoc test results for within-group effects on perceived stress

Variable	Time		Mean difference	SE	P-value
Perceived stress	Pre-test	Post-test	4.74	2.33	0.001
		Follow-up	4.53	2.63	0.001
	Post-test	Follow-up	0.40	1.46	0.632

SE: Standard error

Conversely, some inconsistent studies have indicated that the effectiveness of schema therapy may be less or not entirely stable in some cases. For example, one study found that the positive impact of schema therapy on reducing depressive symptoms in patients with BPD diminished after one year of follow-up (Nadort et al., 2009). These differences may be due to variations in treatment implementation methods, individual differences among patients, or environmental factors that influence treatment outcomes.

This study has several limitations. First, the sample was limited to patients with HTN from Isfahan City, which may restrict the generalizability of the findings to other populations. The purposive sampling method may also introduce selection bias, affecting the sample's representativeness. Future studies should consider using random sampling techniques to enhance generalizability. Additionally, the study's reliance on self-reported measures of stress may be subject to response biases. Finally, the follow-up period was limited to three months, and the longer-term effects of schema therapy need further exploration.

Future research should examine the long-term effects of schema therapy beyond three months to determine the stability of its benefits over time. Studies should also explore the impact of schema therapy on different populations and in various settings to enhance the generalizability of the findings. Additionally, investigating the precise mechanisms through which schema therapy reduces stress and improves mental health can provide deeper insights into its effectiveness. Researchers should also consider potential moderating variables such as personality traits, social support, and coping styles that may influence treatment outcomes.

Conclusion

Schema therapy has demonstrated effectiveness in reducing perceived stress among patients with HTN, suggesting its potential as a valuable psychological intervention in managing HTN-related stress. Healthcare providers should consider incorporating schema therapy into comprehensive treatment plans for patients with HTN to improve their mental health and overall QOL. Policymakers should support the integration of psychological interventions like schema therapy into routine healthcare services to address the psychological needs of patients with chronic conditions.

Conflict of Interests

Authors have no conflict of interests.

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