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Research Article

Effectiveness of Brief Cognitive-Behavioral Therapy (BCBT) on Dysfunctional Attitudes, Lifestyle, and Distress Tolerance in Young Adults with Hypertension

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Abstract

Objective: Hypertension is a common, asymptomatic medical condition. It arises from general or functional disorders and is referred to as primary or essential hypertension. This study aimed to investigate the effectiveness of brief cognitive-behavioral therapy (BCBT) on dysfunctional attitudes, lifestyle, and distress tolerance in young adults with hypertension.

Method: This quasi-experimental study used a pre-test-post- test design, a control group, and \ a 45-day follow-up. The population comprised young male patients with hypertension at Moheb Mehr Hospital in Tehran between March and October 2025. From this population, a sample of 30 people was selected using purposive sampling, and they were then randomly assigned to experimental and control groups (n = 15 each). The experimental group received 10 60-minute BCBT sessions over 2.5 months, per Rudd's protocol (2012). The control group received only routine medical care. Both groups were re-evaluated 45 days after the intervention. Measures included the Dysfunctional Attitudes Questionnaire (Weissman & Beck, 1978), Profile Health-Promoting Lifestyle II (PHPL-II) (Walker et al., 1995), and Distress Tolerance Scale (Simmons & Gaher, 2005). Data were analyzed using repeated-measures ANOVA and Bonferroni post hoc tests in SPSS v26.

Results: BCBT significantly reduced dysfunctional attitudes ($F = 32.913$, $p < 0.004$), improved lifestyle ($F = 9.665$, $p < 0.002$), and increased distress tolerance ($F = 11.313$, $p < 0.001$) of the patients with hypertension. Effect sizes were 0.54, 0.26, and 0.29 for dysfunctional attitudes, lifestyle, and distress tolerance. Improvements persisted at the follow-up stage.

Conclusion: Brief cognitive-behavioral therapy improves behavioral-psychological indices in patients with hypertension. Adding this intervention to rehabilitation programs may enhance patient outcomes.

Keywords: Brief cognitive-behavioral therapy (BCBT), Dysfunctional Attitudes, Lifestyle, Distress Tolerance,

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Extended Abstract

Background and Objective

Hypertension is a common, symptomatic medical condition. It arises from general or functional disorders and is named to as primary or essential hypertension. This condition is also known as the silent killer. Researcher that elevated systolic and diastolic blood pressure in people with primary hypertension significantly impacts lifestyle, quality of life, and psycho-emotional well-being. These effects disrupt psychological functioning and heighten the risk of mood and anxiety disorders. demonstrated that among individuals with chronic medical conditions. Some researchers demonstrated that among individuals with chronic medical conditions, one of the key factors associated with illness perception, heightened stress appraisal, and symptom frequency is the presence of dysfunctional attitudes. Such dysfunctional attitudes and the accompanying negative automatic thoughts influence emotion regulation processes, thereby leading to the adoption of maladaptive coping strategies in response to illness, particularly hypertension. Findings show that an unhealthy lifestyle also leads to an increased rate of chronic medical diseases. Another psychological consequence associated with chronic medical conditions, such as hypertension, is psychological-behavioral distress. Distress tolerance is defined as an individual's capacity to experience and withstand negative emotional states. This influences personal evaluation and judgment. Distress tolerance has been identified as a critical factor in the onset and maintenance of psychological impairments, as well as in the prevention and treatment of patients. One therapeutic approach that has been shown in previous studies to reduce negative effects and improve psychological-behavioral functioning in both clinical and non-clinical populations is short-term cognitive-behavioral therapy. This study aimed to investigate the effectiveness of brief cognitive-behavioral therapy (BCBT) on dysfunctional attitudes, lifestyle, and distress tolerance in young adults with hypertension.

Materials and Methods

The present study employed a quasi-experimental pretest–posttest design with a control group and a 45-days follow-up. The population was young male patients with hypertension at Moheb Mehr Hospital Tehran, between March and October 2025. From this population, a sample of 30 people were selected using purposive sampling, who then randomly assigned to experimental and control groups (n = 15 each). The experimental group received 10 60-minute BCBT sessions over 2.5 months, per Rudd's protocol (2012). The control group received only routine medical care. Both groups were re-evaluated 45 days after the intervention. Measures included the Dysfunctional Attitudes Questionnaire (Weissman & Beck, 1978), Profile Health-Promoting Lifestyle II (PHPL-II) (Walker et al., 1995), and Distress Tolerance Scale (Simmons & Gaher, 2005). Data was analyzed using repeated-measures ANOVA and Bonferroni post hoc tests in SPSS v26. Before statistical analysis, the assumptions of parametric statistics related to analysis of variance were first reviewed and confirmed.

Results

For data analysis, a repeated-measures analysis of variance (ANOVA) was employed, and Bonferroni post hoc tests were used to compare the measurement stages between the two groups. To assess the normality of the study variables,the Shapiro–Wilk test was used. According to the results, the assumption of normality was met at the 0.05 significance level for dysfunctional attitude ($F = 0.951$, $p = 0.269$), lifestyle ($F = 0.931$, $p = 0.282$), and distress tolerance ($F = 0.919$, $p = 0.185$). Levene's test indicated that the assumption of homogeneity of variances was satisfied for dysfunctional attitude ($F = 2.671$, $p = 0.114$), lifestyle ($F = 3.462$, $p = 0.279$), and distress tolerance ($F = –1.591$, $p = 0.116$), confirming that the variance of scores across the study groups was equivalent ($p > 0.05$). Based on the effect sizes, 54% of the variance in dysfunctional attitude scores, 26% in lifestyle scores, and 29% in distress tolerance scores during the assessment stages were attributable to participation in the intervention sessions. According to the results of the Bonferroni post hoc test, there were significant differences in the mean scores for dysfunctional attitude, lifestyle, and distress tolerance between

the pretest and posttest, as well as between the pretest and follow-up ($p < 0.05$). However, no significant differences were observed between the posttest and follow-up mean scores ($p > 0.05$).

Discussion and Conclusion

Based on the results of the present study, it was determined that short-term cognitive behavioral therapy was effective on dysfunctional attitudes in young people with hypertension, and these results continued to be effective until the follow-up stage. Worrying about the disease and irrational beliefs about its consequences cause psychological distress and worsen the individual's condition. Brief cognitive behavioral therapy reduces the person's emotional turmoil and indirectly improves hypertension by changing ineffective attitudes and irrational beliefs and replacing them with rational attitudes about hypertension**.** An unhealthy lifestyle also causes and increases high blood pressure**.** The short-term cognitive behavioral therapy package used behavioral strategies and techniques to change the behavior and lifestyle of people with hypertension. In this therapeutic approach, the lifestyle, nutrition, exercise, and blood pressure of individuals were reviewed in each session and they were given feedback on taking care of high blood pressure, healthy nutrition, and appropriate exercise. In another explanation, it seems that short-term cognitive behavioral therapy helps improve cardiovascular status by improving behavioral function and also by creating relaxation. In another explanation, it seems that short-term cognitive behavioral therapy helps improve cardiovascular status by improving behavioral function and also by creating relaxation. Therefore, by following group training, changing an ineffective lifestyle, and following and adhering to treatment, the individual's level of psychological distress is reduced.Accordingly, it is suggested that in future studies, this research be repeated in other statistical populations of patients with hypertension to increase generalizability and external validity. To increase internal validity, it is recommended to use experimental methods and randomly select subjects. At a practical level, it is suggested that clinics and hospitals use psychologists to improve the mood of patients with hypertension and consider short-term cognitive behavioral therapy for patients with hypertension as an effective intervention in addition to drug treatments. Given the high effect size and favorable statistical power of the analyses, this approach can be used as an effective intervention in mental health centers and in other physical illnesses.

Introduction

Hypertension is a common, asymptomatic medical condition. It arises from general or functional disorders and is referred to as primary or essential hypertension. This condition is also known as the silent killer (Gafane-Matemane et al., 2025). According to the World Health Organization (WHO), over seven million people die annually as a direct consequence of hypertension (Humbert et al., 2025). Numerous studies conducted in Iran have yielded heterogeneous results. However, it is estimated that 25% to 35% people in Iran are affected by hypertension (Kassaeian et al., 2024; Taghizadeh et al., 2025).

A review of the literature indicates that hypertension typically emerges progressively. This condition is expressed in two numerical values. The first, or higher, value represents systolic blood pressure, which reflects the pressure in the arteries during cardiac contraction. The second, or lower, value represents diastolic blood pressure, the arterial pressure between contractions. Systolic blood pressure is generally regarded as a critical indicator of cardiovascular risk (Jiang et al., 2025; Hosseini& Boloorsaz Mashhad, 2025). Recent studies show that the risk of dying from myocardial infarction or stroke doubles with every 20 mmHg increase in systolic blood pressure and every 10 mmHg increase in diastolic blood pressure (Huo et al., 2025). Additionally, findings from recent reviews and meta-analyses suggest a decline in the mean age at diagnosis of hypertension. These studies also report an increasing prevalence of the condition among younger populations, especially

men, in developing societies (Nazarzadeh et al., 2025).

Quinn et al. (2025) found that elevated systolic and diastolic blood pressure in people with primary hypertension significantly impacts lifestyle, quality of life, and psycho-emotional well-being. These effects disrupt psychological functioning and heighten the risk of mood and anxiety disorders.

Woods et al. (2024) demonstrated that among individuals with chronic medical conditions, one of the key factors associated with illness perception, heightened stress appraisal, and increased symptom frequency is the presence of dysfunctional attitudes. Such dysfunctional attitudes and the accompanying negative automatic thoughts influence emotion regulation processes, thereby leading to the adoption of maladaptive coping strategies in response to illness, particularly hypertension (Vazirian et al., 2024). Furthermore, individuals differ not only in how they describe life events but also in their expectations regarding life outcomes. Patients who hold pessimistic attitudes toward life events tend to perceive themselves as confined to unpleasant experiences, which may, in turn, increase their vulnerability to the onset and severity of illness symptoms (Basharpoor & Ahmadi, 2024; Abdelhamid et al., 2025). Findings also revealed that patients with chronic medical conditions who exhibited psychological complaints tended to perceive their social environments as more critical and less supportive. In contrast, hypertensive patients without psychological symptoms showed more favorable results in follow-up blood pressure assessments. These findings suggest that both psychological symptoms and elevated blood pressure may reflect the interpersonal stress dynamics arising from patients' maladaptive cognitive attitudes (Li et al., 2025; Zhang et al., 2025).

On the other hand, reports from the World Health Organization indicate that chronic diseases and their associated risk factors have increasingly emerged as major public health challenges over the past decade. This trend is particularly pronounced in underdeveloped and developing societies (Abdikarim et al., 2025). These findings also suggest that prevention strategies and lifestyle modifications reduce the incidence of chronic medical conditions and all-cause mortality (Bayanfar, 2021). Approximately 80% of cardiovascular and blood-related diseases, and hypertension, can be controlled and managed through appropriate lifestyle choices (Vacca et al., 2025; Molani-Gol & Rarraf, 2025; Zhang et al., 2025). Although meta-analytic studies have long demonstrated the role of lifestyle in the development of cardiovascular disease and hypertension (Park et al., 2025), evidence indicates that poor adherence to an active lifestyle contributes to the increasing prevalence of these conditions in developing countries. Moreover, multiple challenges persist in this context. These challenges range from health-planning deficiencies to socio-cultural and individual factors (Abdikarim et al., 2025). Findings from Ebrahimi et al. (2025) and Harooni et al. (2025) further highlight the low level of awareness and suboptimal behavioral performance among the general population and hypertensive patients regarding the impact of lifestyle and adherence to healthy practices.

Another psychological consequence associated with chronic medical conditions, such as hypertension, is psychological-behavioral distress (Gafane-Matemane et al., 2025). Distress tolerance is defined as an individual's capacity to experience and withstand negative emotional states. This influences personal evaluation and judgment. Distress tolerance has been identified as a critical factor in the onset and maintenance of psychological impairments, as well as in the prevention and treatment of patients (Bayat et al., 2025). Hypertensive patients with low distress tolerance often experience emotions that exceed their perceived coping capacity. They may underestimate their ability to manage distress. As a result, they may deny the presence of emotions or perceive them as distressing. Given their perceived inability to cope with illness-

related emotions, they may attempt to suppress these emotional experiences. Therefore, distress tolerance represents a significant psychological characteristic influencing patients with hypertension and cardiovascular disorders (Zhang et al., 2024).

Patients with low distress tolerance are aware of their inability to endure discomfort and often believe that others possess superior resources for managing negative emotions, resulting in frequent feelings of shame. These individuals also exert substantial effort to avoid negative emotional experiences. When avoidance is not feasible, they may resort to maladaptive strategies to alleviate the aversive emotional state. Such strategies are likely to deplete their energy, ultimately impairing their physical, psychological, and social functioning (Basharpoor & Ahmadi, 2024). Considering the psychological components of illness and intervening in this domain can play a crucial role in facilitating patients' adaptation to their physical conditions (Woods et al., 2024). One therapeutic approach shown in previous studies to reduce negative affect and improve psychological-behavioral functioning in both clinical and non-clinical populations is short-term cognitive-behavioral therapy (Diefenbach et al., 2025).

When managing patients with chronic medical conditions, two factors aid treatment success: flexibility and short-term duration. Both are key features of this intervention. These characteristics are strengths of the present therapy and are less emphasized in classic and traditional cognitive-behavioral therapy (CBT) protocols (Bryan et al., 2025). Short-term CBT, unlike most traditional methods, follows a phase-based structure with three distinct phases to strengthen mastery of CBT skills. This therapy also focuses on skill training in emotion regulation and cognitive flexibility. These constructs are especially important in both psychiatric and chronic medical populations (Bryan et al., 2024).

This therapy addresses behavioral and emotional problems at several levels (Apran et al., 2025). It highlights the importance of human cognition and acknowledges the' major influence on psychological health. Patients identify distorted cognitive patterns and maladaptive behaviors with therapeutic aid (Verdi et al., 2025). To change these maladaptive thoughts, patients are recommended to use structured discussions and carefully organized behavioral assignments (Diefenbach et al., 2025). Despite its strong efficacy (Graboyes et al., 2025), this therapy is still new for patients with cardiovascular disease or hypertension.

It has been [FB1] studied in limited studies for chronic medical patients, and its effectiveness needs to be investigated in more studies and compared with other therapeutic and educational methods (Baourda & Panagiotakos, 2025). On the other hand, as previously stated, according to research results in recent years, we have witnessed an increase in the incidence of hypertension at young ages in developing societies. However, in the past, statistics of mortality due to hypertension were considered a health-treatment challenge only in the adult and elderly population and often in developed societies (Huo et al., 2025; Nazarzadeh et al., 2025). Accordingly, given the increase in the incidence of hypertension among young people, who are often considered the reproductive and productive forces in society, not only will medical and health costs increase as a result of hypertension, but the growth and development of society will also face challenges in terms of human resources as one of the basic principles of the growth and progress of any society is to have a healthy and efficient human force, and this is contrary to the incidence of this disease among young people, and generally men, and the increase in individual and family costs in terms of treatment of the disease, as well as absence from work due to treatment. Considering the research literature and studies conducted in this field, it can be concluded that the effects of short-term cognitive behavioral therapy on the lifestyle and cognitive-behavioral

structures of patients with hypertension in young Iranian men have not been studied so far. Accordingly, this study seeks to fill the gap in previous studies. Also, given the favorable effect of this intervention method on behavioral and emotional problems and the increasing number of patients with hypertension, the aim of this study was to investigate the effectiveness of short-term cognitive behavioral therapy on dysfunctional attitudes, lifestyle, and distress tolerance in young men with hypertension.

Method

The present study employed a quasi-experimental pretest–posttest design with a control group and a 45-day follow-up. The study population consisted of all male patients diagnosed with primary hypertension who were referred to the Internal Medicine Clinic of Moheb Mehr Specialty Hospital in Tehran in 2025. To control for gender as a variable and given higher accessibility among males, only male participants were included. From this population, 30 participants were selected through purposeful sampling and randomly assigned to two equal groups (15 participants per group). The sample size was determined according to the guideline reported by Gall et al. (2006), which recommends 15 participants per experimental or control group for quasi-experimental and experimental studies.

The inclusion criteria for the study were: 1- willingness and informed consent to participate in the study, 2- definite diagnosis of type 1 hypertension by a cardiologist, 3- having symptoms of the disease for at least six months, 4- not receiving other psychotherapy approaches at the same time, 5- not having more than two absences from therapy sessions, 6- male gender, 7- age range of 20 to 45 years, and 8- having at least a bachelor's degree. The exclusion criteria from the study were: 1- Having a history of cerebrovascular diseases and other neurological disorders, 2- Having hypertension due to underlying diseases according to the opinion of a cardiologist, 3- Having other chronic medical diseases (diabetes, cancer, etc.), and 4- Addiction to any drug or alcohol.

The implementation method was as follows: after coordinating with the management of the internal clinic of Moheb Mehr Hospital in Tehran, first, through a call, the announcement of the holding of treatment sessions and the initial registration conditions were communicated to the clients with high blood pressure and the clinic's doctors for the referral of patients. After registration using a purposive sampling method from among 64 men diagnosed with hypertension (diagnosed by a cardiologist), they were randomly assigned to two experimental groups (17 people) and a control group (17 people). Due to the drop in the experimental group, 15 subjects remained in each group at the end. For the experimental group, researchers administered short-term cognitive therapy at the Moheb Mehr Medical Center in Tehran based on the protocol developed by Rudd (2012) during 10 weekly sessions (each session lasting 60 minutes). The control group received only routine medical care, and both groups were re-evaluated 45 days after the intervention.

Ethical Statements

Ethical considerations in the present study were in accordance with the Declaration of Helsinki (2013), cited in (Fadaei, et al., 2016) as well as the ethical considerations contained in the Publication Guide of the American Psychological Association and the Code of Ethics of the Iranian Psychological System Organization, obtaining permission to conduct research from the university, informing about the research, obtaining informed consent in writing, voluntary participation, maintaining privacy, the principle of confidentiality, and the right to withdraw during the research.This article has been approved by Payame Noor University for research ethics. After the follow up period, five therapy sessions similar to those provided to the

experimental group were conducted for the control group. In addition, written informed consent was obtained from all participants. Participation in the study was voluntary, participants' privacy was maintained, and they had the right to withdraw from the research at any stage. Data were collected using the following instruments.

Dysfunctional Attitude Scale (DAS): The Dysfunctional Attitude Scale was developed in 1978 by Beck and Weissman based on Beck's cognitive theory of depression. The original version of this scale consists of 40 items and four subscales: perfectionism (items 1–10), need for approval (items 11–20), need to please others (items 21–30), and vulnerability (items 31–40). The developers of the scale reported acceptable reliability, with a Cronbach's alpha coefficient above 0.70, and concurrent validity, with a correlation of 0.45 with the total test score. However, the Iranian version of the questionnaire includes 26 items and four sub scales:perfectionism (items 3, 5, 6, 7, 8, 9, 10, 11, 12, 15, 17, 21, 23), need for approval from others (items 18, 22, 24, 25), need to please others (items 1, 2, 4, 14, 16), and vulnerability (items 13, 19, 20, 26). The items are scored on a 7point Likert scale ranging from strongly agree (1) to strongly disagree (7). The total score ranges from 26 to 182. In Iran, the psychometric properties of this instrument have been confirmed, and its Cronbach's alpha coefficient has been reported as 0.82 (AbagheriMeyari et al., 2025). In the present study, the Cronbach's alpha coefficient for the scale was 0.77.

Health Promoting Lifestyle Profile II(HPLPII): The Health Promoting Lifestyle Profile II was developed in 1995 by Walker et al. based on Pender's Health Promotion Model to assess health promoting behaviors.

This multidimensional instrument has 52 items and six dimensions: health responsibility (9 items), physical activity (8 items), nutrition (9 items), spiritual growth (9 items), interpersonal relations (9 items), and stress management (8 items). Items are rated on a 4point Likert scale ranging from never (1) to always (4). Subscale scores are calculated by summing the item scores within each dimension, and the total score of the instrument is obtained by summing all item scores. Thus, the total score ranges from 52 to 208, with higher scores indicating a more healthpromoting lifestyle. Walker et al. (1995) reported strong reliability for the instrument, with an overall Cronbach's alpha coefficient of 0.94. The Cronbach's alpha coefficients for the subscales were 0.86 for health responsibility, 0.85 for physical activity, 0.80 for nutrition, 0.86 for spiritual growth, 0.78 for interpersonal relations, and 0.79 for stress management. The three week test–retest reliability of the scale was reported as 0.89. In Iran, the reliability of the instrument has been reported using Cronbach's alpha as 0.85 for the total scale and 0.78 for health responsibility, 0.76 for physical activity, 0.56 for nutrition, 0.80 for spiritual growth, 0.73 for interpersonal relations, and 0.64 for stress management (Shokri et al., 2015, cited in Najarnasab & Dasht Bozorgi, 2019). In the present study, the Cronbach's alpha coefficient for this questionnaire was calculated as 0.72.

Distress Tolerance Scale (DTS): This scale is a self-report measure of distress tolerance developed by Simmons & Gaher in 2005. The items of this scale assess distress tolerance based on the individual's ability to tolerate emotional distress, subjective appraisal of distress, the degree of attention to negative emotions when they occur, and regulatory actions to tolerate distress. This scale consists of 15 items and four subscales: emotional distress tolerance (questions 1, 3, 5), being absorbed by negative emotions (questions 2, 4, 15), subjective appraisal of distress (questions 6, 7, 9, 10, 11, 12), and regulating efforts to reduce distress (questions 8, 13, 14). The scale is scored on a five-point Likert scale from strongly agree = 1 to strongly disagree = 5. The maximum score for a subject on this scale is 75, and the minimum score is 15. High scores on this questionnaire indicate greater distress tolerance, and lower scores indicate less distress tolerance. Cronbach's

alpha coefficients for its four subscales, including tolerance, absorption, evaluation, and adjustment, were calculated as 0.72, 0.82, 0.78, and 0.77, respectively, and 0.82 for the entire instrument. The test-retest validity of this questionnaire was also reported as 0.79 (Azizi, Mirzaei, & Shams, 2010). In the present study, the Cronbach's alpha coefficient of this questionnaire was calculated to be 0.83.

Brief cognitive behavioral therapy (BCBT[FB1]): This treatment approach was created and developed in 2012 based on Rudd's findings and research. This treatment is an outpatient treatment that is designed to prevent suicidal thoughts and actions, typically once a week for 10 to 12 weekly sessions. Brief cognitive behavioral therapy has a general structure consisting of 3 phases: 1) Orientation to treatment and training in emotion regulation skills, 2) Cognitive flexibility, and 3) Relapse prevention. In each of these three phases,unique therapeutic strategies and skills are taught. Mastery of skills is a function of the ability of group members to (1) understand the purpose and performance of the specified skills, (2) master the role played in the group, and (3) apply the skill set in real-life situations. The original version of the intervention protocol was implemented individually in 12 sessions, but its group protocol was implemented in 10 weekly sessions of 45 to 60 minutes (cited in Rostami et al., 2021). In this study, treatment sessions were developed with slight modifications tailored to the characteristics of participants with hypertension. A summary of the treatment sessions is given in Table 1.

Table 1- Summary of the content of Short-Term Cognitive Behavioral Therapy Intervention Sessions

Session	Contents
1	Establishing a therapeutic relationship and defining treatment goals, collecting patients' medical and psychological histories, examining concerns and expectations about various treatment methods and stating the rules of the session, measuring and recording individuals' blood pressure.
2	Feedback from the previous session, introduction of short-term cognitive-behavioral therapy, identification of thoughts related to ineffective attitudes towards hypertension and preparation of a list of diet and physical activities by the patient to examine and identify lifestyle defects, teaching relaxation techniques, providing homework to change unhealthy lifestyles, measuring and recording individuals' blood pressure.
3	Feedback from the previous session, reviewing the individuals' diet and physical activities, noting negative and ineffective thoughts and beliefs about hypertension, reviewing the facts and challenging irrational thoughts about hypertension and immediate and unthinking reactions, teaching how to change negative thought and emotional patterns to positive ones about hypertension, using relaxation techniques and other cognitive techniques to improve the tolerance threshold for hypertension, and providing homework to change ineffective attitudes about hypertension and individuals' diet and physical activities, measuring and recording individuals' blood pressure.
4	Feedback from the previous session, discussion about realistic expectations of the results of participating in treatment sessions, defining a lifestyle and teaching active living methods despite hypertension, teaching the downward vertical arrow technique to identify schemas and core beliefs, relaxation, providing a task to increase the tolerance threshold in relation to the disease, measuring and recording individuals' blood pressure.
5	Feedback from the previous session, reviewing assignments regarding diet, increasing mobility and exercise and providing feedback, preparing a master list of irrational beliefs, teaching relaxation techniques (such as deep breathing, meditation), measuring and recording individuals' blood pressure.
6	Feedback from the previous session, testing patients' irrational beliefs regarding hypertension with objective analysis (judgment and judgment), identifying personal strengths and achievements, exercises to increase self-confidence and self-control regarding the disease, providing homework.
7	Feedback from the previous session, using various cognitive analysis methods, and encouraging clients to reevaluate beliefs, measuring and recording individuals' blood pressure.

Session	Contents
8	Feedback from the previous session, examining dysfunctional thoughts, teaching problem-solving skills, explaining various problem-oriented and emotion-oriented coping styles to increase distress tolerance and reduce negative attitudes about the disease, techniques for managing experiences after contracting the disease, anticipating and examining possible problems in life despite the disease and planning to deal with them, providing homework, measuring and recording individuals' blood pressure.
9	Feedback from the previous session, emphasis on recognizing positive and negative feelings and emotions related to the illness and teaching adaptive and efficient strategies, teaching mindfulness skills and behavioral activation related to the illness and dealing with perceived stress, measuring and recording individuals' blood pressure.
10	Review and evaluate treatment achievements, plan to prevent the individual from returning to an unhealthy lifestyle, prepare patients for the end of sessions, summarize problem-solving skills and manage emotions related to the disease, review mental exercises and skills learned, measure and record individuals' blood pressure.

Research data analysis was performed using SPSS version 26 software. The statistical method used for data analysis was two-way analysis of variance with repeated measures. Before statistical analysis, the assumptions of parametric statistics related to analysis of variance were first reviewed and confirmed.

Results:

Demographic data indicated that the mean age (± standard deviation) of participants in the experimental group was 41.29 ± 3.16 years, and in the control group was 40.78 ± 2.72 years. Additionally, chi-square tests examining education level, marital status, employment status, family history of hypertension or cardiovascular disease, and duration of illness revealed no significant differences between the two groups ($p > .05$). Table 2 shows the mean and standard deviation of the dependent variables and their components, broken down by group and different stages of measurement.

Table 2- Mean and standard deviation of dependent variables and their components by group and different stages of measurement

Dependent variable	Group	Number	Pre-test		Post-test		Follow-up	
			M	SD	M	SD	M	SD
Perfectionism	Experiment	15	17.20	1.26	15.10	1.16	14.90	1.40
	Control	15	17.60	1.50	17.66	1.44	17.66	1.44
Need for Approval	Experiment	15	16.86	1.76	14.53	1.64	14.20	1.14
	Control	15	17.00	1.96	17.20	1.69	17.20	1.69
Pleasing Others	Experiment	15	04.06	1.66	12.53	1.50	12.16	1.59
	Control	15	14.86	1.88	14.86	1.88	14.86	1.88
Vulnerability	Experiment	15	14.66	1.53	12.80	1.37	12.35	1.49
	Control	15	14.80	1.37	14.93	1.16	14.92	1.16
Dysfunctional Attitudes – Total Score	Experiment	15	62.78	6.21	54.96	5.67	53.61	5.62
	Control	15	64.26	6.71	64.65	6.17	64.64	6.17
Health-Promoting Lifestyle – Total Score	Experiment	15	64.73	3.76	66.93	2.65	67.60	2.38
	Control	15	63.00	4.69	63.00	4.69	62.80	4.93
Distress Tolerance – Total Score	Experiment	15	20.33	2.63	22.06	1.94	22.26	1.79
	Control	15	19.40	2.35	19. 33	2.28	19.20	2.30

Table 2 presents the mean and standard deviation of the dependent variables and their components by group

across the different measurement stages. The results indicate that, compared with the control group, the experimental group showed improved mean scores for dysfunctional attitudes, distress tolerance, and lifestyle in both the posttest and followup stages.

For data analysis, repeatedmeasures analysis of variance (ANOVA) was conducted, and Bonferroni post hoc tests were used to compare the measurement stages between the two groups. The normality of the study variables was assessed using the Shapiro–Wilk test. The results indicated that the assumption of normality was met at the 0.05 significance level for dysfunctional attitudes (W = 0.951, p = 0.269), lifestyle (W = 0.931, p = 0.282), and distress tolerance (W = 0.919, p = 0.185). Levene's test showed that the assumption of homogeneity of variances was satisfied for dysfunctional attitudes (F = 2.671, p = 0.114), lifestyle (F = 3.462, p = 0.279), and distress tolerance (F = 1.591, p = 0.116), indicating that the variances of the scores were equal across the study groups (p > 0.05). In addition, Box's M test indicated that the assumption of homogeneity of the variance–covariance matrices was met (Box's M = 7.438, F = 1.089, p = 0.366). Table 3 presents the results of the repeatedmeasures ANOVA for the dependent variables across the three measurement stages.

Table 3 - Results of analysis of variance with repeated measurements of dependent variables in three implementation stages

Dependent variable	Effects	SS	Df	MS	F	P	η^2
Perfectionism	Group	29.649	1	29.649	6.520	0.017	0.195
	Time	8.506	1.647	5.164	9.606	0.001	0.262
	Group×Time	10.207	1.647	6.196	11.527	0.001	0.299
Need for Approval	Group	27.903	1	27.903	4.204	0.038	0.136
	Time	10.021	1.295	7.739	6.351	0.011	0.190
	Group×Time	16.228	1.295	12.532	10.285	0.001	0.276
Pleasing Others	Group	52.674	1	52.674	6.661	0.016	0.198
	Time	6.010	1.246	4.825	7.709	0.006	0.222
	Group×Time	5.170	1.246	3.625	5.456	0.010	0.183
Vulnerability	Group	18.097	1	18.097	3.662	0.025	0.119
	Time	3.690	1.928	1.914	6.809	0.003	0.201
	Group×Time	5.989	1.928	3.107	11.051	0.001	0.290
Dysfunctional Attitudes – Total Score	Group	494.583	1	494.583	25.640	0.001	0.487
	Time	106.886	1.390	76.884	24.502	0.004	0.476
	Group×Time	143.575	1.390	103.275	32.913	0.004	0.549
Health-Promoting Lifestyle – Total Score	Group	280.057	1	280.057	2.263	0.019	0.188
	Time	33.952	1.229	27.622	7.935	0.005	0.228
	Group×Time	41.262	1.229	23.570	9.665	0.002	0.264
Distress Tolerance – Total Score	Group	118.115	1	118.115	8.605	0.007	0.242
	Time	13.781	1.358	10.149	8.256	0.003	0.234
	Group×Time	18.884	1.358	13.907	11.313	0.001	0.295

According to the results presented in Table 3, the assumption of multivariate correlation among dependent variables was also assessed using Mauchly's test of sphericity. The results showed that the significance level for each dependent variable was 0.001, indicating a violation of the sphericity assumption. Consequently, the

Greenhouse–Geisser correction was applied. Based on this adjustment and the confirmation of previously tested assumptions, all necessary prerequisites for conducting the ANOVA were satisfied. According to the results presented in Table 3, since the significance level associated with time was less than 0.05, it can be concluded that there were significant differences between the mean scores of dysfunctional attitude and its subscales, as well as between the mean scores of lifestyle and distress tolerance, across different measurement stages (pretest, posttest, and follow-up). Moreover, given the significant interaction effect of time × group and the significant main effect of group, it can be inferred that changes in dysfunctional attitude, lifestyle, and distress tolerance across the pretest, posttest, and follow-up stages differed between the experimental and control groups, with the experimental group showing significantly greater improvement compared to the control group.

Based on the effect sizes, 54% of the variance in dysfunctional attitude scores, 26% in lifestyle scores, and 29% in distress tolerance scores during the assessment stages were attributable to participation in the intervention sessions.

Table 4- Results of the Bonferroni post hoc test for comparing the stages of group assessment in dependent variables

dependent variable	Stages		Mean difference	Error	Sig.
Dysfunctional Attitudes – Total Score	Pre-test	Post-test	1.657*	0.392	0.001
	Pre-test	Follow-up	2.693*	0.485	0.001
	Post-test	Follow-up	1.036	0.250	0.311
Health-Promoting Lifestyle – Total Score	Pre-test	Post-test	-1.179*	0.387	0.015
	Pre-test	Follow-up	-1.436*	0.497	0.023
	Post-test	Follow-up	-0.257	0.212	0.709
Distress Tolerance – Total Score	Pre-test	Post-test	-0.824*	0.276	0.018
	Pre-test	Follow-up	-0.864*	0.280	0.014
	Post-test	Follow-up	-0.040	0.134	1.000

According to the results presented in Table 4, there were significant differences in the mean scores for dysfunctional attitude, lifestyle, and distress tolerance between the pretest and posttest, as well as between the pretest and follow-up ($p < 0.05$). However, no significant differences were observed between the posttest and follow-up mean scores ($p > 0.05$).

Discussion

This study aimed to determine the effectiveness of short-term cognitive behavioral therapy on dysfunctional attitudes, lifestyle, and distress tolerance in young people with hypertension. Based on the results of the present study, it was determined that short-term cognitive behavioral therapy was effective on dysfunctional attitudes in young people with hypertension, and these results continued to be effective until the follow-up stage. The results of the research findings are consistent with the results of studies by Mahmoudi Molaey et al. (2023), Khodadad Hatkehposhti et al. (2022), Verdi et al. (2025), Mirzaee and Khanjani Veshkial (2025), Kwek, et al. (2025), all of which were conducted with the aim of determining the effectiveness of cognitive behavioral therapy on ineffective attitudes towards psychological illnesses in various statistical populations,

and all of them indicate a significant effect of this type of treatment on reducing psychological problems in patients with chronic illnesses. Albert Ellis's theory can be cited in explaining this finding. According to Ellis, self-talk or irrational statements that people use about themselves are the cause of emotional turmoil, and confusing beliefs about relationships are also considered. In Ellis's A-B-C theory, an event (A) is perceived by the individual as a chronic illness, and his beliefs (B) are identified as the causes of emotional consequences (C). Worrying about the disease and irrational beliefs about its consequences cause psychological distress and worsen the individual's condition. Brief cognitive behavioral therapy reduces the person's emotional turmoil and indirectly improves hypertension by changing ineffective attitudes and irrational beliefs and replacing them with rational attitudes about hypertension. In another explanation, according to Aaron Beck's theory, general errors in thinking cause distorted perceptions in the individual, forming a negative view of oneself, others, and the future (cognitive triangulation). These negative and distorted thought patterns towards the disease are automatic and immediate reactions. Overgeneralization regarding disease outcomes and arbitrary inferences about the negative consequences of hypertension trap patients in distorted thought patterns and dysfunctional attitudes. In Brief Cognitive Behavioral Therapy techniques, by correcting the patient's cognitive errors, such as the tunnel vision error, in which the patient only focuses on the negative aspects of his life related to the disease, or the exaggeration and catastrophizing, in which the patient imagines the consequences of high blood pressure to be greater than they really are and develops dysfunctional attitudes, dysfunctional attitudes cause the individual's disease to worsen. In this therapeutic approach, by making the patient aware of negative thought patterns, the patient is helped to identify their unstructured thoughts and change them. To examine the rationality or irrationality of the way patients with hypertension think and identify the errors in it, the therapist challenges the thoughts of the group members to identify their cognitive errors and ineffective attitudes (Bond & Dryden, 2014).

Also, based on the results of the present study, it was determined that short-term cognitive behavioral therapy was effective on lifestyle in young people with hypertension, and these results continued to be effective until the follow-up stage. The results of the research findings are consistent with the results of the studies of Naseri Far et al. (2022), Hokmabadi et al. (2022), Akbari Ebtekar et al. (2024), and Li et al. (2025), all of which were conducted with the aim of determining the effectiveness of cognitive behavioral therapy on lifestyle for psychological diseases in various statistical populations, and all of them indicate a significant effect of this type of treatment on improving the lifestyle of patients with chronic diseases.

In explaining this finding, the short-term cognitive behavioral therapy package used behavioral strategies and techniques to change the behavior and lifestyle of people with hypertension. In this therapeutic approach, the lifestyle, nutrition, exercise, and blood pressure of individuals were reviewed in each session and they were given feedback on taking care of high blood pressure, healthy nutrition, and appropriate exercise. In another explanation, it seems that short-term cognitive behavioral therapy helps improve cardiovascular status by improving behavioral function and also by creating relaxation. In another explanation, it seems that short-term cognitive behavioral therapy helps improve cardiovascular status by improving behavioral function and also by creating relaxation. Because hypertension is considered a psychosomatic disease, when examining the factors affecting its occurrence and progression, attention should be paid to a combination of biological and psychological factors (Salari, Maddahi & Safarzadeh, 2014). In this regard, it can be said that the factors that cause increased blood pressure are excessive sodium consumption, potassium and fiber deficiency, physical

inactivity, and psychosocial stress (Chobanian et al., 2003). On the other hand, physical activity also reduces blood pressure by reducing sympathetic activity(Mirahmadi et al., 2024). Therefore, therapeutic methods such as short-term cognitive behavioral therapy relying on stress reduction techniques, mental imagery, aerobic exercise, and meditation lead to an increase in the response of the parasympathetic nervous system and invoke relaxation responses. These responses, in turn, lead to changes in the body such as decreased blood pressure, heart rate, respiratory rate, and oxygen consumption (National High Blood Pressure Education Program Working Group, 2004). In other words, this therapy has helped increase control over vital signs and overcome situations that are more controlled by the environment by removing potential barriers, teaching coping and problem-solving skills, and dealing with stress cues. This treatment method can help improve physical health outcomes (vital signs) by using cognitive restructuring strategies, conducting behavioral experiments to select the conscious path of behavior and the unconscious path of emotion regulation, and physiological clues (Bond & Dryden, 2014).

Another finding of the study showed that short-term cognitive behavioral therapy was effective in improving distress tolerance in young people with hypertension, and these results were maintained in follow-up. The results of the research findings are consistent with the results of the studies of Ahmadi-Mahali et al. (2024), Aliyari-Khashani-Vatan (2023), Hossin-Zadeh et al. (2024), Reuther and Canavera (2024), all of which were conducted with the aim of determining the effectiveness of cognitive behavioral therapy on distress tolerance in psychological diseases in various statistical populations, and all of them indicate a significant effect of this type of treatment on distress tolerance in patients with chronic diseases. In explaining this finding, based on Freud's psychoanalytic theory, pervasive feelings of fear, worry, and anxiety play a major causal role in most psychological harms (Holy, Nock, & Butcher, 2025). The intolerable distress caused by having an illness is sometimes experienced openly by the individual, and at other times it is suppressed and transformed into other obvious symptoms. In the short-term cognitive behavioral therapy approach, the individual attempts to overcome their distress and anxiety and increase their ability to tolerate distress by learning relaxation techniques, corrective actions, and lifestyle changes. In the short-term cognitive behavioral therapy approach, the individual attempts to overcome their distress and anxiety and increase their ability to tolerate distress by learning relaxation techniques, corrective actions, and lifestyle changes. In explaining the findings based on behaviorist theories, modifying and changing behavior and lifestyle in patients with hypertension leads to learning, modification, change, and possible elimination of maladaptive responses such as distress intolerance. On the other hand, by correcting ineffective behaviors and changing unhealthy lifestyles, and improving the course of the disease, the level of distress in patients is reduced. In the operant (or instrumental) conditioning approach, a person learns how to achieve a desired goal and escape an aversive stimulus, such as high blood pressure. In this therapeutic approach, according to Thorndike and Skinner, the individual learns to expect the response-consequence. That is, he learns that the response will lead to a pleasant outcome. Therefore, by following group training, changing an ineffective lifestyle, and following and adhering to treatment, the individual's level of psychological distress is reduced.

The present study faced statistical sample limitations that make the external validity and generalizability of the findings subject to caution. Regarding the internal validity of the study, taking the pre-test may have had reactive effects and, by sensitizing the sample, may have affected the post-test scores. In addition, the drop in subjects in the experimental group and individual differences among subjects are other factors that threaten

the internal validity and limitations of this study.

Accordingly, it is suggested that in future studies, this research be repeated in other statistical populations of patients with hypertension to increase generalizability and external validity. To increase internal validity, it is recommended to use experimental methods and randomly select subjects. At a practical level, it is suggested that clinics and hospitals use psychologists to improve the mood of patients with hypertension and consider short-term cognitive behavioral therapy for patients with hypertension as an effective intervention in addition to drug treatments. Given the high effect size and favorable statistical power of the analyses, this approach can be used as an effective intervention in mental health centers and in other physical illnesses.

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