

## Positive thinking training in reducing stress for people with hypertension

Risca Aulia<sup>1</sup>, Rahma Widyana<sup>2</sup>

<sup>1,2</sup>Universitas Mercu Buana Yogyakarta, Yogyakarta, Indonesia

<sup>2</sup>rahma@mercubuana-yogya.ac.id

### Artikel history

Received	Revised	Accepted	Published
2022-02-01	2022-02-17	2022-02-24	2022-02-28

### Keyword :

hypertension  
positive  
thinking  
training;  
stress

### Abstract

One of the causes of hypertension is stress, and non-pharmacological interventions can decrease stress levels so that blood pressure can also be reduced. The intervention provided in this study was positive thinking training. This study aimed to determine the influence of positive thinking training in reducing people's stress levels with hypertension by using a pretest-posttest randomized control group design with three measurement points. The study subjects consisted of 10 people with hypertension with moderate to severe scores (based on the Depression Anxiety Stress Scales). Data was collected with the Indonesian version of the Depression Anxiety Stress Scales (DASS-42) and analyzed with the Mann-Whitney non-parametric test. The results indicated a significant difference ( $p < 0.05$ ) in positive thinking training in reducing stress between the experimental and control groups. Next, a non-parametric Wilcoxon signed-rank test was applied. Results indicated a significant difference  $Z = -2,032$  ( $p < 0,050$ ) in the stress levels of people with hypertension before and after positive thinking training. This study has implications for positive thinking training applications in reducing the stress of people with hypertension. It was concluded that positive thinking training could reduce the stress of people with hypertension.

*How to cite:* Aulia, R., & Widyana, R. (2022). Positive thinking training in reducing stress for people with hypertension. *Insight: Jurnal Ilmiah Psikologi*, 24(1), 139-151. doi: <https://doi.org/10.26486/psikologi.v24i1.2547>

## INTRODUCTION

Hypertension is an increase of systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg, which is done twice in a five-minute measurement when the body is resting. The number of hypertensive patients with uncontrolled blood pressure is increasing (Kementerian Kesehatan RI, 2014) and may be caused by more than just lifestyle or genetic factors (e.g., economic status, living conditions, stress management that contributes to elevated blood pressure), therefore it takes the involvement from multiple parties such as medical practitioners, government sectors, private sectors, and the community so that hypertension can be controlled in society at large (Kementerian Kesehatan RI, 2014).

According to Riskesdas data in 2018 (Kementerian Kesehatan RI, 2019), 34.1% of the population aged 18 already have hypertension. In addition, there are 31.6 residents at the age of 31-44, 45.3% of the population at the age of 45-54, and 55.2% of the population at the age of 55-64 who are diagnosed with hypertension. Prevalence increases along with age. According to Sari et al. (2020), hypertension is caused by several factors, namely age, obesity, smoking status, and stress. Stress can cause changes in body condition. One is increased blood pressure (Gain, 2013; Nevid et

al., 2018). In highlighting stress, stress is a picture of symptoms of stressful situations, namely feelings of anxiety, distress, or headache (Ekawarna, 2018).

Severe stress is one of the causes of hypertension. The initial survey conducted in May 2021 at Gunung Toar Health Center of Kuantan Singingi Riau Regency unveiled that most people with hypertension recorded in Kuantan Singingi Regency were in Gunung Toar Health Center's area coverage. The initial interview was conducted with three people diagnosed with hypertension, namely SE, AR, and NE, who experienced physical symptoms such as having headaches, rapid heartbeat, shaking, sweating, difficulty sleeping, excessive sweating, difficult eating (weight loss), tense veins, and frequent fatigue. The emotional symptoms felt by the three subjects were sadness, ease of crying, anger, embarrassment, insecurity, and tiredness of living life. While intellectual symptoms were often thinking negatively, it was often focusing on failures, having no hope to solve problems and the future, often prejudiced about past occurrences, judging most events negatively, often self-blaming, and feeling guilty. Stress causes include family demands, economic factors, household issues, and other personal problems that impact the physical state and result in elevated blood pressure.

Stress that occurs in individuals will trigger an increase in blood pressure. Bio psychologically, a state of stress will trigger increased levels of adrenaline. Stress will stimulate the sympathetic nervous system, increasing heartbeat and blood pressure. The state of stress will increase if resistance occurs in the peripheral blood vessel, along with an increase in heart rate, which stimulates the sympathetic nerves. Stress will cause the body to react, increasing muscle tension, heartbeat, and blood pressure. Therefore, stressful conditions can trigger the occurrence of cardiovascular diseases, including hypertension (Ardian et al., 2018; Ayada et al., 2015). Clinical psychology has many interventions to manage stress, some of which are relaxation training, cognitive behavioral stress management, among others (Romadhani & Hadjam, 2019). In relation to stress, a previous study has been conducted in Indonesia by Winta dan Linayaningsih (2016) entitled Effectiveness of Positive Thinking Training as A Stress Coping Strategy in Primary School Teachers for Children with Learning Disabilities. The result of the study from samples of primary school teachers for children learning disabilities showed that there was an effect of positive thinking training on increasing stress coping strategies. This indicates that individuals who practice positive thinking patterns will be able to reduce their stress levels.

Thinking positively is a way to help individuals in thinking about solutions so that they are more proficient, confident, and strong in dealing with stressors. Therefore, the individual will be free from suffering or confinement of negative thoughts and their effect on the body (Elfiky, 2019). Concerning thinking positively also takes a particular set of skills. To improve this skill set, training is required. Another approach developed by Meichenbaum is called stress-inoculation training. Training means the process, the act of training, or training in the process (Hasan, 2018). Therefore,

researchers used training intending to add new knowledge and skills so that subjects could apply them in real-life situations.

Training in positive thinking can change a person's thinking by focusing on a positive point of view. The training is carried out using an experiential learning approach. In experiential learning, individuals must be able to reflect on their experiences, process new connections, and try to apply the knowledge gained. Individuals who take part in training can reflect on the training experience, acquire new meanings and try to apply those new meanings in life (Barida, 2018).

The material of the training in this study included aspects of positive thinking, according to (Albrecht, 2005), namely self-affirmation, non-judgment talking, reality adaptation, and positive expectations. Each aspect encompasses skills based on Albert Ellis's A-B-C approach model. According to Ellis (Corey, 2005), A represents the antecedents or things, activities, experiences of triggers, events or preceding situations that stimulate the individual, or other things that occur outside or around the individual that are considered to be the source or cause of unhappiness. B means the individual's beliefs, views, and values, namely irrational beliefs and unworthy thoughts of events or events that befall outside or within the individual. (C) means the consequence or emotional reaction of an individual as a result, whether it is feelings of pleasure, sadness, or inhibitions from (B) or an individual's belief towards (A) events.

Previous studies have shown that positive thinking training can reduce stress. One is research conducted by Kusuma (2017). The result of this study showed that there was a significant difference in academic stress in PPDS (medical student residents) Surgical doctors. The difference between this study and the study by Kusuma (2017) is that it lies in the characteristics of the subjects used, namely people who have hypertension, while the study conducted by Kusuma (2017). Kusuma (2017) were PPDS Surgical doctors. In addition, the instrument used in Kusuma (2017) was an academic stress scale, while the present study will use the DASS-42 version of Indonesian. Another study was conducted by Machmudati and Diana (2017), with results showing a significant difference in anxiety levels after subjects were given positive thinking training. However, the difference between this research and the study by Machmudati & Diana (2017) is the variable used, namely anxiety in thesis writing, and the study instrument, i.e., anxiety scale in thesis writing. In addition, the subject characteristics were also healthy adults, namely students who were writing a thesis from the faculty of Isoshum and Saitek (science and technology), who were reported to have moderate to high anxiety scores. Although differences exist between prior and present studies, we would not neglect the potential outcomes of stress reduction through positive thinking, particularly for subjects at risk of high mortality rates in a context where healthcare access, health awareness, and education still require significant advancements.

Based on the explanations above, this study aims to examine the influence of positive thinking training in reducing the stress levels of people with hypertension. The study hypothesized that there would be different stress levels between the experimental groups given treatment compared to the

control group. After the treatment was given, the experimental group's stress levels would be lower than the stress levels of the control group without positive thinking training. Furthermore, the experimental group had different stress levels before and after the treatment. The research was expected to contribute to scientific studies and professional recommendations on clinical psychology regarding positive thinking training to reduce stress in people with hypertension in Indonesian culture.

## **METHODS**

The study used a pretest-posttest control group design that was randomly taken from the experimental and control groups. The subjects of the study were hypertensive patients at Gunung Toar Health Center, Kuantan Singingi Regency, Riau Province, whom doctors had diagnosed with blood pressure over 140/90, aged 20-60 years who had a mild to very severe stress score (as measured with the DASS-42 scale). Prospective research subjects were screened using the Indonesian version of the DASS-42 (Widyana et al., 2020). The depression scales assessed dysphoria, hopelessness, life devaluation, self-deprecation, lack of interest/involvement, anhedonia, and inertia. Anxiety scales assessed the effects of anxiety on an autonomic nerve, muscle movement, situational anxiety, and subjective experience of anxiety's effects. At the same time, the stress scales assessed the difficulty in relaxing, response to nervousness, irritability/ anxiety, excessive reactivity, and impatience. The analysis results showed a 0.954 reliability coefficient for the depression scale, 0.903 for the anxiety scale, and 0.913 for the stress scale. Hence the Indonesian version of the DASS-42 test had a high degree of validity. This study used 14 of the stress items from the Indonesian DASS-42. The screening process was carried out on 15 hypertensive patients, some of whom were the nurses' recommendations at Gunung Toar Health Center, while some prospective subjects were obtained through home visits. However, only ten people with hypertension were willing to participate in the study. This is because some of the prospective subjects had children under five in addition to full-time work, making these prospective subjects unable or unwilling to be the research subjects subject. In addition to the Indonesian version of the DASS-42, the researchers also used observations and interviews in data collection. The screening results were used as pretest data. Before the positive thinking training began, blood pressure measurements were taken from each subject using a blood pressure gauge (Sphygmomanometer) by the Nurse of Gunung Toar Health Center. The following profile of the research subjects are as follows:

**Table 1. Research Subject Profile**

Subject Initials	Gender	Group	DASS-42 Prete-st score	Category	Pretest of blood pressure
NE	Female	Experiment	33	Severe	180/90
SS	Female	Experiment	30	Severe	170/100
AR	Female	Experiment	25	Moderate	160/90
IY	Female	Experiment	27	Severe	180/90
SE	Female	Experiment	25	Moderate	160/90
RF	Male	Control	28	Severe	170/90
IM	Female	Control	23	Moderate	160/90
ED	Female	Control	26	Severe	170/90
YR	Female	Control	22	Moderate	160/90
RH	Female	Control	24	Moderate	150/90

The process of implementing positive thinking training was carried out for two days. Before the training was given, the researchers first provided information to each subject that a positive thinking training intervention would be conducted online using Zoom video conference. Positive thinking training was provided by trainers who were certified psychologists. The modules used in this study were compiled by Deasy et al. (2020) with some adjustments.

**Table 2. Positive Thinking Training Activities**

Agenda	Descriptions
<b>FIRST DAY</b>	
Opening , Introduction, and praying	The meeting started with opening, group prayer, and self-introduction. The subjects are provided an explanation about the purpose of the training.
Introducing positive thinking	Providing psychoeducation material about the definition, aspects, and benefits of positive thinking.
Explanation on how thoughts influence emotions (feelings) “ <i>self-knowing ...</i> ”	Delivering material about how thoughts influence feelings or emotions. The subjects are guided to understand each strength and weakness. The subjects were guided to know their responses (thoughts and emotions) which emerge in every experience.
“ <i>Self-affirmation</i> ”	The subjects are guided to focus on the strengths and to ignore the weaknesses.
<b>SECOND DAY</b>	
“ <i>Non judgment talking</i> ”	The subjects are guided to describe his/her close friend as well as judge their weaknesses and the strengths. After that, a group discussion is done to guide each subject on the need to avoid judging something easily, but rather to be grateful for what we have now. In this case, a friend’s appearance is considered as a preceding situation (A), which will be judged by each subject and cause them to overthink (B) and elicit certain emotions (C). When a subject describes an appearance and they do not

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“ <i>Self-affirmation</i> ”	The subjects are guided to focus on the strengths and to ignore the weaknesses.
<b>SECOND DAY</b>	
“ <i>Reality adaptation</i> ”	judge, it will impact the emotional state. When subjects judge negatively, it will also impact their emotional state (C).  The subjects discussed a case from a motivational video about a disabled man who never gave up and was sincerely in enduring his life, while always striving to feed his family. Based on this video, an explanation was given on how positive thinking should be accompanied with a positive action so it will obtain a positive result. Next, the subjects reflected towards this in real life. In this case, a man’s belief (B) towards an unhappy event (A) will produce an emotion (C) towards A.
Playing a Video “ <i>the power of positive thinking</i> ” and “ <i>do not prejudice negatively</i> ”	The subjects watched a video about “the power of positive thinking” and “do not prejudice negatively”. Following this, the subjects discussed the story of the video which aims to give an example about the power of positive thinking and negative prejudicing.
“ <i>Positive expectation</i> ”	Each subject is asked to participate in playing a game: throwing a ball twice. The first throw is done without trust and the second throw is done with full trust. By comparing these two throws, it aims to help the subjects deeply concentrate on success, problem solving, and be challenging. In the last session, the subjects discussed and concluded that every individual has a positive expectation for success, because they think (B) positively towards a future event (A), so it emerges a positive emotion (C).
Evaluation	Every subject is provided a paper for evaluation. They fill and express their suggestions and impression during the training.
Closing and praying	Closing the training process and praying together.

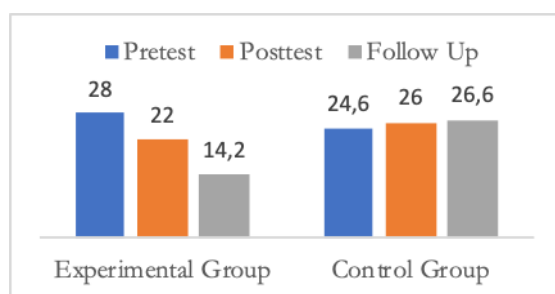
The data in the study was analyzed with SPSS 23 for Windows. Mann-Whitney non-parametric testing was used to examine the differences in stress scores in different subject groups between the experimental group and the control group before the provision of positive thinking training and after the provision of positive thinking training. The following analysis used the Wilcoxon Signed Rank Test to unveil the differences in stress scores in the same subject group, namely the experimental group, before and after the administration of positive thinking training.

## RESULTS AND DISCUSSION

The hypothesis test was carried out by conducting a Mann-Whitney test between the experimental and control groups. The comparison of means at pretest, posttest, and follow-up in both groups and results of the Mann-Whitney test analysis are presented as follows :

Table 3. Mann Whitney-U test results

	Pre-Test	Post-Test	Follow Up
Z	-1.571	-1.892	-2.627
Asymp. Sig. (2-tailed)	.116	.0295	.009



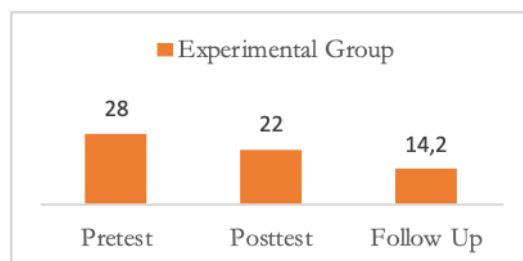
Picture 1. Means comparisons between the experimental and control group

Based on the above description, this study's results showed no difference in stress levels between pretest measurements in the experimental group and pretest measurements in control groups before being given positive thinking training treatment ( $P > 0.05$ ). The experimental group's mean score was higher than the control group's by 3,4. The following analysis examined differences between posttest scores in the experimental group and the control group. A significant difference in stress levels between the experimental and posttest measurements in the control groups was shown ( $p < 0.05$ ). The mean score in the experimental group decreased, showing a more significant score difference from the control group. Based on a follow-up measurement test in the experimental group, significant differences in stress levels in the experimental group given positive thinking training were apparent, with the control group that was not given positive thinking training ( $p < 0.05$ ). The experimental group's mean score decreased, resulting in a 12,4 lower margin than the control group. Based on the above analysis, it was concluded that the results of this study showed differences in stress levels based on the posttest and follow-up measurements between the experimental group and control group after positive thinking training.

Furthermore, the Wilcoxon rank test was used to test the hypothesis to figure out the differences between the same groups and compare score means at pretest, posttest, and follow-up measurements. The results of the analysis are presented in Table 4 and Picture 2 :

Table 4. Wilcoxon Rank Test Results

	Posttest-Pretest	Follow Up-Posttest
Z	-2.032	-2.023
Asymp. Sig. (2-tailed)	.042	.043



Picture 2. Mean comparisons of the experimental group

Based on the above description, this study's results showed a difference in stress levels based on pretest and posttest measurements, with a coefficient value of  $Z = -2,032$  ( $p < 0.05$ ). The mean score at the posttest was lower than the mean score at the pretest, with a 6-point difference. Furthermore, there was a difference in stress levels between follow-up and posttest, with a coefficient value of  $Z = -2.023$  ( $p < 0.05$ ). The mean score at follow-up was lower than the posttest, with a 7,8-point difference. The analysis results presented above concluded that a significant difference in the stress levels was shown in the experimental group before and after being given positive thinking training.

This study used positive thinking training that refers to four aspects of positive thinking put forward by Albrecht, (2005): Self-affirmation, non-judgment talking, reality adaptation, and positive expectations. The self-affirmation aspect aims to help subjects focus on self-strength by imagining each other's strengths as self-strength. By focusing only on their strength, subjects may manifest such qualities, making them feel more comfortable in life and the challenges it presents. Subjects who do self-affirmations can feel calm and at peace, as evidence has shown that self-affirmation may affect the parasympathetic nervous system and sympathetic nerves to stimulate the secretion of endorphins, reduce blood pressure, slow down breathing, and reduce tension in the body, further resulting in lowered stress levels (Zainiyah et al., 2018). This is in line with Creswell et al. (2013) research that self-affirmation can improve problem-solving abilities to reduce the effects of stress. Subjects who do self-affirmation can feel more comfortable, calm, and peaceful. In the training sessions, it was found that all subjects could find and focus on their strengths despite feeling that they have many weaknesses. All subjects reported feeling calm when finding and focusing on their strengths, namely NE, SS, AR, IY, and SE.

The statements of non-judgment talking helped subjects not be prejudiced or think negatively of something. This is similar to Beck's explanation (in Pangastuti, 2014) of the close relationship between emotions, thoughts, and behavior. Emotions and behaviors are formed by events caused by



a person's thoughts as triggered by the events they experience. Therefore, the primary key in regulating emotions and behavior is the individual's thoughts toward experiences. Additionally, the subjects were guided to describe something (e.g., an event, a person) as it is. This is aimed at promoting non-prejudiced thinking. The subjects were taught to review and observe the actual circumstances and think more realistically. The results found during the research process were that all subjects could generate a sense of wisdom for past occurrences, whereby previously, the subjects were inclined to think negatively about the adverse circumstances they have endured that caused their emotions and behavior to form negatively. After describing past occurrences better or more positively, all subjects, especially AR, IY, and SE, reported feeling much calmer, peaceful, and comfortable.

The aspect of self-adaptation to reality is helpful to promote subjects to be able to immediately adjust to the situation, not feel guilty or self-blame, and try to accept reality and move on. In the sessions, each subject was invited to analyze the case of the true story of a disabled person who never gave up, lived life sincerely, and strived to make a living despite physical limitations. Subjects are invited to analyze cases from a short film. The case analysis of a film is in line with the research of Rastogi et al. (2018), where the effects of watching films about positive thinking can help to manage stress levels and increase creativity in solving problems. From this case, it was concluded that positive actions must accompany positive thoughts to yield positive results. These events were analyzed to increase the subject's understanding of the required aspects of self-adjustment into reality. The subjects can then reflect on the events on actual life premises. In this session, it was found that each subject became aware of the many people who are less fortunate than they were, thus making each subject high-spirited, excited, and not self-blaming. Especially subjects SE, AR, and NE, reported feeling more grateful than ever before. According to Fitch-Martin, (2015), gratitude can reduce stress by changing individual perceptions of an unwanted event.

The aspects of positive expectation can help subjects concentrate more on success, problem-solving, optimism, and self-motivating from failure by using words of hope. Based on the aspects of optimistic hope, each subject concluded that all problems would be resolved when a strong sense of hope is instilled, along with positive actions. In this session, each subject was able to foster confidence in everything they faced. Each subject, especially IY, SS, and AR, understood that positive beliefs and hopes are influential in solving life problems.

There was a difference in stress levels in the experimental group from before and after positive thinking training, as subjects showed changes in thinking whereby previously they had the propensity of negative thinking, often focusing on their failures, and had no hope of solving their problems and future, were often prejudiced toward things, easily judged negatively on many life matters, often blamed their selves and always regretted many past occurrences, which resulted in increased stress. This was evident in the experimental group's interview before the intervention was delivered, as most subjects reported that they continued to negatively judge past occurrences, which

further burdened their mental capacity and resulted in many symptoms of stress, such as difficulty sleeping, rapid heartbeat, loss of interest in daily activities, and difficulty in controlling emotions from always blaming the people around them.

In addition, the observation results showed that all subjects were enthusiastic about following the training. Only subject SS appeared quite nervous in following the training. SS was not confident and nervous in reading the tasks. However, over time, SS could follow and understand the material well. While subjects NE, AR, IY, and SE were able to report their duties well and able to understand the materials, which made them able to apply positive thinking toward the environment.

Based on the subject's expressed emotions after positive thinking training, all subjects and mainly NE, SS, AR, IY, and SE, experienced positive changes after getting positive thinking training. Stress, difficulty relaxing, easily angered, anxiety, and impatience were diminished. For example, NE focused only on her weakness and always complained about overthinking. However, he/she never realized that many people are still in more disadvantaged life situations and problems. Recently, NE reported being more aware and showed gratitude (e.g., felt lucky as a person because the problems they face are incomparable compared to those who are less fortunate). At follow-up, NE reported feeling more comfortable and grateful, as well as subjects SS, AR, IY, and SE. All subjects were able to apply positive thinking in their daily lives. Therefore, the symptoms of stress were reportedly reduced. This is in line with a study by Kholidah and Alsa (2012), which found that positive thinking can significantly lower psychological stress. In addition, it supports findings by Lidiana et al. (2021), who stated that positive thinking training could reduce the stress level that is greatly needed in the covid-19 pandemic. Then, research by Barjoe et al. (2022) found thinking Positive training thinking is effective for reducing perceived stress through positive thinking for the target group.

Abimanyu (2018) explained that thinking positively can benefit physical and mental health. For example, individuals will be at lower risk of various diseases and psychiatric disorders. It may nourish the mind and body, generate greater productivity and success in life, have good social relationships, at lower risk from hostility and violence, can overcome problems appropriately, not carelessly, more purposefully and focused, become braver, be their selves, not give up quickly, and is beneficial for physical health such protection of heart health, blood pressure, among others. According to Canfield (2016), positive thinking will bring happiness, joy, health, and success to every action. Therefore, positive thinking has many benefits.

After the subjects were given positive thinking training, their blood pressure decreased, although it was still in the elevated category. This is in line with the research of Masithoh et al. (2016), who found that positive thinking influences lowering blood pressure. In doing positive thinking training, the subjects will employ positive thinking strategies in their mind. When subjects can apply positive thinking, they will feel comfortable and relaxed so that stress decreases. Physiologically, the stress reduction mechanism is stimulated by the concentration of plasma

catecholamine that affects the activation of symptomatic energy that causes the release of stress hormone. The reduction of stress can affect the release of catecholamine into blood vessels so that the concentration of plasma catecholamine lowers, further decreasing heartbeat and blood pressure (Ainurrafiq et al., 2019).

Based on the explanations above and correspondence to prior literature, it can be concluded that positive thinking training can be used to reduce the stress of people with hypertension. The weakness of this study is that it was carried out through online sessions (using video conference meetings) that are limited to a duration of 40 minutes and controlled by the network, so that when the duration of time is up, then the video conference disconnects automatically. When the video conference or the network is disconnected, it dramatically affects the subject's mood. In addition, researchers do not take measurements first on the free variable of positive thinking that can enrich additional data in determining the subject's state. Therefore, the suggestion for future researchers is to ensure the meeting zoom time so as not to disconnect every 40 minutes and prepare research time to minimize technical problems that occur (e.g., less stable network connection, use of more than one device with a different provider so that when the network is disconnected, it can still be continued) to maintain the moods of the subjects during training. It may also be necessary to retrieve a larger sample size to generate more outcome data or set longer follow-up points (e.g., 12 months, 18 months, and so on) to observe whether a maintained effect exists.

## CONCLUSION

Based on the analysis and discussion results, it can be concluded that positive thinking training reduces the stress levels of people with hypertension. This is substantiated by the significant difference between the stress levels of people with hypertension in the experimental and control groups. Furthermore, there was a significant difference between before and after the provision of positive thinking training in the experimental group. Based on the results of these measurements, positive thinking training can reduce the stress of people with hypertension.

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