

# The Effect of Positive Thinking Skills Training and Acceptance and Commitment Therapy on Perceived Stress among Women with Breast Cancer

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## Abstract

**Background:** Women with breast cancer may suffer from numerous psychological, physical, cognitive, and socio-emotional problems. If their psychological disorders persist, they may perceive a high level of stress. We conducted the present study to evaluate the effect of positive thinking skills training and acceptance and commitment therapy (ACT) on perceived stress among women with breast cancer in Ahvaz, Iran in 2019.

**Methods:** This was an experimental controlled pretest-posttest study. A sample of 45 women with breast cancer was conveniently selected and randomly allocated to the positive skills training group, ACT group, and the control group. The first and second experimental groups underwent eight sessions (90-minute sessions per week) of positive thinking skills training and ACT, respectively. The research instrument included the Perceived Stress Scale. One-way analysis of covariance was used to analyze the data.

**Results:** The mean±SD of the post-test scores of perceived stress in the positive thinking skills training group was 17.01±2.32 while it was 22.53±1.45 in the ACT group, which was significantly different from the control group (54.10±4.37). Positive thinking skills training and ACT both reduced the perceived stress in women with breast cancer in the experimental groups compared to that in the control group. Positive thinking skills training had a significantly greater effect than ACT on mitigating perceived stress ( $P<0.001$ ).

**Conclusion:** According to the results, positive thinking training and ACT were effective in reducing perceived stress in women with breast cancer. Moreover, positive thinking training was more effective in declining stress in women with breast cancer.

**Keywords:** Acceptance and commitment therapy, Stress disorders, Breast cancer, Optimism, Women

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## 1. Introduction

The breast is an important part of a woman's body image; thus, any abnormality in this area can lead to cognitive problems for women (1). The disease-induced clinical symptoms lead to high perceived stress, and impede the socio-individual relationships and adjustment. Women with breast cancer may experience boredom, sadness, hopelessness, discouragement, loneliness, and dissatisfaction. The negative impact of high perceived stress on these women influences their mental state during the disease (2). Perceived stress is a prevalent issue in these women. Studies have suggested that stress involves physical, mental, and emotional reactions experienced as a result of changes in the needs of a person's life (3, 4). These major or minor changes could disturb patients. Perceived stress impairs a person's perceived ability and confidence in the face of stress and leads to mood problems (4).

Breast cancer is a debilitating and refractory disease. Patients diagnosed with breast cancer are stressed by an unrealistic fear of death, experience reduced social energy, and may later develop psychological disorders. These patients may have numerous psychological, physical, cognitive, and socio-emotional problems. If their psychological disorders persist, they may perceive a high level of stress, which impacts their self-belief, increases negative information about self, and exposes them to numerous familial and social problems (5). Pain is another factor causing different difficulties for these patients. They suffer from chronic pain and usually experience stress, disrupted interpersonal relations, sleep disorders, fatigue, along with diminished physical and psychological functioning (6).

Epel and colleagues (7) viewed stress as having a cognitive and environmental characteristic, deeply influenced by mental and physical states. Stress is

influenced by the environment and is interpreted differently in various situations. People's perception can affect their mental capacity depending on how stressful they perceive a situation. Stress is a psychological state encompassing various types of distress, ranging from slight distress in daily activities to a debilitating illness that disrupts mental health (8). Compared to healthy women, those with breast cancer perceive a very high level of stress. It has been shown that stress involves a physical and mental reaction that may lead to disorders. Once women perceive stress, they perceive a threat to their physical and psychological well-being (9, 10).

Psychological interventions are of particular necessity to mitigate perceived stress; meanwhile, which educational intervention can better alleviate perceived stress in women with breast cancer still remains controversial (11). Positive skills training is one of the therapies examined in the current study. When thinking is negative, the feeling and therefore, performance become negative as well. Positive thinking skills training helps people know themselves better and challenge their opinions about themselves and life. In this training, women are encouraged to discover their good self through positive experiences and identify their role in promoting self-esteem and respect. Women also learn to take a stand, take hold of their lives, and do not passively accept whatever happens to them. Research has shown that positive thinking skills training reduces stress and anxiety in women with breast cancer (12, 13). Cheung and colleagues (13) reported that positive thinking training greatly mitigated perceived stress in women with breast cancer. According to behavioral sciences and psychology, one's mental and physical state stems from their mental and psychological disposition and positive thinking. Accordingly, positive thinking skill training can effectively alleviate cognitive disorders (14-16).

Acceptance and commitment therapy (ACT) can also help mitigate perceived stress. Research has revealed the determining role of ACT in reducing cognitive and emotional problems (17). This therapy significantly alleviates death anxiety, perceived stress, and anxiety in women with breast cancer (18). ACT is based on mindfulness, with proven effects on a wide range of clinical conditions. It assumes that psychological processes are usually destructive and cause psychological pain. According to ACT, only a conscious act can create a meaningful life. This therapy teaches people effective mindfulness skills to manage their internal experiences (19). ACT first attempts to enhance the clients' mental acceptance of their mental

experiences (thoughts and feelings), thereby reducing their ineffective control over them. Clients learn that any action for controlling or avoiding these unwanted mental experiences is futile or even exacerbates them; instead, they must fully accept these experiences without any internal or external reaction to eliminate them. In the second step, the clients' mental awareness of the present moment is promoted; that said, they become aware of all their mental states, thoughts, and behaviors at the present moment. In the third step, clients learn to separate themselves from these mental experiences (cognitive diffusion) so that they can act independently of these experiences. In the fourth step, efforts are made to reduce their excessive concentration on their self-created personal story (such as victimization). In the fifth step, ACT helps clients to identify their basic personal values, clearly delineate them, and transform them into specific behavioral goals (values clarification). Finally, it motivates clients to take committed actions, that is, goal- and value-oriented actions, and accept their mental experiences (anxiety, depressive thoughts, trauma, or phobias) (20, 21).

Women with breast cancer suffer from a high degree of stress due to their emotional, cognitive, mood-related, and physical problems, which may negatively impact the process of their treatment (22, 23). Two therapeutic methods were compared herein since both of them are known to alleviate patients' cognitive problems. Given the special state of patients with breast cancer, it is important to know which therapy is more effective on their disruptive stress so that the best therapy could be selected for promoting their quality of life and cognitive state. Positive thinking skills training is greatly conducive to the treatment of emotional disturbance and may accelerate the rate of recovery. ACT is also highly effective in reducing cognitive problems. However, which therapy is more effective in treating stress in the target group still remains uncertain. Accordingly, the present study aimed to investigate the effect of positive thinking skills training and acceptance and commitment therapy on perceived stress in women with breast cancer.

## 2. Methods

This was a quasi-experimental study with pretest-posttest control group design. The statistical population consisted of all the women with breast cancer visiting Shafa Health Center of Ahvaz, Iran in 2019. A sample of 45 women with breast cancer was conveniently selected and randomly allocated to the positive skills training group, ACT group, and the control group (n=15 per

group). In the present study, the specified sample size was selected according to G\*Power software with an effect size of 1.60, test power of 0.90, and  $\alpha=0.05$  (24). We used a simple random coin-throwing method for allocating the participants to the experimental and control groups. At the end of the study, in order to observe the ethical considerations, the control group received a course of ACT and positive skills training. Additionally, written informed consent were obtained from the participants.

### 2.1. Instruments

**Perceived Stress Scale:** The Perceived Stress Scale (PSS) was developed by Cohen in 1983. The items were developed to elicit respondents' opinion about their uncontrollable, unpredictable, and difficult life. It is a 14-item inventory scored on a five-point scale from 1=Never to 5=Always. Items 4, 5, 6, 7, 9, 10, and 13 were inversely scored. The minimum and maximum scores

were 14 and 70, respectively (25). The content validity ratio (CVR) and content validity index (CVI) of the Persian version of PSS were reported to be 0.82 and 0.89, respectively. In order to determine the face validity of the Persian version of PSS, this scale was provided to several specialists. Moreover, to quantitatively face the validity of the PSS, the impact score of each item was calculated (26). Badie and colleagues (27) reported the reliability of this scale equal to 0.86 based on Cronbach's alpha coefficient. In the present work, Cronbach's alpha coefficient was 0.82 for the scale.

### 2.2. Intervention Program

**Positive Thinking Training Course:** The positive thinking training course was developed based on the power of positive thinking and was provided to the intervention group in eight 90-minute sessions (28). Table 1 represents a summary of the training sessions.

**Table 1:** Summary of positive thinking training courses

Sessions	Details
1	Introduction, conducting pre-test, introducing, and contracting for the training process Explaining the fundamentals of positive thinking approach Explaining the effect of positive thinking on maturity of emotional dimensions Explaining the positive thinking concept
2	Positive thinking modeling to deal with stress Flexibility: changing adaptation, stability amid turmoil, authoritarian leadership Connection: support, respect, compromising damaged relationships, and forgiving Teaching self-awareness and self-knowledge
3	Teaching positive thinking processes Sharing excitement: talking about pleasure, pain, mutual empathy, responsibility, pleasing interactions, and humor Collaborative problem solving: problem identification, brainstorming, joint decision making, focusing on goals, and relying on successes Teaching self-acceptance Increasing self-esteem in diseases
4	Tips to strengthen a positive attitude in the treatment process Giving meaning to difficulties: normalization, sense of coherence, and explanatory documents Positive vision: hope, courage and encouragement, seizing opportunities, and accepting what cannot be changed Explicit expression of feelings Identifying responsibilities Behaving responsibly
5	Positive hope Teaching hope in challenges Assessing stress and potential forces on the individual and thinking positively about ones abilities Strengthening positive thinking Optimism and having hope Teaching how to identify negative and irrational thoughts
6	Boosting positive thinking in women through controlling psychological pressures Facilitating adaptation Family processes affecting stress control Learning to share excitement and get support Teaching positive thinking and identifying ones positive traits
7	Forming resilience to challenges through positive thinking Having the spirit Teaching positive self-talk and its effect on behavior and cognitive dimensions
8	Summing up positive thinking trainings Teaching the connection between positive thoughts and emotions and behavior Summing up sessions Submitting suggestions and conducting post-test

**Acceptance and Commitment Therapy (ACT):** The ACT protocol was developed based on the ACT in practice: case conceptualization in acceptance and commitment therapy. It was administered in eight 90-minute sessions (29). Table 2 presents the protocol in brief.

### 2.3. Statistical Analyses

Data were analyzed with descriptive and inferential statistics, such as mean, standard deviation mean, standard deviation, analysis of variance (ANOVA), analysis of covariance (ANCOVA), and Bonferroni post-hoc test. We then utilized SPSS version 23.0 to analyze the data.

### 3. Results

The inclusion criteria in the present study were as follows: not being in the mastectomy and chemotherapy stage during the training sessions, taking no psychotropic medications at least three months before and during the study, informed consent to attend the training sessions, the minimum of middle high school education, and having no severe neuropsychiatric disorders based on the participants' self-reports. The exclusion criteria were: missing more than two treatment sessions during the intervention and starting a simultaneous psychotherapy intervention. The mean and standard deviation (SD) of the participants' age in the positive skills training, ACT, and control groups

were  $43.27 \pm 6.52$ ,  $45.21 \pm 6.64$ , and  $44.52 \pm 7.21$  years, respectively. Table 3 depicts the demographic variables of women with breast cancer.

The mean and standard deviation (SD) of perceived stress were respectively  $63.60 (4.08)$  and  $17.01 (2.32)$  for the positive thinking skills training group,  $64.40 (5.12)$  and  $22.53 (1.45)$  for the ACT group, and  $52.60 (4.54)$  and  $54.10 (4.37)$  for the control group on the pre- and post-test (Table 4).

The assumption of normal distribution of all the groups' perceived stress scores on pre-test was confirmed. The F-value for perceived stress was not significant ( $F=1.67, P=0.512$ ), confirming the regression homogeneity assumption. The results of Levene's test were not significant for perceived stress ( $F=2.89, P=0.091$ ); therefore, the variances of the groups were not significant, confirming the homogeneity of variances assumption. The null hypothesis for the equality of variances of perceived stress scores was confirmed in all the groups.

By controlling the pre-test scores, a significant difference was observed concerning perceived stress between the experimental and control groups ( $F=197.52, P<0.001$ ). As the effect size was 0.90, 90% of the personal differences in perceived stress post-test scores were on account of the effect of the interventions. By controlling the pre-test scores, a significant difference was observed in perceived stress between the positive

**Table 2:** A summary of acceptance and commitment therapy protocol

Sessions	Notes
1	Pre-test, establishing a therapeutic relationship with the patients
2	Introducing the concepts of ACT, creating insight into the problem, and challenging negative thoughts and emotions
3	Training creative hopefulness, discussing sadness, problems arising due to a lack of control over the stress level, and destructive emotions
4	Creating acceptance, mindfulness by letting go of the effort to control, establishing cognitive, mood, and emotional diffusion
5	Discussing a value-oriented life
6	Training and discussing choice, realistic goals, barriers, and their evaluation
7	Asserting values, actions, enthusiastic engagement, commitment
8	Discussing the concept of being, summary, survey, final suggestions, and post-test

**Table 3:** Demographic characteristics of the participants (n=15 per group)

Variable		Positive thinking skills	ACT	Control	P
Mean±SD age (years)		$43.27 \pm 6.52$	$45.21 \pm 6.64$	$44.52 \pm 7.21$	0.312
Duration of illness (years)		$2.75 \pm 1.38$	$3.11 \pm 1.22$	$2.45 \pm 1.66$	0.422
Education	None Academic	8 (53.33%)	9 (60.00%)	8 (53.33%)	0.214
	Academic	7 (46.66%)	6 (40.00%)	7 (46.66%)	
Marital status	Married	12 (80.00%)	13 (86.67%)	11 (73.33%)	0.418
	Single	3 (20.00%)	2 (13.33%)	4 (26.67%)	

**Table 4:** Mean and standard deviation of the research variable in the experimental and control groups in pre-test and post-test

Variable	Phases	Positive thinking skills	ACT	Control	P (between groups)
		M±SD	M±SD	M±SD	
Perceived stress	Pre-test	63.60±4.08	64.40±5.12	52.60±4.54	0.194
	Post-test	17.01±2.32	22.53±1.45	54.10±4.37	0.001
	P-value (within groups)	0.001	0.001	0.614	-

**Table 5:** Bonferroni post-hoc test for paired comparison of the perceived stress in the post-test phase

Variable	Groups	Mean difference	SE	P
Perceived stress	Positive thinking skills – Control	37.21	2.68	0.001
	ACT – Control	32.63	2.32	0.001
	Positive thinking skills – ACT	5.18	2.21	0.001

thinking skills training and control groups ( $F=41.33$ ,  $P<0.001$ ). In other words, this intervention significantly reduced perceived stress on the post-test compared to that in the control group. There was also a significant difference between the ACT and control groups in terms of perceived stress ( $F=28.56$ ,  $P<0.001$ ). In other words, ACT significantly mitigated perceived stress on the post-test.

To pinpoint the difference, the ANCOVA was followed by Bonferroni's post-hoc test. The perceived stress means significantly differed within the positive thinking training and ACT groups ( $P<0.001$ ). Positive thinking skills training, therefore, had greater effects on reducing perceived stress compared with ACT among the women with breast cancer (Table 5).

#### 4. Discussion

The present study aimed to investigate the effect of positive thinking skills training and acceptance and commitment therapy on perceived stress in women with breast cancer. A significant difference was found between the ACT, positive thinking skills training, and control groups in terms of perceived stress. The two interventions significantly mitigated perceived stress among women with breast cancer. Moreover, positive thinking skills training exerted a significantly greater effect than ACT on reducing perceived stress. This finding is consistent with the results of Cheung and colleagues (13), and Li and colleagues (20).

In a cognitive struggle with cancer, women with breast cancer perceive stress that causes cognitive and anxiety disorders (5). Positive thinking skills training effectively decreased perceived stress in these women. This intervention promoted positive thinking and gave constructive meanings to thoughts and attitudes,

thereby reducing stress, tension, and worry in these women. Positive thinking skills training promoted positive feelings, flexibility, well-being, positive behaviors, along with constructive and energizing thoughts through suggestion, repetition, and practice. It thus transformed these women's mentality and thoughts into a positive one, which persistently boosted their spirits and controlled their stress (15).

ACT also effectively decreased these women's perceived stress. By enhancing their emotional awareness (awareness of all their emotions, thoughts, and behaviors at the present moment), ACT reduced hasty decisions due to cognitive impulsivity and high perceived stress. It promoted goal- and value-oriented actions, acceptance of experiences, mood evaluation, selection of emotional response, and emotion integration. Accordingly, ACT facilitated adaptation to the current conditions and reduced the stress, tension, and worrying about cancer. Thanks to the development of flexibility, cognitive diffusion, acceptance, living in the present moment, the observant self, values, and committed action, ACT helped the patients learn how to view their thoughts, imaginations, and memories. It also provided a space for perceiving emotions, bodily sensations, and internal experience without fighting them, in addition to decreasing their stress (21). By experiencing the here and now, openness, acceptance, and full awareness, ACT prevented the patients from taking unplanned actions and thus alleviated stress, which is a key component in anxiety.

Positive thinking skills training had a significantly greater effect compared to ACT on alleviating perceived stress among women with breast cancer. Compared to ACT, positive thinking skills training is a multi-dimensional intervention that develops and facilitates patients' mutual understanding, support,

and adaptation. By integrating positive thinking and regulation, this intervention promoted perception through written emotion disclosure and contributed to a more flexible psychological function. Compared to ACT, this protocol involved further intimate relationships with the therapist because of the disclosure of information, promoted positive attitude, and helped the patients identify their positive attributes. As such, it reduced these women's tension and worry. Based on the social influence model, compared to ACT, positive thinking training teaches constructive thinking and disclosure, thereby gradually forming care, friendship, social support, and trust in women. This advantage further influenced proper cognitive-emotional discharge, mitigated stress, and maintained mental peace. Positive thinking training provides a positive outlook, acceptance, and recognition of positive experiences by expressing negative emotions (11). In this way, it results in cognitive-emotional organization and improves distress and worry. Based on the theory underpinning cognitive changes, this intervention facilitates the expression of emotions and feelings through language and organizes beliefs. As such, herein, it played a more prominent role in adapting the patients to stressful events and improved their psychological and physical state, as well as interpersonal relationships.

## 5. Conclusion

Positive thinking training was, therefore, a more effective intervention than ACT in reducing the perceived stress of death in the target group. This training developed self-esteem, optimism, an expectation of positive outcomes, self-efficacy, positive feelings, and emotional discharge. Thus, compared to ACT, it further mitigated perceived stress through positive thinking about emotional experiences. By nourishing a positive attitude, this intervention further affected the perceived stress of the target group. Accordingly, positive skills training is a more effective intervention for mitigating perceived stress in women with breast cancer. Counseling and treatment clinics should pay further attention to this training owing to its greater effect on improving perceived stress in women with breast cancer. Workshops should be held to train this method to therapists in order to benefit the target group. It could be also recommended that clinics and hospitals examine the positive effects of positive thinking skills training and ACT on perceived stress of women with breast cancer and publish the results to raise these women's awareness.

## Ethical Approval

The study was approved by the Ethical Committee of Islamic Azad University- Bushehr Branch with the code of IR.IAU.AHVAZ.REC.1399.046. Also, written informed consent were obtained from the participants

**Conflict of Interest:** None declared.

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