



Effectiveness of Frederickson Positive Excitement Training on Resilience and Psychological Capital of Patients with Breast Cancer

Mehri Raoufi¹, Mohammad Reza Seyrafi^{1,2*}, Hasan Ahadi¹

¹ Department of Health Psychology, Kish International Branch, Islamic Azad University, Kish Island, Iran

² Department of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran

***Corresponding author:**

Mohammad Reza Seyrafi, Department of Health Psychology, Kish International Branch, Islamic Azad University, Kish Island, Iran; Department of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran
Email: mohamadreza.seirafi@kiau.ac.ir

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Abstract

Background and Objective: Chronic diseases, including cancer, affect the lives of millions of people as a major source of stress. However, Frederickson's positive emotions training can increase the resilience and psychological capital of these patients. This study aimed to determine the effect of Frederickson's positive emotion training program on the resilience and psychological capital of patients with breast cancer in Bandar Abbas, Iran.

Materials and Methods: This is a quasi-experimental study with a pre-test and post-test design and a control group conducted in Bandar Abbas in 2019. There were 15 women with breast cancer in each group of intervention and control, with the same severity and level of disease. The study instruments included the Luthans Psychological Capital Questionnaire (PCQ) and the Connor and Davidson Resilience Scale. The validity and reliability of these tools have been investigated in previous studies. Frederickson's Positive Emotions Training was held in nine sessions (90 min a month). Questionnaires were completed in the first and ninth stages of intervention. Data were analyzed using SPSS software (version 22) through descriptive statistics such as mean and standard deviation and inferential statistics by analysis of covariance.

Results: Based on the obtained results, Frederickson's positive emotion training program increased resilience ($\eta^2=0.82$, $P<0.001$) and the psychological capital ($\eta^2=0.77$, $P<0.001$) of patients with breast cancer.

Conclusions: It can be concluded that the positive emotion training program can improve the resilience and the psychological capital of patients with breast cancer. It is recommended that this program should be used to improve the psychological problems of cancer patients.

Keywords: Breast neoplasms, Psychological, Resilience

Background

Chronic diseases, including cancer, affect the lives of millions of people as a bitter reality and a major source of stress. Every year, more than 12 million people around the world are infected with a deadly disease, and more than seven million people die (20,000 people die from cancer every day). The World Health Organization estimates that by 2020 the number of cancer patients in the world will reach 15 million per year. Research shows that life-threatening illnesses in a family member can cause many changes in one's life. Millions of family members of patients who need healthcare suffer from a great deal of psychological and financial issues [1]. Although cancer has been known for thousands of years, and scientists have been researching it extensively for more than 50 years, no cure has been found yet for this deadly disease. Cancer can be partially treated and controlled only if diagnosed early [2].

Breast cancer is one of the most common cancers in women. No cancer is more worrying for women than breast cancer, as it affects one in eight women and causes more deaths than any other cancer. Breast cancer is the most common cause of death in women between the ages of 35 and 55 years [3]. Research shows that one-third of cancer patients suffer from some degree of mental health problems, such as anxiety or depression, which require psychological treatment. In the past, most symptoms of mental stress remained unknown and undetectable. Today, the body's natural response to cancer and its common psychological side effects are known and treated with appropriate medical or behavioral interventions. Patients with cancer often resort to psychological mechanisms such as distrust, denial, or frustration that often persist for a long time [4].

Almost all cancer patients suffer from the

psychological effects of their disease for a variety of reasons. Cancer causes a variety of physical, social, and psychological pressures, and may affect the patient's motivation to improve and work with the treatment group [5], mainly due to ever-present taboos on cancer. These taboos discourage a person from seeking specialist care despite the presence of symptoms, which may in turn reduce the resilience and psychological well-being of patients [6]. Health psychologists believe that cancer patients have psychological and emotional problems and experience more anxiety [7].

Psychological capital is another variable that is likely to be impaired in these patients due to learning about disabilities. Psychological capital is a positive psychological state of personal growth and development that has four characteristics: 1) having confidence in one's efforts and power to succeed and overcome difficult and challenging tasks, 2) having a positive and optimistic outlook to current and future success, 3) having perseverance towards one's goals and, if necessary, reviewing the goals to ensure of achieving the desired results, and 4) having flexibility in the face of difficulties to achieve success [8]. The four characteristics listed in the definition of psychological capital include self-efficacy, hope, resilience, and optimism which have been mentioned in various studies [9]. Efficacy is confidence in one's ability to equip one's motivational and cognitive resources, and hope is defined as a positive psychological state consisting of feeling energized to move in the direction of one's goals. Optimism, as a third component, can be defined as positive expectations of oneself and the world around, and resilience is the ability to be flexible, responsible, and persistent in the face of adversities, difficulties, and even positive life events [9].

Resilience is one of the most important human abilities that adapt one effectively to risk factors. Positive Psychology was developed in the late 1990s by Seligman, the father of positivist psychology, and focuses on one's strengths and abilities rather than one's weaknesses and shortcomings [10]. Resilience is defined as a form of development in which a person is able to cope with failures, calamities, conflicts in life, and even positive events with more responsibility to continue to achieve greater success [11]. The findings of Hijmadal et al. [11] pointed to the relationship between resilience and mental health. The results of the study conducted by Carr (2014) showed that high levels of resilience help a person use positive emotions and feelings to overcome unwanted experiences and return to the desired state. Emotion plays an important role in

various aspects of life, such as adaptation to changes and stressful events in life. Those who use adaptive emotion regulation strategies report less anxiety and depression, while those who use non-adaptive strategies are more likely to suffer from depression and adjustment problems, especially in the area of resilience [12,13].

The issue of emotion regulation is one of the possible problems faced by cancer patients. Emotion regulation is the process of adjusting oneself to one or more aspects of defined emotional experiences or responses [14]. Emotion regulation is an important factor in adaptive functioning, and the use of maladaptive strategies leads to negative outcomes, such as low psychological well-being and physical illness [15]. Emotional control involves the creation of thoughts and behaviors that inform people of the emotions they are experiencing and how to express them. Emotion regulation is further explored in two important contexts: 1) emotion regulation strategies before the accident that are activated before or at the onset of excitement and prevent intense excitement, and 2) strategies that are activated after the accident or after the onset of excitement and cannot prevent intense excitement [16].

Emotional adjustment strategies that are activated before a stressful event interpret the situation in a way that reduces the emotional response associated with that situation. Emotion management is an internal and external process responsible for controlling, evaluating, and altering emotional responses for achieving one's goals and overcoming difficulties in regulating one's emotions against mental disorders [17].

Emotion regulation training is a treatment approach that can affect the well-being, psychological capital, and emotional regulation of cancer patients. Emotional regulation and positive emotions include all conscious and unconscious strategies used to increase, maintain, and reduce the emotional, behavioral, and cognitive components of an emotional response, and refer to one's ability to understand, emotionally modify, and express emotions [18]. Research findings in recent years have shown the effectiveness of the socio-emotional aspects of learning [19], positive emotion development model [19], emotion regulation training [20], and psychoanalysis [21].

The theory of expansion and the creation of positive emotions was proposed in 1998 by Frederickson. This theory states that although specific positive objective emotions (happiness, interest, satisfaction, pride, and love) are cognitively distinct, they share the ability to expand one's

mental treasures and develop lasting individual resources. Individual resources include intellectual, physical, psychological, and social resources. This theory contradicts the traditional models based on specific action orientations. Tendencies of a particular action, triggered by negative emotions, limit a person's immediate thought-action treasury [21]. Positive emotions have a complementary effect through developing a treasure trove of people's current thoughts and actions and expanding the lines of thought and action. Happiness, for instance, creates playfulness and removes limitations, and creativity is manifested not only in one's physical and social behavior but also in intellectual and artistic behavior as well. Interest, as a positive and exponential emotion in terms of cognitive phenomena, stimulates the desire to gain new information and experiences. Appreciation, which is the fourth positive emotion, creates a desire to be creative and kind [22-23]. Given the link between the theory of development and construction and the components of mental health, it seems that an intervention program designed based on the theory of development and construction is effective in promoting the psychological well-being, psychological capital, and resilience of patients with breast cancer.

Objectives

This study aimed to determine the effect of Frederickson's positive emotion training program on the resilience and psychological capital of patients with breast cancer in Bandar Abbas, Iran.

Materials and Methods

This experimental study has a pre-test and post-test design and a control group. The statistical population consisted of all women with breast cancer at Shahid Mohammadi Hospital in Bandar Abbas, Iran. The study samples included 30 women who were randomly selected based on their age, the severity of the disease, being in a similar stage of the disease, marital status, and level of education. The women were divided into equal-sized groups of intervention ($n=15$) and control ($n=15$). The minimum sample size to achieve the desired power was 15 in each group and 30 in total, which was determined based on the effect size of 0.25, $\alpha=0.05$, and $\text{power}=0.80$ in the two groups. Inclusion criteria were giving informed consent, ability to attend group therapy sessions, no history of chronic physical illness, the age range of 35- 55 years, non-participation in psychological training classes at the same time, and being in stage 2 breast cancer. However, those who were absent in more

than two therapy sessions were excluded from the study. The study protocol was proved by the Ethics Committee of Hormozgan University of Medical Sciences, Bandar Abbas, Iran (IR.HUMS.REC. 1399.104).

In the present study, Connor-Davidson Resilience Scale and Luthans Psychological Capital Questionnaire (PCQ) were used to collect data. Connor and Davidson's resilience scale consists of 24 items and five subscales, including individual competence, trust in individual instincts, control, and tolerance of negative emotions [24]. This questionnaire was conducted on 248 people at risk of substance abuse in the Fars province of Iran, with a reliability of 0.87. The reliability of this scale has been reported to be 0.89 in the previous studies conducted in Iran, which is considered acceptable.

The Luthans PCQ has 24 items and four subscales, including hope, optimism, resilience, and self-efficacy. In the study conducted by Rad et al. [25], the reliability of this questionnaire based on Cronbach's alpha was reported to be 85%.

A license was obtained from the Vice Chancellor for Research of Hormozgan University of Medical Sciences before the start of the study. The necessary permission was then obtained from the head of the Oncology and Class Affairs Department located in Shahid Mohammadi Hospital in Bandar Abbas. Finally, the patients were selected through the available sampling method, and the training classes were held in groups to educate the Fredrickson positive emotions program, subsequently. The duration of each session was 90 min. Sessions were held in November 2019, monthly, and two sessions per week, on Mondays and Wednesdays (one session in the last week on Thursday).

In the first session, which was partly dedicated to introducing and knowing group members, patients were taught how to actively participate in the learning process. Finally, Connor and Davidson's Resilience Scale and Luthans' Psychological Capital Scale were provided to patients and collected after completion. In the ninth session (the final session), Luthans's Psychological Capital Questionnaire and the Convergence Scale of Connor and Davidson were distributed and completed by patients. The interval between the two tests was one month (due to the length of the group therapy sessions). The obtained data were then analyzed through the ANCOVA method. The summaries of Frederickson's Positive Emotions Training Program meetings are presented in Table 1.

Table 1. Positive Emotions reagent

Emotional tag	Evaluation thread	Desire for thought-action	Obtained resources	Central concepts
Joy	Nikki Safe, familiar, overloaded	Playing, getting busy	Skills earned through experiential learning	Happy, happy
Appreciation	Get a gift or a benefit	Creating willingness to be social	Skills to show care, loyalty, and social links	Appreciation
Relaxation	Low, safe, familiar effort	Understand and merge	New assets, new perspectives	Peaceful, happy, or peaceful atmosphere
Interest	Safe, new	Explore, learn	Knowledge	Interested, sober, or inquisitive
Hope	Ready for the worst, wish for the best	Planning for a better Future	Flexibility, optimism	Hopeful, optimistic, or aroused
Honor	Valuable social improvement	Big dreams	Motivation for achievement	Proud, secure, or possessing self-gain
Entertainment and laughter	Social, Non-serious	Shared Jamboree, Laugh	Social links	Entertained, funny, or silly
Inspiration	Giving certificate to human excellence	Trying to move toward higher goals	Motivation for individual growth	Inspired, sublime, or excellent
Shock	Facing beauty or grace at a large scale	Absorb or match build	World of new noses	Shocked, surprised, confused
Love	Each/all of the above in an interpersonal relationship	Each/ all of the above, along with mutual care	Each/ all of the above, especially social links	Love, intimacy, or trust

Data were analyzed using SPSS software (version 22) through descriptive statistics such as mean and standard deviation and inferential statistics by ANCOVA.

Results

The mean±SD age of patients in the experimental and control groups were 35.8±7.9 and 35.1±6.7 years, respectively. Therefore, there was no significant difference between the study groups in terms of age. The following tables represent mean and standard deviation values of resilience and psychological capital variables in the pre-test and post-test stages in the experimental and control groups. The results of ANCOVA confirmed the assumption of data normality through Shapiro-Wilk and Kolmogorov-Smirnov tests (P<0.05). In addition, the equality and mean assumptions in the pre-test stage were approved as well (P<0.05). The assumption of homogeneity of variances was

confirmed during the study (P<0.05). Furthermore, there was a significant difference between the pre-test and post-test stages in terms of the assumption of linearity (P<0.05).

As observed above, the pre-test effect is significant. A significant difference was observed between the control and experimental groups in the absence of the pretest effect. Considering the mean values, it can be concluded that positive emotions training has a significant effect on one’s resilience and psychological capital. The results obtained from descriptive findings show that the mean values obtained for resilience and psychological capital variables were higher in the post-test in the experimental group compared to controls.

Table 2. Mean and standard deviation of resilience and psychological capital in pre and post-test stages of the study

Variables	Groups	Pretest		Posttest	
		Mean	SD	Mean	SD
Resilience	Control	57.07	6.79	58.67	6.99
	Experimental	58.48	6.26	71.30	9.81
Psychological capital	Control	87.97	8.72	88.60	8.84
	Experimental	88.24	9.06	96.73	11.70

Table 3. Covariance analysis related to positive excitement training on resilience and psychological capital

Variables	Source of changes	Sum squares	Df	Mean squares	F	Eta Square (η ²)	P-value
Resilience	Pre-test	2010.550	1	2010.550	57.864	0.50	0.0001
	Group	1054.04	1	1054.04	199.71	0.82	0.001
	Error	1980.517	27	34.746	-	-	-
Psychological capital	Pre-test	526.369	1	526.369	21.793	0.27	0.0001
	Group	1109.5	1	1109.5	144.06	0.77	0.001
	Error	1376.698	27	24.153	-	-	-

Discussion

This study aimed to evaluate the effectiveness of Frederickson’s positive emotion training program on the resilience and psychological capital of patients with breast cancer. Therefore, in this study, treatment was performed in nine sessions (each

session 90 min), according to the scientific guideline of Frederickson’s positive emotions training program. The results showed that Frederickson’s positive emotion training and psycho-based training intervention had a significant effect on the resilience and psychological capital of patients with breast

cancer. Persistent individual resources in a reciprocal framework enhance positive emotions. This interaction in the later stages forms an upward spiral that leads to higher levels of psychological health [26]. The results of this study were in line with previous studies [27-28] that demonstrated the positive effect of this training on the well-being and various dimensions of one's mental health.

In explaining the findings of this study, it can be said that psychological capital includes the components that support people to achieve their goals. Having a flaw in this regard will disrupt success. Due to their special status, breast cancer patients may receive unpleasant feedback from others, and the repetition of this condition, along with their self-assessment and observation of adverse outcomes, puts them on a regression path in terms of psychological capital [29]. Over time, they will lose the power to deal with problems and their resilience will decline. They also have no hope for the future and will be less enthusiastic about their goals, and their self-efficacy will decline [30]. The positive emotion training program is a regular program based on Frederickson's model for developing and building positive emotions and has a significant impact on raising patients' psychological capital. One of the first indicators of psychological capital is hope. One of the components of Frederickson's positive emotion training program is hope which is created by gaining a sense of optimism and resilience to problems [31]. In the explanations of these results, it can be said that teaching positive emotions based on Frederickson's model of creating positive emotions leads to building lasting individual resources by creating positive emotions and accumulating them over time. Persistent individual resources in a reciprocal framework lead to an increase in positive emotions. This interaction in the later stages forms an upward spiral that leads to higher levels of psychological health [32]. In fact, positive emotions reinforce a person's path to positive development, and repeated experience of these emotions leads to optimal performance [33]. Positive emotions lead to a tendency for people to engage in positive and healthy behavior. When these behaviors are performed and have positive results, they create satisfaction and motivate the person to repeat the behaviors. In the long run, this cycle can divert a person from the behaviors that can threaten optimal performance.

The positive emotions training program can create conditions that affect one's interpretation of the current situation and improve what seems to be an unchangeable climate of disability and unreasonable expectations. Some of these positive emotions (e.g.,

happiness), which have a corresponding counterpart in psychological well-being, can play a greater role in improving this structure. One of the elements of a positive emotions training program is happiness, that when learned, helps people have fun and leads to other joyful behaviors and a lasting source of happiness [34]. In general, all emotions create a path to mental well-being directly or through some connections. According to Frederickson, positive, albeit fleeting emotions, accumulate over time as individuals accumulate new experiences. Just as the experience of positive emotions predicts increases in individual resources, individual resources can predict the side effects of increases in positive emotions. This interaction reflects the upward spiral, which in turn leads to higher levels of well-being and performance over time [35].

In general, a positive emotion training program reduces depression, increases happiness and psychological well-being by increasing positive emotions, positive thoughts, and behaviors, and leads to satisfaction of basic psychological needs, including autonomy, communication, and belonging [36]. In light of this intervention, working women accept the existing conditions and focus on the positive aspects of their capabilities and success rather than on the negative aspects and feelings of shame and guilt. Eventually, they become resilient, hardworking, self-respecting, self-reliant, enterprising, focused, motivated, and self-confident individuals, who can overcome negative emotions [37].

Regarding the limitations of this study, one can refer to the fact that this study was performed only on women with breast cancer in Bandar Abbas; therefore, the results should be carefully generalized to this group of patients in other cities. According to the results of the study, it is recommended that women with breast cancer be referred to medical centers to receive group expansion sessions and develop positive emotions in order to increase their resilience and psychological capital.

Conclusions

Based on the obtained results, it can be concluded that the positive emotion program training can improve resilience and the psychological capital of patients with breast cancer. Therefore, it is recommended to use positive emotion regulation to improve the psychological well-being of cancer patients.

Compliance with ethical guidelines

All ethical principles were observed in this study. The participants were informed about the study objective and procedure. Informed consent was obtained from the participants. They were also ensured of the confidentiality of their information. Moreover, the participants were free to withdraw from the study at any time. They were also informed

that they would be provided with the results of the present study.

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Authors' contributions

M. R. conceptualized the study, performed the investigation, and wrote the original draft. M. S. contributed in Methodology. H. A. supervised the study. All authors contributed in writing, reviewing, and editing the final manuscript, as well as funding and resource acquisition.

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Conflicts of Interest

The authors declare that they have no conflict of interest regarding the publication of the present study.

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