

# The effectiveness of resilience training on anxiety, depression, stress, life expectancy and psychological well-being of women with breast cancer

*Efectividad del entrenamiento de resiliencia sobre la ansiedad, la depresión, el estrés, la esperanza de vida y el bienestar psicológico de mujeres con cáncer de mama*

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## Abstract

**Introduction and objective:** Breast cancer accounts for about one-third of all female cancers, as breast cancer is the most common cancer in women and the second leading cause of cancer-induced death among women. The present study aimed to evaluate the effectiveness of resilience training on anxiety, depression, psychological well-being, and life expectancy of women with breast cancer in Isfahan, Iran.

**Methods:** The present study was an experimental research with a pretest-posttest design. The population of the present study included all women with cancer who had medical records in clinics in Isfahan. Using random sampling, 30 women were selected and assigned to two groups (15 in the experimental group and 15 in the control group). After completing the questionnaires in the pretest stage, resilience training was held in 12 one-hour sessions for the experimental group. After 12 sessions, the posttest was held in the experimental and control groups. The first instrument was the Ryff Psychological Well-being Scale-Short form with a reliability of 0.73 and the second instrument was the Snyder Life expectancy Scale with acceptable reliability and the

third instrument was Depression, Anxiety, and Stress Scale (DASS) developed by Lovibond in 1995. The reliability was reported at 0.94 for the subscale of depression, 0.85 for anxiety, and 0.87 for stress. Data analysis was performed by analysis of covariance.

**Results:** Resilience training reduced anxiety symptoms ( $F = 44.20$ ), depression ( $F = 28.73$ ) and stress ( $F = 76.04$ ) in the experimental group women in the posttest stage ( $P = 0.001$ ) and increased life expectancy significantly ( $F = 17.18$ ) ( $p = 0.001$ ) and resilience treatment had no significant effect on the psychological well-being of women with breast cancer ( $p = 0.51$ ).

**Conclusion:** Psychological treatments such as resilience training in hospitals and clinics can reduce the symptoms of anxiety, stress, and depression in women with breast cancer and increase their life expectancy.

**Keywords:** Breast Cancer, Resilience, Anxiety, Depression, Stress, Life expectancy, Psychological well-being

**Introducción y objetivo:** El cáncer de mama representa alrededor de un tercio de todos los cánceres femeninos, ya que el cáncer de mama es el cáncer más común en las mujeres y la segunda causa principal de muerte inducida por cáncer entre las mujeres. El presente estudio tuvo como objetivo evaluar la efectividad del entrenamiento de resiliencia sobre la ansiedad, la depresión, el bienestar psicológico y la esperanza de vida de mujeres con cáncer de mama en Isfahan, Iran.

**Métodos:** El presente estudio fue una investigación experimental con diseño pretest-postest. La población del presente estudio incluyó a todas las mujeres con cáncer que tenían un registro médico en clínicas en Isfahan. Se utilizó un muestreo aleatorio, se seleccionaron 30 mujeres y se asignaron a dos grupos (15 en el grupo experimental y 15 al grupo de control). Después de completar los cuestionarios en la etapa de pretest, se realizó un entrenamiento de resiliencia en 12 sesiones de una hora para el grupo experimental. Después de 12 sesiones, se realizó postest en los grupos experimental y control. El primer instrumento fue la Escala de Bienestar Psicológico de Ryff-Forma Corta con una confiabilidad de 0,73 y el segundo instrumento fue la Escala de Esperanza de Vida de Snyder con una confiabilidad aceptable y el tercer instrumento fue la Escala de Depresión, Ansiedad y Estrés (DASS) desarrollado por Lovibond en 1995. La confiabilidad de se informó en 0,94 para la subescala de depresión, 0,85 para la ansiedad y 0,87 para el estrés. El análisis de datos se realizó mediante análisis de covarianza.

**Resultados:** El entrenamiento de resistencia redujo los síntomas de ansiedad ( $F = 44,20$ ), depresión ( $F=28,73$ ) y estrés ( $F=76,04$ ) en el grupo experimental de mujeres en etapa postest ( $P=0,001$ ) y aumentó significativamente la esperanza de vida ( $F=17,18$ ) ( $p=0,001$ ) y el tratamiento de resiliencia no tuvo un efecto significativo sobre el bienestar psicológico de las mujeres con cáncer de mama ( $p = 0,51$ ).

**Conclusión:** Los tratamientos psicológicos como el entrenamiento en resiliencia en hospitales y clínicas pueden reducir los síntomas de ansiedad, estrés y depresión en mujeres con cáncer de mama y aumentar su esperanza de vida.

**Palabras clave:** Cáncer de mama, Ansiedad, Depresión, Estrés, Esperanza de vida, Bienestar psicológico.

**K**nowing about cancer is a worrying experience for everyone. In other words, with gaining knowledge of having a malignant and life-threatening disease, people's perception of life will change<sup>1,2</sup>. Several studies have shown that there is a close association between cancer and psychological states. Thus, mental health, psychological well-being, life expectancy, and other psychological components are endangered in people with cancer. Although the diagnosis of cancer does not mean imminent death, many studies in Western countries and some Asian countries have shown that such a diagnosis causes major emotional problems in the patient and his or her family<sup>3,4</sup>. Among the reasons for these problems are the implications of this diagnosis in the mind of the patient and his or her family, such as the possibility of deformity, pain, financial and social losses, dependency, disruption of family structure, and death in patients' lives<sup>5</sup>.

Studies have indicated that between 50 and 85% of cancer patients suffer from a psychiatric disorder<sup>6</sup>. Based on the studies, the most common psychiatric disorder in these patients is adjustment disorder with emotional subgroups such as adjustment disorder along with anxiety, depression, and with anxiety and depression. The second most common psychiatric diagnosis in these patients was major depression disorder<sup>7</sup>. The two main complaints of patients with cancer are depression and anxiety<sup>8</sup>. Most researchers use the term "resilience" for high-risk and adverse conditions, which refers to a person's ability to create a bio-psychological balance in a dangerous situation, in which the person becomes aware of his or her situation and identifies his or her emotions and improve his or her social ability and overcome problems despite exposure to severe pressures. For this reason, resilience training helps people with cancer to adapt to the situation and reduce their anxiety<sup>9</sup>. Given what was stated and the importance of the subject of the present study, the following hypothesis was tested: Resilience training affects anxiety, depression, stress, psychological well-being, and life expectancy of women with breast cancer.

The population of the present study included all women with breast cancer who had medical records in clinics related to the treatment of the disease in Isfahan in 2015. The sample of the present study was determined at 123 people based on Morgan and Krejcie table. Thirty of them were randomly selected from the population and were assigned to one of the experimental (15 people) and the control (15 people) groups. Then, a briefing session was held on the subject and objective of the research, and pretest questionnaires were distributed among the subjects. The experimental group received 12 one-hour resilience training sessions and the control group did not receive any treatment or intervention. Then, both groups completed posttest questionnaires and submitted them to the researchers. All process of this study has been supervised and approved by the ethical committee of Islamic Azad University, Isfahan

### Research instruments

#### Ryff 18-item Psychological Well-being Scale-Short Form

Ryff and Keyes<sup>10</sup>, designed an instrument to assess six aspects of psychological well-being. The main form has 120 questions. In later studies, the shorter 84-item, 54-item, and 18-item versions were also suggested. Ryff et al. linked well-being components to indicators of physical and emotional health. The theoretical dimensions of positive psychological well-being in Ryff and Keyes's perspective include independence, environmental mastery, personal growth, positive relationships with others, purpose in life, and self-acceptance. The short form of the Ryff Psychological Well-being Questionnaire has 18 questions and includes six dimensions to measure these six dimensions (three questions for each dimension). The subject is asked to read the questions and choose one of the six options ranging from strongly disagree to strongly agree. Subjects answer questions on a 6-point scale from strongly disagree to strongly agree.

Some questions are scored directly, and some are in reverse. In questions that are scored directly, the answer of strongly disagree receives a score of 1, slightly disagree receives a score of 2, somewhat disagree receives a score of 3, slightly agree receives a score of 4, somewhat agree receives a score of 5, and strongly agree receives a score of 6. A higher score indicates better psychological well-being. In this scale, to determine the scores of each subscale, the scores of their questions are summed and the total score of the questionnaire is obtained by the sum of the scores of the total questions of all subscales. Questions 2, 8, and 10 are the factors of self-acceptance (positive attitude towards oneself and acceptance of different aspects such as good and bad characteristics and positive feelings about the past life).

Questions 1, 4, and 6 assess the factor of environmental mastery (sense of mastery of environment and control of external activities, and effective use of opportunities). Questions 3, 11, and 13 assess the positive relationship with others (feeling satisfied and intimacy with the relationship with others and understanding the importance of these dependencies). Questions 5, 14, and 16 assess purpose in life (believing that his or her past and present life is meaningful). Questions 7, 15, and 17 assess individual growth (feeling of sustainable growth and gaining new experiences as a potentially talented being). Questions 9, 12, and 18 assess independence (feeling of independence and influence in life events and active role in behaviors). Questions 3, 4, 5, 9, 10, 13, 16, and 17 are scored in reverse and the rest is scored directly.

#### Snyder Hope Scale (12 questions)

The Snyder Hope Scale, based on Snyder's theory of hope, evaluates hope as a relatively constant personality trait<sup>7,10,12</sup>. This scale applies to all people, including the mentally ill people<sup>11</sup> and people aged 15 years and older<sup>12</sup>. To measure the two main factors of the scale, initially, 45 items were designed by Domain and Domain<sup>13</sup> and were used in the sample of students with a 4-point Likert from completely incorrect to completely correct and the correlation of all items was calculated. Finally, 14 items remained that correlated with 0.2. Among the items, 4 items that had the most correlation with agent thinking, and 4 other items that had the highest correlation with paths were isolated and calculated. The internal items of each factor showed a correlation between 0.57 and 0.38 (coordination of the questions of this scale with Snyder's theory shows its good content validity<sup>11</sup>). In concurrent validity, a positive correlation was found between optimism and self-esteem, and a negative correlation was found between hopelessness and depression<sup>13</sup>. In concurrent validity, Snyder et al.<sup>14</sup> reported a correlation of this scale with the Beck Depression Inventory at -0.44.<sup>12</sup> A significant positive correlation was found between this scale and positive emotion, optimism, life satisfaction, and self-esteem and a significant negative correlation with anxiety and pessimism were obtained<sup>15</sup>.

Snyder et al.<sup>14</sup> calculated its reliability with Cronbach's alpha and the reliability coefficient at 0.84 - 0.74, respectively<sup>10</sup>. To determine the cut-off point of this scale, percentage rank and T-score were used. It is a 12-item scale scored on an 8-point Likert from strongly disagree= score 1 to strongly agree= score 8. The subscale of agent thinking consists of four questions of 2, 9, 10, and 12, the subscale of paths includes four questions of 1, 4, 7, 8 and 4 questions 3, 5, 6, and 11 are deviant questions<sup>11,16</sup>. The scoring of deviant questions (1, 5, 7, and 11), which is to increase the accuracy of the test, is removed<sup>17</sup>, so the range of scores is between 8 and 64. The lowest score is 8 and the highest score is 64.

#### Depression, anxiety, stress scale-short form (DASS 21)

This questionnaire was developed by Lovibond and Lovibond in 1995<sup>17</sup> and has two short and long forms. The short form

has 21 terms that evaluate each of the psychological structures of "depression", "anxiety", and "stress" by 7 different items. The questions are scored with 4 options in the self-assessment form. The range of answers varies from never to always. The short form of this questionnaire was validated by Sahebi et al. (2005) for the Iranian population. The alpha coefficient calculated is 0.94 for the depression scale, 0.85 for anxiety, and 0.87 for stress. The questionnaire has relatively good validity and acceptable reliability. Each question is scored from zero (It is not true for me at all) to 3 (It is true for me completely). Since the DASS-21 scale is the short form of the original scale (42 questions), the score of each subscale should be doubled. Then, the severity of the symptoms can be determined by referring to (Table 1).

Depression includes the following questions:  
3, 5, 10, 13, 16, 17, 21

Anxiety includes the following questions:  
2, 4, 7, 9, 15, 19, 20

Stress includes the following questions:  
1, 6, 8, 11, 12, 14, 18

**Table 1. The severity of each subscale**

Severity	Depression	Anxiety	Stress
Normal	9-0	7-0	14 - 0
Weak	13-10	9=8	18 =15
Moderate	20-14	14 -10	25 - 19
Severe	27=21	19 - 15	33 -26
Very severe	+28	+20	+33

### Procedure

Resilience training intervention sessions were held for the experimental group, while the control group did not receive any intervention. The training program was implemented in 12 sessions of 1 hour, as shown in the following (Table 2).

**Table 2. Resilience sessions**

Row	Title	Topic
Session 1	Familiarity	Communicating with audiences and familiarizing them with resilience
Session 2	Self-awareness	Awareness of own abilities
Session 3	Value	Strengthening self-esteem
Session 4	effective communication	Improving people's ability to communicate
Session 5	relationship seeking	Establishing social relationships and making friends
Session 6	Foresight	Determining the goal and the ways to achieve it
Session 7	Efficacy	Decision making
Session 8	Efficacy	Problem-solving
Session 9	Efficacy	Responsibility
Session 10	Emotion control	Management of anger, anxiety, stress
Session 11	Meaning	Developing a sense of spirituality and faith
Session 12	Increasing awareness	Informing about the cancer disease

## Results

This training package is prepared for 12 sessions. This package was performed on the subjects in the experimental group twice a week during 12 sessions of 1 hour. Then, the post-test was taken from both groups and the results were statistically analyzed.

Table 3 shows the frequency distribution of subjects' education level and grouping and age information.

33.3% of the subjects had under diplomas, 40% had diplomas and associate, 20% had bachelor's level of education and 6.7% did not report their level of education. In other words, most of the subjects had a diploma and associate level of education. Table 3 shows the mean and standard deviation of the age of the subjects. The mean age of the subjects in the sample group was 48.10 years and their standard deviation was 10.05. The youngest member of the sample group was 30 years old and the oldest was 78 years old.

**Table 3. Frequency distribution of education level and grouping and age information of the subjects**

Variables and their levels		f	%			
Level of education	Under diploma	10	3.33			
	Diploma and associate	12	40			
	Bachelor	6	20			
	Not reported	2	7.6			
Group membership	Experimental group	15	50			
	Control group	15	50			
Index	mean	SD	min	max	skewness	kurtosis
Age	10.48	10.05	30	78	60.0	74.1

Levene's test was used in this study. Table 4 shows the results of Levene's test to evaluate the hypothesis of equality of variance.

**Table 4. Levene's test results for equality of variances**

index		F	Df1	Df2	sig
Anxiety	pretest	80.0	1	28	37.0
	posttest	19.5	1	28	030.0
Depression	pretest	25.0	1	28	61.0
	posttest	62.3	1	28	067.0
Stress	pretest	36.0	1	28	55.0
	posttest	17.3	1	28	085.0
Life expectancy	pretest	45.0	1	28	50.0
	posttest	32.2	1	2	13.0
Psychological well-being	pretest	30.0	1	28	58.0
	posttest	029.0	1	28	86.0

As shown in Table 5, the f-value is not significant in the variables. Thus, it can be said that the variance of the scores of the two groups in the research population is equal and there is no statistically significant difference between them.

**Table 5. Box' M test for equality of covariances**

Box' M value	82.15
f-value	84.0
Df1	15
Df2	63.3156
sig	62.0

As shown in Table 6, the f-value is not significant in the variables. Thus, it can be said that the covariances are equal and there is no statistically significant difference between them.

The results of Table 7 show that the difference between the means of the two groups in the post-test stage and by controlling the scores of the pretest stage (except in the psychological well-being scale) is significant. Since the level of significance in the analysis of covariance was less than 0.05, it can be said that the difference between the two

groups was significant. Also, the statistical power obtained in this group is close to 1, so the sample group has an adequate volume.

In other words, the results of the analysis of covariance showed that resilience training was effective on anxiety, depression, stress, and life expectancy ( $p < 0.05$ ), and the scores of subjects who received this treatment changed in the post-test stage. Thus, the research hypothesis is confirmed in all variables except psychological well-being Table 8.

**Table 6. Results of analysis of covariance between experimental and control groups after controlling pretest scores**

index		Sum of squares	df	Mean of squares	F	sig	Eta	Statistical power
Anxiety	Group	69.447	1	69.447	59.54	001.0	70.0	1
	pretest	08.13	1	08.13	59.1	21.0	065.0	22.0
Depression	Group	68.293	1	68.293	06.33	001.0	59.0	1
	pretest	54.14	1	54.14	63.1	21.0	066.0	23.0
Stress	Group	79.407	1	79.407	85.64	001.0	73.0	1
	pretest	96.30	1	96.30	92.4	037.0	17.0	56.0
Life expectancy	Group	54.837	1	54.837	92.9	004.0	30.0	85.0
	pretest	89.1137	1	89.1137	48.13	001.0	37.0	94.0
Psychological well-being	Group	20.0	1	20.0	006.0	94.0	001.0	051.0
	pretest	43.33	1	43.33	91.0	34.0	038.0	15.0

**Table 7. Estimated means after pretest control**

index	group	mean	SD	With a 0.95 confidence interval	
				min	max
Anxiety	control	85.19	80.0	20.18	51.21
	experimental	87.10	80.0	21.9	53.12
Depression	control	47.18	83.0	74.16	19.20
	experimental	19.11	83.0	46.9	92.12
Stress	control	62.19	70.0	16.18	07.21
	experimental	04.11	70.0	59.9	49.12
Life expectancy	control	55.56	57.2	23.51	87.61
	experimental	84.68	57.2	52.63	16.74
Psychological well-being	control	13.62	69.1	63.58	64.65
	experimental	32.62	69.1	82.58	83.65

**Table 8. Results of Wilks lambda analysis of two experimental and control groups after controlling pretest scores**

Statistic	F	df	Df error	sig	Eta value	Statistical power
18.0	27.17	5	19	001.0	82.0	1

The present study aimed to investigate the effect of resilience training on anxiety, depression, stress, psychological well-being, and life expectancy of women with breast cancer. In this regard, a general hypothesis was developed. The showed that resilience training was effective in anxiety, depression, stress, psychological well-being, and life expectancy of women with breast cancer. Resilience training has a significant effect on reducing anxiety symptoms in women with breast cancer. The results of the analysis of covariance showed that resilience training has a significant effect on anxiety in women with breast cancer. The results are in line with those of studies conducted by Samani et al.<sup>18</sup> and Loprinzi et al.<sup>19</sup>, who in their research indicated that resilience training reduced the symptoms of anxiety and subsequently increased psychological well-being. Breast cancer is an issue that causes a high level of anxiety and worries for the person in his or her family. Coping with physical pain, the anxiety of chemotherapy, mood swings, and changes in living conditions cause high levels of anxiety for the patient and his or her family. Resilience training develops capabilities such as positive thinking, the ability to adapt to difficult situations, and using the help and support of others.

People who can manage their emotions when they have problems and use the support of others to experience will have less anxiety than other people. Garmezy and Masten<sup>20</sup> defined resilience as a process, ability, or outcome of successful adaptation to threatening conditions. In other words, resilience is a positive adaptation in response to adverse conditions<sup>21</sup>. It is believed that resilience is a kind of self-reconstruction with positive emotional, emotional, and cognitive outcomes<sup>20</sup>.

Based on Friberg et al.<sup>22</sup>, resilient individuals are more resilient to traumatic conditions and protect themselves against them. For this reason, resilience training helped people with cancer to adapt to the situation and reduce their anxiety. During the treatment sessions, patients were instructed to look at the other side of the cancer coin, identify their emotions at every moment, and control their anxiety by using techniques such as optimism, expression of emotions, and so on.

In other words, resilience training allowed the women in the experimental group to adapt to the created conditions<sup>23,24</sup>. For this reason, the level of anxiety in the experimental group was reduced compared to the control group. In the post-test stage, the scores of anxiety, depression, and stress of the control group that had not received any training increased, and their life expectancy and psychological well-being scores decreased. It seems that since the patients were not interviewed, this increase in score could be explained by the progression of their disease, the experience of more physical pain in the process of chemotherapy, or other events in their lives. However, it is believed that the hospital setting

can cause anxiety, stress, and depression. Hence, it seems that due to frequent referring to medical centers, the level of these variables changed, especially since these patients had not received any training or psychological treatment. In resilience training, women with cancer are taught to value themselves, resulting in reduced reproaches that are often seen in these people.

After receiving a diagnosis of cancer, these women sometimes restrict many of their relationships, have less sex, and sometimes have problems with their spouse and children, which in turn leads to depression. The resilience training focused on friendships and interpersonal relationships, and these women were taught to rebuild their relationships and use the social support of others. Teaching positive thinking, seeing the positive points of life, being in the present moment, etc. have also led to a reduction in depression in these women. Accordingly, the use of psychological therapies, such as resilience training, in hospitals and clinics can reduce the symptoms of anxiety, stress, and depression in women with breast cancer and increase their life expectancy. However, since this study was conducted only among women with breast cancer in Isfahan, the results cannot be generalized to other patients and other cities.

## Conclusions

Given the results,—it can be stated that people who do not have good psychological well-being may get cancer and lack life skills such as positive expression of emotions, ability to say no, frequent self-deprecation, lack of sufficient self-confidence, and the consequent avoidance of many important social situations all lead to an increase in failure and negative emotions in the person, which guide the person to an incorrect lifestyle and finally cancer. Hence, during resilience training, people learn to change their lifestyle positively and adapt to the conditions created, to maintain their humor, resulting in increased psychological well-being. We hope that training these patients to be effective in acquiring resilience skills in promoting the health of clients and be used by policymakers and planners in the country.

## Recommendations

Due to the significant effect of resilience on the variables of anxiety, depression, stress, psychological well-being, and life expectancy in women with cancer, the following recommendations are presented for further studies:

It is recommended to add the follow-up step to the evaluation process to assess the sustainability of the training effect.

The research is recommended to be repeated in different regions of the province or country and the results should be compared in different social and economic groups.

It is recommended to train the first-degree family members, especially the husbands of women with breast cancer, and to compare the results.

It is recommended to select a larger research sample to obtain more accurate results.

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