The Efficacy of Positive Psychology on Hope, Self-Compassion, and Post-Traumatic Growth in Women with Breast Cancer

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Quantitative Study

Abstract

Background: Breast cancer is the most common cancer in women and can cause various psychological issues for those with it. The current study aimed to determine the efficacy of positive psychology in improving hope, self-compassion, and post-traumatic growth in patients with breast cancer.

Methods: The current study used a quasi-experimental research with a pre-test, post-test, and follow-up design. The statistical population included 483 women with breast cancer diagnosis referred to King Abdullah Medical City Hospital in Makkah Region, Saudi Arabia, in 2021. One hundred patients were chosen using a simple random sampling method and assigned to intervention and control groups (50 people in each group). Members of the intervention group received positive psychology training. At various stages of the test, Snyder Hope Scale (1996), Neff Self-Compassion Scale (2003), and Tedeschi and Calhoun Post-Traumatic Growth Inventory (1996) were used. The data were analyzed using the mixed analysis of variance (ANOVA) test in SPSS software.

Results: Positive psychology-based intervention effectively improved hope (F = 17.94, P = 0.002), self-compassion (F = 10.41, P = 0.003), and post-traumatic growth (F = 35.23, P = 0.001) in women with breast cancer.

Conclusion: Positive psychology provides patients with breast cancer with a compassionate and hopeful understanding of the disturbances affecting their quality of life, allowing them to consciously accept their feelings and thoughts.

Keywords: Breast cancer; Positive psychology; Hope; Self-compassion; Post-traumatic growth

Introduction

Cancer is a disease that affects an increasing number of people and necessitates extensive medical attention. Ongoing research has shown that cancer is a global problem affecting not just developed countries (Faryabi, Rafieipour, Haji-Alizadeh, & Khodavardian, 2021). Breast cancer is the most common cancer in women in developed countries, even though the mortality rate in developed countries is higher than in semi-industrialized countries. It is one of the most common cancers in women and one of the leading causes of death in women around the world (Lotfi-Kashani, Fallahi, Akbari, Mansour-Moshtaghi, & Abdollahi, 2018). Aside from the fear and stress of cancer recurrence and reactivation, or the spread of cancer to other parts of the body, surgery and mastectomy have numerous psychological consequences. Most patients with cancer suffer from anxiety and depression, among the most common mental disorders. Major depressive disorder is the second most common psychiatric diagnosis in these patients (Goli, Scheidt, Gholamrezaei, & Farzanegan, 2021). Depression and anxiety reduce patients' energy and interest in continuing treatment, quality of life, interpersonal relationships and perception of health and physical symptoms. These mental illnesses are partly caused by fear of the disease and uncertainty about its treatment. Breast cancer can challenge patients' core beliefs about their invulnerability, safety, and worth, leading to depression, tension, body image issues, and physical symptoms (Shi, Shi, Liu, & Cai, 2021).

Breast cancer is more common in depressed women than in fit women. Because cancer resistance is dependent on immune system resistance, it appears that stressors weaken this system and cause disease (Porro, Broc, Baguet-Marin, & Cousson-Gelie, 2022). Breast cancer and its treatment will cause numerous physical and mental issues. It is the most common cancer in women and is one of the most serious threats to women's physical and psychological health. Breast cancer is the fifth leading cause of death in women with cancer, with a mortality rate of four out of every 100000 people, and it is the third most common cancer in women among all cancers. Breast cancer has a greater emotional and psychological impact on women than other cancers. It is also a stressful situation for women and affects more than one million women worldwide (Michalczyk, Dmochowska, Aftyka, & Milanowska, 2022).

Because of the increasing prevalence of breast cancer in recent decades and its negative effects on all physical, emotional, psychological, social, and economic dimensions, specialists' attention is increasingly focused on this disease. Patients with cancer face a wide range of physical, psychological, and social issues, with clinical depression being the most common mental disorder. Numerous cancer studies have suggested that depression is a significant risk factor. Depression is a crippling disorder that costs the individual and society dearly due to its widespread prevalence, relatively chronic course, and dysfunction of work and interpersonal relationships, which cause severe economic and human harm. These patients' most common causes of depression are illness-related pain, decreased social activities, and disability (Fujimoto & Okamura, 2021). Because it requires surrender to the disease, depression is extremely harmful to patients with cancer. Depression can manifest itself in various ways, including pessimism about the future, low self-esteem, and feelings of worthlessness and inadequacy. Hope increases a person's efforts to cope with the disease and continue treating ailments such as cancer. Despair is a major feature and manifestation of depression. Depression and anxiety can occur in these patients for various reasons, including the individual's reaction to the diagnosis,

treatment complications, long treatment duration, repeated hospitalization, and disruption of family life. According to studies, depression will be one of the world's most common and expensive diseases in the future (Zhai, Weller-Newton, Shimoinaba, Chen, & Copnell, 2021).

Patients with cancer who become aware of impending death experience feelings of helplessness, pessimism about the future, despair, and failure following denial and anger (Shen, Qiang, Wang, & Chen, 2020). As a result, one of the variables that must be investigated about patients with cancer is life expectancy (Abdollahi, Panahipour, Hosseinian, & Allen, 2019). Hope, a multidimensional and potentially powerful complex factor in effective recovery and adaptation, is an important adaptation mechanism in chronic diseases such as cancer. People who are depressed, hopeless, and restless, and those who are lonely lament the meaninglessness and emptiness of life (Todorov, Sherman, & Kilby, 2019). Access to appropriate resources, including hope, can significantly affect adjustment process of a patient with cancer; one of these patients' most common psychological problems is a sense of despair and hopelessness. Furthermore, hope can play an important role in improving the overall health of patients with cancer, facilitating healing, and increasing therapeutic responses at various stages of treatment (Pahlevan et al., 2021). Hope, from a biological standpoint, has biological effects and can help control pain and physical weakness in sick people, because it activates brain circuits and releases endorphins, which reduce pain (Li, Kong, Xuan, Wang, & Huang, 2021).

Compassion is another variable linked to mental health and, as a result, physical health. Compassion, according to Neff (2003) is a three-part construct that includes self-kindness versus self-judgment, common humanity, and mindfulness in the face of extreme imitation, which is closely related to emotion (Arambasic, Sherman, & Elder, 2019). Patients with cancer who have more compassion for themselves have fewer negative consequences and psychological symptoms and have more personal control over their lives. In women with breast cancer, self-compassion modifies the relationship between perceived stress and self-care behaviors and mediates the relationship between body image and anxiety. In patients with breast cancer, poor body image and lack of self-compassion are linked to increased psychological distress. Compassion, according to researchers, increases emotional resilience and reduces depression and anxiety in patients (Abdollahi, Taheri, & Allen, 2020).

Because of the prevalence, devastation, and cost of depression and anxiety disorders in breast cancer, patients should pay special attention to theoretical and applied research in prevention and treatment. It appears that psychological evaluation of these patients is necessary to identify common reactions and psychological complications for rapid prevention and treatment. As a result, in addition to medical and pharmacological treatments, it is essential to teach these patients some appropriate coping strategies for dealing with the experience of overcoming the pathological dimensions caused by the courses of diagnosis, treatment, and prevention. As a result, the three variables of post-traumatic growth, self-compassion, and hope are important factors in improving the mental health of people with cancer, and interventions to improve these factors should be sought. One of the interventions that appear to be effective in this field is positive psychology. Today, the effect of positive psychology on the healing process of chronic diseases has been confirmed. With the advancement of the field of health psychology, psychologists have taken a more active role in the disease treatment process. As a result, the current study investigated the effect of positive psychology on hope,

self-compassion, and post-traumatic growth in patients with breast cancer.

Methods

The current study was a quasi-experimental research with pre-test, post-test, and follow-up design with a control group. The study's statistical population included 483 women with breast cancer diagnosis referred to King Abdullah Medical City Hospital in Makkah Region, Saudi Arabia, in 2021. One hundred people were chosen for this study using a simple random sampling method. With a 95% confidence level, 0.05 alpha error, 80% study power, and a 10% probability of loss, 50 people were assigned to each intervention and control groups using simple random replacement. Inclusion criteria included breast cancer diagnosis, being between the ages of 35 and 55, not having a severe mental disorder, and not using antidepressants or anxiety medications. Exclusion criteria included missing more than two treatment sessions, having a significant physical illness other than breast cancer, being unwilling to continue participating in the study, and failing to complete a questionnaire. Questionnaires were completed before, during, and two months after the intervention. The Snyder Hope Scale (Snyder et al., 1996), Self-Compassion Scale, and Post-Traumatic Growth Inventory were used to collect data in this study. To observe ethical principles in the research, the fundamental conditions of informed consent to participate, protection of personal information and confidentiality of participants, and exit at any research stage when the treatment process caused psychological discomfort were taken into account. Before the intervention, participants were briefed on the research, its objectives, necessity, terms, and number and duration of sessions.

The Snyder Hope Scale was created to assess hope. This scale has 12 terms and is used for self-evaluation. Four expressions are used to assess factor thinking, four are used to assess strategic thinking, and four are deviant expressions. The scores range from entirely true (8) to entirely false (1). Deviant questions are no longer scored in order to improve test accuracy. Thus, the score range is 8 to 64, with 8 representing the lowest level of hope and 64 representing the highest level of hope. Numerous studies back up the Snyder Hope Scale's reliability and validity as a measure of hope (Stanton, Danoff-Burg, & Huggins, 2002). The overall homogeneity of the test ranges from 0.74 to 0.83, and the reliability is 82% (Vakili, Ghanbari, Nooripour, Mansournia, Ilanloo, & Matacotta, 2022). The functional subscale has an internal consistency of 0.72 to 0.77, while the strategic subscale has an internal consistency of 0.65 to 0.84 (Leite et al., 2019). In the current study, the Cronbach's alpha for the Snyder Hope Scale was 0.79.

Neff created the Self-Compassion Scale, a 26-item tool for measuring self-compassion. Test questions are graded on a 5-point scale ranging from zero (rarely) to four (almost always). The overall score ranges from 0 to 104. According to Brown et al. (2020), Cronbach's alpha for the Self-Compassion Scale is 0.81, indicating that the questionnaire questions have the desired internal consistency. Confirmatory factor analysis (CFA) was used to evaluate the instrument's validity, and it was discovered that factor loads related to all subscales and reagents were in good condition. In the current study, the Cronbach's alpha for the Self-Compassion Scale was 0.84.

Tedeschi and Calhoun (1996) developed the Post-Traumatic Growth Inventory; it consists of 21 items designed to measure post-traumatic growth. This test is a self-evaluation instrument in which individuals should rate their responses on a scale from 0 (no change) to 5 (significant change). The range of test scores is from 0 to 105, with higher scores indicating greater post-traumatic development. In a

study by Ruini and Vescovelli (2013), the questionnaire's reliability coefficient with a one-week interval was 0.95, and Cronbach's alpha for the entire scale was 0.91. In the current study, the Cronbach's alpha for the Post-Traumatic Growth Inventory was 0.93.

The current study's intervention program based on positive psychology was administered in eight 90-minute sessions (one weekly). A description of the intervention sessions is provided in table 1. Before the intervention, participants were briefed on the research, its objectives, necessity, terms, and number and duration of sessions. In addition, each participant was required to complete the Snyder Hope Scale, the Self-Compassion Scale, and the Post-Traumatic Growth Inventory. The experimental group was then administered an intervention grounded in positive psychology. Both groups completed the questionnaires again after the intervention (post-test phase) and two months later (follow-up phase).

First, the demographic characteristics of the research participants were investigated. The mean and standard deviation (SD) values of the intervention and control groups in the pre-test, post-test, and follow-up phases for each of the hope, self-compassion, and post-traumatic growth variables are given below. The differences in variable scores were subsequently compared between and within groups. For this purpose, the univariate mixed analysis of variance (ANOVA) was utilized. The Bonferroni post-hoc test was then used to compare pre-test, post-test, and follow-up stages. Noteworthy is the fact that SPSS software (version 23, IBM Corporation, Armonk, NY, USA) was used for the analysis.

Results

The intervention group's mean age was 47.32 ± 6.49, while that of the control group was 49.27 ± 7.26. Table 2 contains information about the demographic characteristics of the groups.

Table 3 displays descriptive statistics for subjects' scores on the variables under consideration. According to table 3, the positive psychology intervention was associated with increased scores of hope, self-compassion, and post-traumatic growth, whereas there was no change in the control group.

Table 1. Description of intervention sessions

Session	Session description
1	Introducing patients to each other, general statement of group work rules, general explanation about the program
2	Issues related to the lack of positive resources such as positive emotions, commitment, positive communication, meaning, and positive abilities in the occurrence of negative emotions and their effect on the disease treatment process
3	Determining your positive competencies, discussing competencies to create and strengthen commitment, and how to use the strengths of the index
4	Understanding the nature of forgiveness and its effects on a variety of issues
5	Emphasis on good memories and gratitude as a lasting form of gratitude and writing the first letter of appreciation to a familiar person
6	Acceleration in the enjoyment of pleasures as a potential threat to gradual satisfaction and ways to deal with it through a variety of strategies
7	Practicing constructive and active reaction as a strategy to strengthen positive communication
8	Final summarizing, getting feedback, and running the post-test phase

Table 2. Comparison of groups' demographic characteristics

Demographic variables		Intervention group [n (%)]	Control group [n (%)]
Marital status	Single	9 (18)	7 (14)
	Married	41 (82)	43 (86)
Age category (year)	35-40	8 (16)	9 (18)
	41-50	23 (46)	20 (40)
	51-55	19 (38)	21 (42)
History of cancer (year)	< 5	16 (32)	15 (30)
	5-10	27 (54)	24 (48)
	> 10	7 (14)	11 (22)
Education level	High school	10 (20)	11 (22)
	Diploma	26 (5)	23 (46)
	Undergraduate	14 (28)	16 (32)

The differences in the scores related to the variables were then compared between and within groups. The univariate mixed ANOVA was used for this purpose. Table 4 shows the results of the univariate ANOVA.

Table 4 shows that all three effects of intergroup and intragroup membership and interactive intergroup and intragroup interaction were significant on hope, self-compassion, and post-traumatic growth variables. As a result of the intergroup effect, or in other words, the intervention based on positive psychology, the scores related to the variables studied in the intervention group improved. Furthermore, the effect within the group indicates that all three variables' scores increased significantly from the pre-test to the post-test stage. The interactive results also showed that when the impact of the intervention and test time (stage) were considered concurrently and in interaction, the scores of hope, self-compassion, and post-traumatic growth increased significantly. Table 5 presents the Bonferroni post-hoc test comparing pre-test, post-test, and follow-up stages.

According to table 5, it is evident that the pre-test stage differs significantly from the post-test and follow-up stages for all studied variables. In addition, a comparison of the post-test and follow-up phases revealed that none of the mentioned components differed significantly.

Discussion

The current study aimed to assess the efficacy of the positive psychology on hope, self-compassion, and post-traumatic growth in women with breast cancer. According to the results, the positive psychology intervention was effective on the values of the variables in women with breast cancer. This study's results are consistent with those of other studies in this field (Brix et al., 2013; Svetina & Nastran, 2012).

Positive psychology can help increase life expectancy in all aspects of life, because it reduces ineffective strategies (Bergqvist & Strang, 2019). In fact, by interrupting the mechanisms of continuity of inefficient strategies, this type of intervention frees the patient's attention from repeated involvement with unpleasant events from the past.

Table 3. Indicators describing the studied variables in each group at various stages

Variable	Group	Pre-test (mean ± SD)	Post-test (mean ± SD)	Follow-up (mean ± SD)
Hope	Intervention	22.49 ± 6.74	27.94 ± 9.28	26.13 ± 8.62
	Control	23.17 ± 7.83	23.31 ± 7.76	23.81 ± 8.14
Self-compassion	Intervention	54.38 ± 11.41	62.49 ± 12.83	61.24 ± 12.16
	Control	55.14 ± 11.76	55.71 ± 11.46	55.37 ± 11.94
Post-traumatic growth	Intervention	63.51 ± 12.07	72.64 ± 14.17	70.42 ± 13.74
	Control	62.97 ± 11.83	63.68 ± 12.39	62.57 ± 11.03

SD: Standard deviation

Table 4. Univariate mixed analysis of variance (ANOVA) test results for study variables

Source of changes	Variable	Sum of squares	df	Mean squares	F-value	P-value	Effect size
Group	Hope	421.36	1	421.36	17.94	0.002	0.47
	Self-compassion	104.35	1	104.35	10.41	0.003	0.36
	Post-traumatic growth	2207.38	1	2207.38	35.23	0.001	0.68
Time	Hope	1538.72	1	1538.72	38.26	0.001	0.59
	Self-compassion	193.27	1	193.27	7.16	0.007	0.32
	Post-traumatic growth	941.59	1	941.59	29.17	0.004	0.53
Group*Time	Hope	602.57	1	602.57	19.67	0.003	0.41
	Self-compassion	241.61	1	241.61	8.13	0.005	0.34
	Post-traumatic growth	549.18	1	549.18	21.53	0.001	0.47

df: Degree of freedom

It also enables the individuals to free their attention and focus from the trap of emotionally, behaviorally, and cognitively defective circles, allowing them to concentrate on other aspects of life (Parambil, Philip, Tripathy, Philip, Duraisamy, & Balasubramanian, 2019). The findings can be explained by considering patients' maladaptive coping behaviors, including avoiding activities and social contact. These patients reduce their activities to allow more time for rumination or to increase their relaxation, because they mistakenly believe that rumination provides a valuable opportunity for recovery (Soderberg-Naucler, 2022). As a result of performing the techniques and tasks of this treatment, patients undergoing positive psychology treatment will not have much time to drown in negative thoughts, memories, and rumination (Khezri, Bagheri-Saveh, Kalhor, Rahnama, Roshani, & Salehi, 2022). Mentioned treatment causes them to pay more attention to other aspects of their lives and expand their social relationships, resulting in increased energy, positive thinking, and life expectancy. Patients with breast cancer in such situations can engage in activities they were previously unable or unwilling to do (Ginter, 2020).

There are several reasons why positive psychology effectively improves the self-compassion of patients with breast cancer. By reducing the avoidance of painful emotions, this treatment increases self-compassion and its components, such as mindfulness, self-kindness, and human sharing (Mifsud et al., 2021). Patients are helped to accept feelings of compassion by investigating their reasons for not empathizing with themselves (Todorov et al., 2019). People with a high level of compassion accept it to relieve resentment for healing rather than avoiding pain, and this trait can be seen in patients with cancer who eagerly pursue the healing process (Hoffman & Baker, 2022; Semenchuk et al., 2022). Compassion, according to the theoretical definition, is a kind of ability to adapt to the current situation, which means that when a tragic event occurs, people develop the ability of compassion to cope with this situation. As a result, when faced with pain and failure, self-compassion shines brighter.

Table 5. Bonferroni post-hoc test for comparing pre-test, post-test, and follow-up stages

Variable	Paired comparison	Mean difference	Mean deviation	P-value
Hope	Pre-test vs. post-test	-5.45	1.37	0.001
	Pre-test vs. follow-up	-3.64	0.76	0.007
	Post-test vs. follow-up	1.81	0.23	0.721
Self-compassion	Pre-test vs. post-test	-8.11	2.16	0.003
	Pre-test vs. follow-up	-6.86	1.79	0.004
	Post-test vs. follow-up	1.25	0.17	0.493
Post-traumatic growth	Pre-test vs. post-test	-9.13	2.43	0.001
	Pre-test vs. follow-up	-6.91	1.64	0.011
	Post-test vs. follow-up	2.22	0.56	0.512

Consequently, when the breast cancer treatment process is complete and patients have completed an emotion-focused treatment, they have less need for compassion exercises within two months of follow-up. Furthermore, some highly self-critical clients have a low capacity for compassion; in such cases, developing and expressing self-compassion may be a complex process that necessitates gradual occupational therapy.

Limitations of the current study, including the reduction in the number of treatment sessions for this group of participants appear to have prevented the consolidation of positive psychology's effects on hope, self-compassion, and post-traumatic growth, and the study's statistical population of women with breast cancer at King Abdullah Medical City Hospital in Makkah. They were chosen by simple random sampling; therefore, caution should be exercised when extending the findings to others in the community. It is possible to improve the generalizability of treatment results by implementing this intervention in other cancer groups. Different sampling methods are also suggested to improve the external validity of the results. Furthermore, follow-up courses with longer intervals and multiple follow-up courses should be used to increase knowledge and the possibility of definitively commenting on the stability of changes during treatment and generalization of treatment skills. Because hope, self-compassion, and post-traumatic variables play a protective role in mental health, it is suggested that the number of sessions of positive psychology interventions is increased to evaluate the stability of the effectiveness of this treatment in patients with cancer.

Conclusion

The current study found that treating patients with breast cancer with positive psychology significantly increased hope, self-compassion, and post-traumatic growth. Positive psychology reduces self-criticism and negative emotions by increasing the values of the variables under consideration and assisting patients in evaluating their judgment. As a result, the findings can assist researchers, therapists, and other health professionals in developing appropriate interventions for these patients.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

None.

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