Psychological Resilience and Cognitive Flexibility Levels of Women Diagnosed with Breast Cancer

Eker Berra, Hallaç Süeda, Savaş Esra, Örnek Billur

Department of Psychology, Yeditepe University, Istanbul, Turkey

Abstract

Background Numerous cancer patients experience a range of obstacles and problems during their healing and therapy processes. Cognitive flexibility and psychological resilience are key ideas when assessing the psychological health of cancer patients during this process. The cognitive flexibility and psychological resilience of breast cancer patients, nevertheless, have not received sufficient focus. Moreover, there is still an inadequate amount of data about the association between receiving a breast cancer diagnosis and psychological resilience and cognitive flexibility.

Aims To investigate the psychological resilience and cognitive flexibility of women who have been diagnosed with breast cancer compared to those who have not.

Methods A cross-sectional study that was descriptive and correlational was carried out. The study included a total of 157 female respondents without a breast cancer diagnosis and 143 female respondents with a breast cancer diagnosis.

Results The analysis's findings indicate that the psychological resilience averages of the participants who were diagnosed with both breast cancer and a psychiatric diagnosis (X = 108.88, SD = 20.66) were lower than those of the participants who were only diagnosed with breast cancer (X = 120.90, SD = 16, 63). The results of the t-test analysis reveal that there is a significant difference in the average psychological resilience between those in the breast cancer diagnostic group who have a psychiatric diagnosis and those who do not (t = -3.18, p <.01).

Conclusions The findings of this study reveal a significant disparity in psychological resilience among breast cancer patients based on the presence of a psychiatric diagnosis. Specifically, participants with both breast cancer and a psychiatric diagnosis exhibit lower psychological resilience compared to those solely diagnosed with breast cancer.

Keywords: Breast Cancer, Cognitive Flexibility, Psychological Resilience, Women's Cancer, Psychiatric Diagnosis.

Introduction

In 2022, 670,000 women worldwide lost their lives to breast cancer, out of 2.3 million new cases. Globally, a woman is diagnosed with breast cancer every 14 seconds. The most frequent cancer among women worldwide, in both industrialized and developing nations, is breast cancer. The most frequent cancer among women overall is breast cancer. With 57 out of 185 countries globally reporting a diagnosis, it is the most common disease among women (Breast Cancer Research Foundation, 2024). A Turkish study (Başara et al., 2021) found that 4300 women died from breast cancer in 2019. One in four women was diagnosed with breast

cancer diagnosis, and the disease is striking women at progressively younger ages. The Turkish Ministry of Health (2019) reported that 4300 women lost their lives to breast cancer in 2019. Breast cancer, which is diagnosed in every four women diagnosed with cancer, is increasingly seen among younger ages. Patients with breast cancer can benefit from psychological resilience and cognitive flexibility when it comes to their mental health.

For this study, the relationship between having a breast cancer diagnosis, psychological resilience, and cognitive flexibility in female patients was examined. The third variable of taking psychiatric drugs was taken into account. The purpose of this study is to expand the literature by providing an analysis of differences in the psychological resilience, and cognitive flexibility levels in women with breast cancer diagnosis. The first hypothesis is that the psychological resilience scores of participants diagnosed with cancer are significantly higher than participants who were not diagnosed. The second hypothesis is that the cognitive flexibility scores of participants diagnosed with cancer are significantly higher than participants without a diagnosis. The third hypothesis is the psychological resilience scores of people who have been diagnosed with both cancer and a psychiatric diagnosis are significantly higher than those who have been diagnosed with cancer but have not received a psychiatric diagnosis. The fourth hypothesis is cognitive flexibility scores of people who have been diagnosed with both cancer and a psychiatric diagnosis are significantly lower than those who have been diagnosed with cancer but not a psychiatric diagnosis. The fifth hypothesis is among individuals diagnosed with cancer, the psychological resilience scores of participants who received psychological support are significantly higher than those who did not receive support.

Treatment

American Cancer Society (2022) reported that most women with non-metastatic breast cancer experience some form of surgery. To lower the chance of recurrence, surgery is frequently combined with other treatments such as hormone therapy, radiation therapy, chemotherapy, and medication therapy. Systemic therapies, such as immunotherapy, hormone therapy, targeted drug therapy, and chemotherapy, are typically used to treat patients with metastatic disease.

The goal of treatment for breast cancer in its early stages is to remove the cancer from the body and reduce the likelihood that it will recur. Stages 0 through III are included in early-stage breast cancer. Higher stages usually indicate a greater distance traveled by the cancer cells from the breast (Living Beyond Breast Cancer, 2022). The duration of the treatment plan is indicated by the type of surgery and other treatments the patient undergoes.

When breast cancer reoccurs, it is often considered incurable. 20% of patients will develop a later stage of the disease, and 5–10% of patients will first present with metastatic illness despite improved treatment approaches (DeSantis et al., 2011). There are considerable differences in breast cancer survival depending on the diagnostic stage. Patients diagnosed with breast cancer between 2009 and 2015 had an average 5-year survival rate of 98% for stage I, 92% for stage II, 75% for stage III, and 27% for stage IV (DeSantis et al., 2019).

Challenges

A considerable number of patients and survivors may have severe psychological struggles caused by the results of the diagnosis, symptoms, and course of treatment for breast cancer (Fallowfield & Jenkins, 2015). Patients use various coping mechanisms depending on their unique situations, cultures, and way of life (Dunkel-Schetter et al., 1992). According to research by Khalili et al. (2013), acceptance, planning, and religion were the three problem-focused coping strategies that study participants engaged in the most often. Furthermore, it was discovered that self-distraction, denial, and avoidance were the most commonly used emotion-focused coping strategies. Patients who employed these mechanisms more frequently also experienced physical health symptoms, which negatively impacted their mood, relationships with others, and overall quality of

life. As a result, higher levels of these mechanisms were linked to worse functional status and quality of life (Yavuz, 2023).

Psychological Resilience

Researchers have looked into the concept of psychological resilience from a wide range of fields, including psychiatry, sociology, genetics, and endocrinology. They also investigated it from within psychology, including developmental psychopathology, traumatology, neurobiological psychology, and humanistic psychology (Graber et al., 2015). According to Masten et al. (1990), psychological resilience is the capacity to overcome the effects of trauma by exhibiting social competence and realizing favorable results in the face of difficulty. It also entails having the power to adapt to a disorder that can endanger development and to control a dynamic system's functional equilibrium so that it can continue to exist after chaos (Masten, 2014). Psychological resilience is not a personality trait or feature of the individual; rather, it is a process that leads to exposure to negative situations and constructive adaptation to these situations, according to Masten et al. (1999), Luthar and Cicchetti (2000), and Luthar et al. (2000).

Patients with breast cancer can benefit from psychological resilience when it comes to their mental health, yet a high symptom burden is a sign of poor psychological wellness. The partner's emotional support is the one important factor that helps patients deal with the illness the best. Similarly, the greatest factors in lowering a patient's symptoms are the partner's emotional support and the family's informational support. Resilience reduces symptoms and enhances overall functioning and health. Optimism and resilience in patients also lessen symptoms (Hewitt et al., 2004). Variations in resilience at the individual level have been explored in participants who have experienced traumatic experiences in their lives most often (Mancini AD & Bonanno GA, 2006). People with high levels of resilience have handled difficult situations better than those with low resilience (Hjemdal, 2006).

Furthermore, less emotional suffering following exposure to stressful conditions has been associated with higher resilience (Hoge et al., 2007). As cancer diagnosis and treatment are often considered potentially traumatic events, one may anticipate a person's level of resilience to affect their emotional difficulties related to cancer (Southwick et al., 2005).

Realistic optimism, fear, morality, religion and spirituality, social support, resilient role models, physical and mental health, and emotional flexibility are the components of psychological resilience. To all of this, there is still an additional component to what is referred to as "cognitive flexibility." Cognitively flexible people can create alternatives, view demanding circumstances as more manageable, and swap out challenging and maladaptive beliefs with more harmonic and balanced ones. (Gülüm & Dağ, 2012).

Cognitive Flexibility

More specifically, researchers have defined cognitive flexibility as the capacity to modify or adapt one's attention and thought patterns across different tasks or processes, typically in response to a shift in rules or expectations (Friedman et al., 2000). The ability to adapt one's way of thinking to new situations is known as cognitive flexibility. With high cognitive flexibility, people can make a wide range of decisions, taking into account many viewpoints, coming up with creative solutions, and using efficient stress-reduction techniques. In patients with chronic illnesses like cancer, uncontrollable troubling thoughts are frequently stressful reactions to unpleasant experiences. These people feel psychological strain and mental pressure brought on by physical discomfort. Living in the present moment can be hampered by a lack of cognitive flexibility in accepting unchanging conditions, whether they be internal or external. Consequently, when breast cancer patients experience chronic physical pain, insufficient cognitive flexibility may result in rumination, worry, and inadequate coping mechanisms (Rahimi et al., 2023).

Method

A cross-sectional study that was descriptive and correlational was carried out. This research was approved by Yeditepe University Humanities and Social Sciences Scientific Research and Publication Ethics Committee (Approval Number: E.61350595-050.06-324) and conducted following the Declaration of Helsinki.

Participants

In this study, breast cancer patients were recruited by convenience sampling between November 2023 and January 2024 from several social media platforms serving as a cancer support group. These cancer support groups serve cancer patients with various types of cancer. Through being together, patients exchange personal stories and make one another feel less isolated. Also, they discuss coping mechanisms that have worked for them. Participants in the research were required to be women with breast cancer who were 18 years of age or older, receiving treatment, aware of their disease, and able to read and comprehend the questions. Since the data collection was conducted online, some of the participants were hesitant at first. The trust of the participants was met by providing the necessary information. However, those who were not comfortable with participating in the study were shown comprehension.

The age group that comprised the majority of participants in the breast cancer diagnostic group was 24-44, accounting for 64,3. %89 of the individuals in the undiagnosed group were in the 18–24 age range. A total of 157 female responders without a breast cancer diagnosis and 143 female respondents with a breast cancer diagnosis overall.

Materials

Since the participants' mother tongue was Turkish, Turkish scales and forms have been used to ensure that the participants fully understand the questions and instructions. This reduced the risk of misinterpretation. This was critical for obtaining accurate and reliable responses.

Demographic Information Form

To gain a good understanding of the participants' demographic background, a series of questions was created. These included questions on their gender, age, degree of education, marital status, employment status, perceived income level, cancer stage, and whether or not they were on psychiatric medication.

The Psychological Resilience Scale for Adults

The Psychological Resilience Scale for Adults (RSA) attempts to identify the essential protective elements, especially related to the maintenance and recovery of mental health. It does this by focusing on protective resources in fostering psychological resilience. (Friborg et al., 2003). This scale comprises the following dimensions: social competency, family harmony, personal strength, structural style, and social resources. According to a later study, the scale's six-dimensional form helps to better describe the psychological resilience concept (Friborg et al., 2005). The Psychological Resilience Scale for Adults was the subject of reliability and validity research undertaken in Turkey by Dr. H. Nejat Basım and Dr. Fatih Çetin. In this study, the criteria for validity of the Psychological Resilience Scale for Adults was tested using The Locus of Control Scale, which was created by Rotter (1966) and translated into Turkish by Dağ (1991).

In their study, Friborg et al., (2005) divided the scale into six dimensions. These are 'structural style' (items 3, 9, 15, 21) and 'future perception' (items 2, 8, 14, 20); 6 items for 'family cohesion' (items 5, 11, 17, 23, 26, 32), 'self-perception' (items 1, 7, 13, 19, 28, 31), and 'social competence' (items 4, 10, 16, 22, 25, 29); and 7 items for 'social resources' (items 6, 12, 18, 24, 27, 30, 33).

The scale format uses a schematic arrangement to avoid biased evaluations, with five separate boxes for responses to different positive and negative characteristics. The scoring method allows for flexibility in measuring high or low psychological resilience (Friborg et al., 2005).

The Cognitive Flexibility Inventory

Dennis and Vander Wal (2010) developed the Cognitive Flexibility Inventory (CFI) to measure people's ability to think in imaginative, harmonious, appropriate, and balanced ways in difficult conditions. The scale was translated into Turkish by Gülüm and Dağ (2012). The original scale's two-factor structure was validated in the adapting research.

The questionnaire consists of 20 items, and respondents use a 6-point Likert scale to indicate whether they agree or disagree with each issue. Response possibilities range from Strongly Disagree (1) to Strongly Agree (6) (Dennis & Vander Wal, 2010). This scale was divided into two subdimensions by Dennis and Vander Wal (2010). Control and alternatives are these two subdimensions. The alternatives sub-dimension assesses a person's capacity to identify viable alternatives to events and human behaviors that occur in daily life as well as their ability to come up with several solutions to challenging circumstances. The sub-dimension of control quantifies the inclination to view challenging circumstances as manageable.

Higher scores on the scale indicate more cognitive flexibility. The scale has a range of 20 to 100. The overall score had a Cronbach's alpha value of 0.90, the alternatives sub-dimension had a value of 0.89, and the control sub-dimension had a value of 0.85 (Dennis & Vander Wal, 2010).

Procedure

After an individual would press on the link in the post or message, they would be directed to an online survey made in Google Forms. Considering how sensitive the topic could be for some people, an informed consent paper was placed before starting the survey itself, allowing the participant to withdraw from participating, or continue responding. The "Informed Consent Form," which included information about the nature and purpose of the research, a disclaimer that participation in research is voluntary, and details about the protocols used to ensure data protection, confidentiality, and privacy, was required of participants who agreed to participate. After the approval, participants were asked to fill out the demographic information form that contained questions about gender, age, relationship status, education level, income level, health insurance information, psychiatric diagnosis status, and psychiatric drug usage. The next step was filling out "The Psychological Resilience Scale for Adults" and then the "Cognitive Flexibility Inventory". After collecting the right amount of responses, the research had enough data to be analyzed and continue the research.

Results

The current study examines the associations between psychological resilience and cognitive flexibility and receiving a breast cancer diagnosis. There are only female participants in the sample. These findings are based on responses to questionnaires about age, education, employment status, health insurance, psychiatric diagnosis, and use of psychiatric medication provided by 143 participants with a diagnosis of breast cancer and 157 participants without one. The distributions of those with and without breast cancer were assessed differently. Table 1 displays the demographic features of the sample.

Table 1 Participants' demographic details based on whether or not they have received a breast cancer diagnosis

		Have a Breast Cancer Diagnosis		No Breast Cancer Diagnosis	
		N	%	N	%
Age	18-24	-	-	127	80,9
	25-44	92	64,3	16	10,2
	45-64	51	35,7	14	8,9

Education	Primary School	4	2,8	1	0,6
	Middle School	8	5,6	2	1,3
	High School	38	26,6	16	10,2
	University	93	65	138	87,9
Marital Status	Married	112	78,3	20	12,7
	Single	31	21,7	137	87,3
Work Status	Working	79	55,2	40	25,5
	Not Working	64	44,8	117	74,5
Perceived Income	Low	17	11,9	15	9,6
	Middle	90	62,9	92	58,6
	High	36	25,2	50	31,8
Who do they live with?	Alone	9	6,3	66	42
	With Family	134	93,7	91	58
Health Insurance	Yes	132	92,3	141	89,8
	No	11	7,7	16	10,2
Cancer Stage	1	25	17,5	-	-
	2	57	39,9	-	-
	3	38	26,6	-	-
	4	23	16,1	-	-
Psychiatric Diagnosis	Yes	26	18,2	28	17,8
	No	117	81,8	129	82,2
Psychiatric Diagnosis	No Diagnosis	117	81,8	129	82,2
	Depression	17	11,8	20	12,7
	Anxiety	9	6,2	8	5,1
Psychotherapy Support	Yes	55	38,5	61	38,9
	No	88	61,5	96	61,1
Psychotherapy Preference	No	88	61,5	96	61,1
	Individual	20	13,9	61	38,8
	Group	35	24,5	-	-
Psychiatric Medicine	Taking	31	21,7	23	14,6
	Not taking	112	78,3	134	85,4

Descriptive statistics were run to assess the data and look at the distribution before the analysis began. Table 2 provides the lowest and highest values, averages, standard deviations, and kurtosis values for the Cognitive Flexibility and Psychological Resilience Inventory.

Table 2 Descriptive statistics for the entire group

	N	Min	Max	Mean	SD	Skewness	Kurtosis
Psychological Resilience	300	78	165	120,25	16,68	-.09	-.19
Cognitive Flexibility	300	43	100	73,20	11,90	-.31	-.16

As the table indicates, skewness and kurtosis values are between -1 and +1. This finding shows that the data is normally distributed (Hair et al., 2013).

An independent group t-test was used to examine if psychological resilience and cognitive flexibility differed between participants who had been diagnosed with breast cancer and those who had not. Accordingly, the average psychological resilience in the group diagnosed with breast cancer was (X = 118.72, SD = 17.96), while the average psychological resilience in the group not diagnosed with cancer was (X = 121.64, SD = 15.34). The t-test indicates that the mean difference between the two groups is not statistically significant. (t = -1.51, p >.05). The first hypothesis which is "the

psychological resilience scores of participants diagnosed with cancer are significantly higher than participants who were not diagnosed" is rejected.

When the cognitive flexibility score averages are being examined, the average score in the group diagnosed with breast cancer is (X = 72.9, SD = 13.79) while the average score in the undiagnosed group is (X = 73.45, SD = 9.8). The undiagnosed group's mean cognitive flexibility scores appear to be greater than the diagnosed group's, but this difference is not statistically significant. (t = -.36, p >.05). The second hypothesis which is "the cognitive flexibility scores of participants diagnosed with cancer are significantly higher than participants without a diagnosis" has been rejected.

Table 3 T-test results regarding psychological resilience and cognitive flexibility score averages according to whether or not a cancer diagnosis was made

	Grup	N	Mean	SD	t	df	p
Psychological Resilience	Has Cancer Diagnosis	143	118,72	17,96	-1,51	298	.13
	No Cancer Diagnosis	157	121,64	15,34			
Cognitive Flexibility	Has Cancer Diagnosis	143	72,93	13,79	-,369	298	.713
	No Cancer Diagnosis	157	73,45	9,89			

The effect of having any psychiatric diagnosis on the psychological resilience and cognitive flexibility averages in the group with and without a breast cancer diagnosis was examined with an independent group t-test. The analysis's findings show that the psychological resilience

averages of the participants who were diagnosed with both breast cancer and a psychiatric diagnosis (X = 108.88, SD = 20.66) were lower than those of the participants who were only diagnosed with breast cancer (X = 120.90, SD = 16, 63). The t-test analysis's findings show that

there is a significant difference in the psychological resilience average between the individuals in the breast cancer diagnostic group who have and do not have a psychiatric diagnosis (t = -3.18, p <.01). The third hypothesis which is "the psychological resilience scores of people who have been diagnosed with both cancer and a psychiatric diagnosis are significantly higher than those who have been diagnosed with cancer but have not received a psychiatric diagnosis." has been accepted.

When looking at the cognitive flexibility scores, the average score of participants with both breast cancer and psychiatric diagnoses (X = 68.23, SD = 14.28) was lower than the participants with breast cancer without a psychiatric diagnosis (X

= 73.98, SD = 13.53). Nevertheless, it was discovered that there was no statistically significant difference (t = -1.94, p >.05). The fourth hypothesis which is "cognitive flexibility scores of people who have been diagnosed with both cancer and a psychiatric diagnosis are significantly lower than those who have been diagnosed with cancer but not a psychiatric diagnosis." has been rejected.

In the group without a breast cancer diagnosis, the psychological resilience and cognitive flexibility averages were higher than the group without a psychiatric diagnosis (Psychological Resilience = 116.85, SD = 14.31; Cognitive Flexibility = -1.64, p >.05). The findings of the analysis are given in Table 4.

Table 4 T-test findings comparing the averages of the endurance and flexibility scores of individuals with or without a cancer diagnosis based on whether or not they also had a psychiatric diagnosis.

		Group	N	Mean	SD	t	df	p
Has Breast Cancer Diagnosis	Psychological Resilience	Has Psychiatric Diagnosis	26	108,88	20,66	-3,18	141	.002*
		No Psychiatric Diagnosis	117	120,90	16,63			
	Cognitive Flexibility	Has Psychiatric Diagnosis	26	68,23	14,28	-1,94	141	.05
		No Psychiatric Diagnosis	117	73,98	13,53			
Has No Breast Cancer Diagnosis	Psychological Resilience	Has Psychiatric Diagnosis	28	116,85	14,31	-1,83	155	.06
		No Psychiatric Diagnosis	129	122,68	15,41			
	Cognitive Flexibility	Has Psychiatric Diagnosis	28	70,67	8,56	-1,64	155	.10
		No Psychiatric Diagnosis	129	74,04	10,09			

When the psychological resilience score averages of breast cancer participants who received psychological support (psychotherapy) and those who did not receive psychological support (psychotherapy) were compared, the average score of the group receiving support (X = 115.96, SD = 17.43) was higher than that of the group receiving support (X = 120.44, SD =18.17) is lower, but this difference is not statistically significant (t = -1.45, p >.05). The

fifth hypothesis which is "among individuals diagnosed with cancer, the psychological resilience scores of participants who received psychological support are significantly higher than those who did not receive support." has been rejected.

When the same analysis was carried out in the group not diagnosed with breast cancer, the average psychological resilience of those who received psychological support in this group (X

= 122.40, SD = 15.60) was lower than the average of those who did not receive support (X = 122.40, SD = 15.20). However, it seems that this difference is not statistically significant (t = -781, p >.05).

When the cognitive flexibility score averages is examined, it is seen that the average of people diagnosed with breast cancer and receiving psychological support (X = 71.40, SD = 14.33) is lower than that of those who do not receive psychological support (X = 73.89, SD = 14.33).

It seems that the difference is not statistically significant (t = -1.01, p >.05).

When the same analysis was carried out in the group that was not diagnosed with breast cancer, the average resilience of those who received psychological support in this group (X = 71.40, SD = 12.87) was lower than the average of those who did not receive support (X = 73.89, SD = 14.33). However, it seems that this difference is not statistically significant (t = -1.05, p >.05). Data regarding the analysis are shown in Table 5.

Table 5 T-test results regarding the psychological resilience and cognitive flexibility score averages of participants who have or have not been diagnosed with cancer, depending on whether they receive psychological support or not.

		Group	N	Mean	SD	t	df	p
Has Breast Cancer Diagnosis	Psychological Resilience	Receives psychological support	55	115,96	17,43	-1,45	141	.14
		Does not receive psychological support	88	120,44	18,17			
	Cognitive Flexibility	Receives psychological support	55	71,40	112,87	-1,05	141	.29
		Does not receive psychological support	88	73,89	14,33			
Has No Breast Cancer Diagnosis	Psychological Resilience	Receives psychological support	61	120,44	15,60	-,78	155	.43
		Does not receive psychological support	96	122,40	15,20			
	Cognitive Flexibility	Receives psychological support	61	72,45	10,71	-1,01	155	.31
		Does not receive psychological support	96	74,07	9,34			

Table 5 T-test results regarding the psychological resilience and cognitive flexibility score averages of participants who have or have not been diagnosed with cancer, depending on whether they receive psychological support or not.

Discussion

This study investigated the levels of psychological resilience and cognitive flexibility and explored their association with having a breast cancer diagnosis. This information could assist in clarifying the relationship between cognitive flexibility, psychological resilience, and breast cancer diagnosis, thereby educating healthcare

professionals about the unique requirements of this patient group.

As indicated by the analysis's findings, participants who received a psychiatric diagnosis in addition to their breast cancer diagnosis had averages of psychological resilience that were lower than those of participants who received a breast cancer diagnosis alone. According to the results, the psychological resilience average of those with and without a psychiatric diagnosis in the breast cancer-diagnosed group differs.

The findings of this study reveal a significant disparity in psychological resilience among breast cancer patients based on the presence of a psychiatric diagnosis. Specifically, participants with both breast cancer and a psychiatric diagnosis exhibit lower psychological resilience compared to those solely diagnosed with breast cancer. This result aligns with existing literature suggesting that comorbid psychiatric conditions can exacerbate psychological distress and reduce resilience in cancer patients (Brown & Lee, 2020). Effective cancer treatment and recovery depend heavily on psychological resilience, which is the capacity to swiftly return to a pre-crisis position or manage a crisis on a mental or emotional level (Bonanno, 2004).

Patients with psychiatric diagnoses often face additional emotional and cognitive burdens, which can hinder their ability to adapt to the stress and challenges posed by cancer treatment (Giese-Davis et al., 2011). The dual struggle with both cancer and a psychiatric condition can lead to a compounded effect, where the symptoms and treatments for one condition may exacerbate the other, thus creating a vicious cycle that impairs overall resilience (Tauber et al., 2019). These results highlight the significance of integrated care strategies that attend to the psychological and oncological requirements of breast cancer patients to enhance their resilience and improve their prognosis (Habimana et al., 2023).

Moreover, the significant difference in resilience between these groups highlights the need for targeted psychological interventions. Resilience-building techniques including

cognitive-behavioral therapy (CBT), mindfulness-based stress reduction (MBSR), and resilience training are useful for cancer patients and may be especially helpful for people who also have other mental disorders (Bigatti et al., 2012; Carlson et al., 2003). Future studies should examine the precise effects of these treatments on resilience in this vulnerable population to create customized support networks that cater to their particular needs.

Reference

1. American Cancer Society. (2022). Breast cancer facts & figures. https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/breast-cancer-facts-and-figures/2022-2024-breast-cancer-fact-figures-acs.pdf

2. Basım, H. Nejat ve Çetin, Fatih (2011). Yetişkinler için Psikolojik Dayanıklılık Ölçeği'nin Güvenilirlik ve Geçerlilik Çalışması, Türk Psikiyatri Dergisi, 22, 2, 104-114.

3. Bigatti, S. M., Steiner, J. L., Makinabakan, N., Hernandez, A. M., Johnston, E., & Storniolo, A. M. (2012). Matched and mismatched cognitive appraisals in patients with breast cancer and their partners: implications for psychological distress. Psycho-Oncology, 21(11), 1229-1236.

4. Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? American Psychologist, 59 (1), 20-28.

5. Breast Cancer Research Foundation. (2024). Breast cancer statistics and resources. https://www.bcrf.org/breast-cancer-statistics-and-resources/

6. Brown, K. W., & Lee, S. (2020). Psychological resilience and depressive symptoms in breast cancer survivors: A longitudinal study. Journal of Behavioral Medicine, 43(3), 426-434.

7. Carlson, L. E., Speca, M., Patel, K. D., & Goodey, E. (2003). Mindfulness-based stress reduction in relation to

quality of life, mood, symptoms of stress, and immune parameters in breast and prostate cancer outpatients. Psychosomatic medicine, 65(4), 571-581.

8. Dağ, İ. (1991). Rotter'in İç-Dış Kontrol Odağı Ölçeği'nin (RİDKOÖ) üniversite öğrencileri için güvenirliği ve geçerliği. Psikoloji Dergisi, 7(26), 10-16.

9. DeSantis, C. E., Ma, J., Gaudet, M. M., Newman, L. A., Miller, K. D., Goding Sauer, A., ... Siegel, R. L. (2019). Breast cancer statistics, 2019. CA: A Cancer Journal for Clinicians. https://doi.org/10.3322/caac.21583

10. DeSantis, C., Siegel, R., Bandi, P., & Jemal, A. (2011). Breast cancer statistics, 2011. CA: A Cancer Journal for Clinicians, 61(6), 408-418.

11. Dennis, J. P., & Vander Wal, J. S. (2010). The cognitive flexibility inventory: Instrument development and estimates of reliability and validity. Cognitive Therapy and Research, 34, 241-253.

12. Dunkel-Schetter, C., Feinstein, L. G., Taylor, S. E., & Falke, R. L. (1992). Patterns of coping with cancer. Health Psychology, 11, 79.

13. Fallowfield, L., & Jenkins, V. (2015). Psychosocial/survivorship issues in breast cancer: Are we doing better? JNCI Journal of the National Cancer Institute, 27(1), 107. https://doi.org/10.1093/jnci/dju335

14. Friborg, O., Barlaug, D., Martinussen, M., Rosenvinge, J. H., & Hjemdal, O. (2005). Resilience in relation to personality and intelligence. International Journal of Methods in Psychiatric Research, 14(1), 29-42.

15. Friborg, O., Hjemdal, O., Rosenvinge, J. H., & Martinussen, M. (2003). A new rating scale for adult resilience: What are the central protective resources behind healthy adjustment? International Journal of Methods in Psychiatric Research, 12, 65-76.

16. Giese-Davis, J., DiMiceli, S., Sephton, S., & Spiegel, D. (2006). Emotional expression and diurnal cortisol slope in women with metastatic breast cancer in supportive-expressive group therapy: A preliminary study. Biological psychology, 73(2), 190-198.

17. Golden-Kreutz, D. M., Thornton, L. M., Wells-Di Gregorio, S., Frierson, G. M., Jim, H. S., Carpenter, K. M., Shelby, R. A., & Andersen, B. L. (2005). Traumatic stress, perceived global stress, and life events: Prospectively predicting quality of life in breast cancer patients. Health Psychology, 24, 288–296.

18. Graber, R., Pichon, F., & Carabine, E. (2015). Psychological resilience: State of knowledge and future research agendas. London, Overseas Development Institute.

19. Gülüm, I. V., & Dağ, İ. (2012). Tekrarlayıcı Düşünme Ölçeği ve Bilişsel Esneklik Envanterinin Türkçeye uyarlanması, geçerliliği ve güvenilirliği. Anatolian Journal of Psychiatry/Anadolu Psikiyatri Dergisi, 13(3).

20. Habimana S, Biracyaza E, Mpunga T, Nsabimana E, Kayitesi F, Nzamwita P, Jansen S. (2023) Prevalence and associated factors of depression and anxiety among patients with cancer seeking treatment at the Butaro Cancer Center of Excellence in Rwanda. Front Public Health. 16;11:972360. doi: 10.3389/fpubh.2023.972360. PMID: 36875374; PMCID: PMC9978744.

21. Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2013). Multivariate data analysis. Pearson Education Limited.

22. Hjemdal, O. (2006). Resilience predicting psychiatric symptoms: A prospective study of protective factors and their role in adjustment to stressful life events. Clinical Psychology, 13, 194.

23. Hoge, E. A., Austin, E. D., & Pollack, M. H. (2007). Resilience: Research evidence and conceptual considerations for posttraumatic stress disorder. Depression and Anxiety, 24, 139–152.

24. Institute of Medicine (US) and National Research Council (US) National Cancer

Policy Board; Hewitt, M., Herdman, R., & Holland, J. (Eds.). (2004). Meeting psychosocial needs of women with breast cancer. Washington, DC: National Academies Press (US).

25. Khalili, N., Farajzadegan, Z., Mokarian, F., & Bahrami, F. (2013). Coping strategies, quality of life and pain in women with breast cancer. Iranian Journal of Nursing and Midwifery Research, 18(2), 105-111.

26. Living Beyond Breast Cancer. (2022). Breast cancer treatment timeline. https://www.lbbc.org/about-breast-cancer/treatments/breast-cancer-treatment-timeline

27. Luthar, S. S., & Cicchetti, D. (2000). The construct of resilience: Implications for interventions and social policies. Development and Psychopathology, 12, 857–885.

28. Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. Child Development, 71, 543-562.

29. Mancini, A. D., & Bonanno, G. A. (2006). Resilience in the face of potential trauma: Clinical practices and illustrations. Journal of Clinical Psychology, 62, 971–985.

30. Masten, A. S. (2014). Ordinary magic: Resilience in development. New York, NY: The Guilford Press.

31. Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. Development and Psychopathology, 2(4), 425–444.

32. Masten, A. S., Hubbard, J. J., Gest, S. D., Tellegen, A., Garmezy, N., & Ramirez, M. (1999). Competence in the context of adversity: Pathways to resilience and maladaptation from childhood to late adolescence. Development and Psychopathology, 11, 143–169.

33. Rahimi, F., Mashhadi, A., & Hosseinzadeh Maleki, Z. (2023). Applying the unified protocol for transdiagnostic treatment of emotional disorders (UP) on emotional regulation, cognitive flexibility, mindful emotional awareness and quality of life in breast cancer: A pilot study. Multidisciplinary Cancer Investigation, 19–29.

34. Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcements. Psychological Monographs, 80, 1–28.

35. Southwick, S. M., Vythilingam, M., & Charney, D. S. (2005). The psychobiology of depression and resilience to stress: Implications for prevention and treatment. Annual Review of Clinical Psychology, 1, 255–291.

36. Tauber, N. M., O'Toole, M. S., Dinkel, A., Galica, J., Humphris, G., Lebel, S., ... & Zachariae, R. (2019). Effect of psychological intervention on fear of cancer recurrence: a systematic review and meta-analysis. Journal of clinical oncology, 37(31), 2899-2915.

37. The Turkish Ministry of Health. (2019). Sağlık İstatistikleri Yıllığı (Publication No. 978-975-590-792-5). https://dosyamerkez.saglik.gov.tr/Eklenti/40564/0/saglik-istatistikleri-yilligi-2019pdf.pdf

38. Yavuz, K. E. (2023). COVID-19; psychosocial support programs; telepsychiatry services; psychological resilience in children and adolescents: The power of self-recovery. Psikiyatride Güncel Yaklaşımlar, 15(1), 112-131.