Difficulty in emotion regulation, psychological resilience, and depression are associated with Prolonged Grief Disorder in patients with breast cancer

Buket Er[1], Şükrü Alperen Korkmaz[2], Lokman Koral[3], Demet Güleç Öyekçin[4]
[1]M.D, Department of Psychiatry, Arhavi State Hospital, Artvin, Türkiye https://orcid.org/0009-0009-3357-5744
[2]Assoc. Prof., [4]Prof., Department of Psychiatry, Çanakkale Onsekiz Mart University, Çanakkale, Türkiye https://orcid.org/0000-0002-0684-3303 https://orcid.org/0000-0003-3828-0426
[3]Assoc. Prof., Department of Medical Oncology, Çanakkale Onsekiz Mart University, Çanakkale, Türkiye https://orcid.org/0000-0003-4646-4591

SUMMARY

Objective: Grief is a natural reaction to potential losses faced by women with breast cancer. To our knowledge, no study has been conducted on prolonged grief disorder (PGD) in women with breast cancer. This study investigated the sociodemographic, cancer-specific, and psychological factors affecting PGD and the relationship between psychological resilience (PR), difficulty in emotion regulation (DER), and PGD in patients with breast cancer.

Method: Breast cancer patients who met the inclusion criteria were included in the study (N=177). The Prolonged Grief Disorder Scale-Patient Form, Resilience Scale for Adults, Difficulties in Emotion Regulation Scale – Brief Form, and Hospital Anxiety and Depression Scale were administered to the patients. The DSM-5-oriented clinical interview was also conducted.

Results: No significant relationships were found between PGD and clinical variables such as tumor stage, recurrence, or treatment types. Significant relationships were found between PGD and a history of mental illness and active psychotropic use. PGD was negatively correlated with age, total duration of cancer, and resilience. PGD was also positively associated with DER. DER was found to be a partial mediator variable (PR→DER→PGD), and depression score acted as a moderator variable in the relationship between PR and PGD, after adjusting for confounders.

Discussion: The findings of our study indicate that DER, depression, and PR influence PGD in breast cancer patients. We believe that all patients with breast cancer for more than six months should be evaluated for prolonged grief and, if necessary, referred to grief psychotherapies that help them to accept their losses easily.

Key Words: Breast cancer, emotion regulation, prolonged grief, psychological resilience, psycho-oncology

INTRODUCTION

Grief is a profound, prolonged, and distressing condition following losses (1, 2). Severe physical and psychological losses accompany breast cancer. Therefore, grief is natural and inevitable for the patient (3). Reactions to loss vary from person to person; however, some universal grief responses include numbness, denial, anger, crying, and a sense of emptiness. When the grief process is not adequately addressed, it may evolve into a prolonged grief disorder (PGD). In PGD, despite more than six months having passed since the loss, difficulties accepting the loss persist, impacting functionality (4).

Breast cancer is accompanied by losses throughout the diagnosis (loss of health, becoming a patient), treatment (effects of mastectomy, chemotherapy, radiotherapy), and post-treatment phases (early menopause, social and individual losses, and loss of employment). Unresolved psychological processes lead to difficulties adapting to treatment, an increase in the rates of psychopathology, and a significant loss of functionality. If grief is acknowledged and negative emotions are appropriately processed, the grieving process unfolds healthily (5). Current studies provide evidence that

DOI: 10.5505/kpd.2025.41961

Cite this article as: Er B, Korkmaz SA, Koral L, Gulec Oyekcin D. Difficulty in emotion regulation, psychological resilience, and depression are associated with Prolonged Grief Disorder in patients with breast cancer. Turkish J Clin Psych 2025; 28:95-104

The arrival date of article: 20.01.2025, **Acceptance date publication:** 22.02.2025

Turkish J Clinical Psychiatry 2025;28: 95-104

difficulty in emotion regulation (DER), such as not understanding, expressing, or suppressing emotions, is associated with psychopathology (6). The impact of DER on PGD is observed both directly and indirectly through cognitions related to grief (7).

Psychological resilience is intricately associated with an individual's capacity for adaptation. In a study involving individuals diagnosed with chronic illnesses, those exhibiting high levels of psychological resilience demonstrated an ability to navigate their illness processes effectively(8). They maintained cognitive engagement, participated in activities that fostered positive well-being, and focused on future possibilities, consequently preserving their functional capabilities. Conversely, individuals characterized by low psychological resilience and those undergoing the grieving process are more susceptible to PGD compared to their counterparts with elevated psychological resilience(9-10).

This study aimed to investigate the sociodemographic, clinical, treatment-related, and psychological factors that may influence PGD in patients with breast cancer. Additionally, this study aimed to examine the relationship between DER and psychological resilience with PGD in these patients.

METHOD

Study Sample

This study was conducted with 177 female patients who applied to Çanakkale Onsekiz Mart University Hospital Medical Oncology Unit between 01.02.2023 and 30.04.2023, met the inclusion criteria, and volunteered to participate. A total of 346 patients who were diagnosed with breast cancer and consecutively admitted to the Medical Oncology Unit were evaluated for inclusion in the study. The inclusion criteria for the study were individuals diagnosed with breast cancer at least six months and at most 120 months before admission. Exclusion criteria were the presence of psychosis spectrum disorders (schizophrenia, schizoaffective disorder, delusional disorder, schizotypal personality disorder) or intellectual disabilities or major neurocognitive disorder (dementia) and the diagnosis of cancer within 6 months or more than 120 months before the diagnosis. A total of 169 patients were excluded from the study because they did not meet the inclusion criteria (presence of a psychiatric illness that would cause judgment or cognitive impairment, or breast cancer less than six months ago or more than 120 months ago) and did not want to participate or could not be reached. One of the most commonly used methods to calculate the sample size is the Cochran formula (n = (Z ^ 2 * p * (1-p)) / E ^ 2). The sample size was calculated as n= 150 for Z= Z score corresponding to the confidence level (Z= 1.96 for 95% confidence level); p= expected rate (0.50); E= margin of error (0.08). We obtained written informed consent from participants and conducted the study in line with the ethical principles of the World Medical Association (WMA) Declaration of Helsinki.

Materials

To determine the participants' demographic information and oncological and psychological clinical conditions, the "Sociodemographic and Clinical Data Form" was used. The "Prolonged Grief Disorder Scale - Patient Form" was utilized to measure prolonged grief symptoms. The "Resilience Scale for Adults" assessed psychological resilience. The "Difficulties in Emotion Regulation Scale–Brief Form" was used to gather information about emotion regulation skills and difficulties if present. To determine anxiety and depression risk related to the disease, the "Hospital Anxiety and Depression Scale" was administered. Additionally, a clinical interview based on the DSM-5 guidelines was conducted by the principal investigator to ascertain whether participants had active psychiatric disorder diagnoses at the time of their participation in the study.

Prolonged Grief Disorder Scale – Patient Form (PG-12-Patient Form): This scale consists of 12 items rated on a five-point Likert scale with a score range of 12 to 60. A higher total score indicates more severe prolonged grief symptoms (3, 11).

Difficulty in Emotion Regulation Scale – Brief Form (DERS-16): The scale consists of 16 items. There is

no cut-off point for the scale, and a positive relationship exists between a higher total score and greater difficulty in emotion regulation (DER) (12).

Resilience Scale for Adults (RSA): This 33-item scale determines individuals' psychological resilience levels (13, 14). The scale score indicates the level of psychological resilience, which is evaluated based on that score.

Hospital Anxiety and Depression Scale (HADS): The purpose of this scale is to determine the anxiety and depression risk status of patients due to their existing illness rather than diagnosing anxiety and depression. The scale consists of 14 questions, forming two subscales: anxiety and depression. Patients can score between 0 and 21 on each subscale. The cutoff point for each sub-scale is set at 8 (15).

Statistical Analysis

Statistical analyses were performed using IBM SPSS 28.0 (IBM, NY, USA). Before analyzing the data, they were checked for loss and extreme values. For the normality status of the numerical variables, the requirement was set based on skewness and kurtosis values falling between -1.5 and +1.5 (16). The standardized z-scores were observed to fall within the (-3.00 <z< 3.00) range. Continuous variables were expressed as mean ± standard deviation and minimum and maximum values, while categorical variables were presented as numbers and percentages. Descriptive statistics were examined, followed by independent samples t-test, one-way analysis of variance (ANOVA), and Pearson correlation analysis for the variables. Multiple regression analysis (enter model) was performed to identify the factors influencing the prediction of PGD. To examine the relationship between psychological resilience and PGD, moderator variable analysis was conducted to determine whether the depression score served as a moderator variable, and mediator variable analysis was performed to ascertain whether difficulty in emotion regulation acted as a mediator variable. The significance level was set at $\alpha = 0.05$, and all the tests were 2-tailed.

RESULTS

Sociodemographic and clinical data are shown in Table 1. The mean age of the 177 breast cancer patients who participated in the study was 54.24 ± 10.01 years, and the average years of education received were 8.55 ± 4.56 years. The majority of these patients were unemployed [58.8% (n=104)], residing in rural areas [52.0% (n=92)], married [72.9% (n=129)], and living with their nuclear family [75.1% (n=133)].

It was observed that 33.3% (n=59) of patients had received a psychiatric diagnosis at least once in the past. During the DSM-5-oriented clinical interviews, 15.8% (n=28) of the participants had an active psychiatric diagnosis. At the time of the interview, 19.2 % (n = 34) of the patients were taking psychiatric medication. The rate of a history of suicide attempts was 2.8% (n=5).

Table 1.

	Sample (n)	Percent (%)	Mean – SD(min-max)
Age	177		54,24 – 10,01(29-80)
Education (years)	177		8,55 – 4,56 (0-17)
Employment Status			
Not working	104	%58,8	
Working	42	%23,7	
Retired	31	%17,5	
Place			
Urban Center	85	%48,0	
Village/town	92	%52,0	
Marital Status			
Married	129	%72,9	
Single	14	%7,9	
Divorced	13	%7,3	
Widowed	21	%11,9	
Living Arrangement			
Alone	32	%18,1	
With nuclear family	133	%75,1	
With extended family	12	%6,8	
History of Mental Disorder			
Yes	59	%33,3	
No	118	%66,7	
Current Psychiatric Diagnosis			
Depression	10	%5,6	
Anxiety	14	%7,9	
Other	4	%2,3	
None	149	%84,2	
Current Psychiatric Drug Use			
Yes	34	%19,2	
No	143	%80,8	
Total Cancer Duration (months)	177		30,71–31,87 (6-120)
Tumor Stage			
Stage 1	19	%10,7	
Stage 2	77	%43,5	
Stage 3	44	%24,9	
Stage 4	37	%20,9	
Cancer Recurrence			
Yes	28	%15,8	
No	149	%84,2	
Hormone Therapy			
Yes	70	%39,5	
No	107	%60,5	

Table 2: Relationship between PGD and clinical variables

	PG-12-Patient Form		
Variable	Mean+SD	F/t value	p-value
Cancer recurrence		1.05	0.29[b]
Yes	26.18 – 8.66		
No	24.35 – 8.41		
Tumor stage		0.89	0.97[a]
I	23.95 – 8.71		
II	24.7 – 8.31		
III	24.43 – 8.42		
IV	25.11 – 8.97		
Types of treatment		0.22	0.96[a]
Only chemotherapy	24.85 – 7.38		
Only breast surgery	23.47 – 9.11		
Chemotherapy+radiotherapy	21.0 – 8.88		
Breast surgery+chemotherapy	25.33 – 9.43		
Breast surgery+radiotherapy	24.69 – 7.15		
Breast surgery+chemotherapy +radiotherapy	24.68 – 8.63		
Chemotherapy Protocols		0.32	0.81[a]
Classic chemotherapy	24.4 – 8.23		
Classic chemotherapy +smart drugs	26.46 – 10.64		
Smart drugs only	25.13 – 8.66		
None of them	24.0 – 8.21		
Hormone therapy		0.52	0.60[b]
Yes	24.23 – 8.6		
No	24.91 – 8.4		
History of suicide		0.96	0.07[b]
Yes	31.2–15.59		
No	24.45–8.16		
Current psychiatric diagnosis		2.27	0.02[b] *
Yes	27.93 – 9.1		
No	24.02 – 8.22		
Current psychiatric medication use		2.40	0.017[b] *
Yes	27.74 – 9.4		
No	23.9 – 8.08		
History of mental illness		2.06	0.04[b] *
Yes	26.47–9.20		
No	23.72–7.94		
HADS-A score		3.24	<0.001[b] *
? 8	29.42 – 9.61		
< 8	23.81 – 7.98		
HADS-D score		3.29	<0.001[b] *
? 8	29.94 – 10.52		
< 8	23.49 – 8.29		

Note: PG-12-Patient Form: Prolonged Grief Disorder Scale- Patient Form; HADS-A: Hospital Anxiety and Depression Scale - Anxiety Score; HADS-D: Hospital Anxiety and Depression Scale - Depression Score; * Statistical Significant; a: ANOVA test; b: Independent Samples t-test; SD: standard deviation.

The average time since breast cancer diagnosis for the participating patients was 30.71 ± 31.87 months. When evaluating the stage at which patients received their diagnoses, 10.7% (n=19) were at stage 1, 43.5% (n=77) at stage 2, 24.9% (n=44) at stage 3, and 20.9% (n=37) at stage 4. In terms of cancer recurrence during the cancer process, 15.8% (n=28) of patients had at least one recurrence.

Regarding the treatments received by patients during the cancer period: 15.3% (n=27) received only chemotherapy, 9.6% (n=17) underwent only breast surgery, 1.7% (n=3) received both chemotherapy and radiotherapy, 16.9% (n=30) underwent breast surgery and received chemotherapy, 7.3% (n=13) underwent breast surgery and received radiotherapy, and 49.2% (n=87) received all three treatments of chemotherapy, breast surgery, and radiotherapy. When patients were evaluated based on the type of chemotherapy administered during the treatment period, 54.2% (n=96) received classic chemotherapy protocols, 21.5% (n=38) received smart drugs, and 7.3% (n=13) received both classic chemotherapy protocols and smart drug treatments. Furthermore, 16.9% (n=30) of patients did not receive chemotherapy. In terms of hormone treatment, 39.5% (n=70) of the patients underwent hormone therapy. Among these patients, 13% (n=23) used tamoxifen and 26.5% (n=47) used aromatase inhibitors.

Table 3: Correlation Analysis of PGD and DER, resilience and age

	PG-12-Patient Form	
Variable	r value	p-value
DERS-16 score	0.27	<0.001*
RSA score	-0.22	0.003*
Age	-0.26	<0.001*
Total cancer time	-0.15	0.004*
Education	0.08	0.293
HADS-A score	0.36	<0.001*
HADS-D score	0.35	<0.001*

Note: r: Pearson correlation coefficient; * Statistical significance level; PG-12-Patient Form: Prolonged Grief Disorder Scale - Patient Form; HADS-A: Hospital Anxiety and Depression Scale-Anxiety Score; HADS-D: Hospital Anxiety and Depression Scale - Depression Score; DERS-16: Difficulty in Emotion Regulation Scale - Brief Form Score; RSA: Resilience Scale for Adults Score.

It was determined that 28 of the 177 participants had a current diagnosis of mental disorders. Of these, 14 were diagnosed with anxiety disorder, 10 with depressive disorder, and the remaining four were identified as other psychiatric disorders (such as bipolar disorder and obsessive-compulsive disorder).

This study calculated the Cronbach's alpha for the PG-12-Patient Form as 0.82. The Kaiser-Meyer-Olkin value for the PG-12-Patient Form scale was 0.826, and the Bartlett test was significant ($p < 0.001$).

No association was found between the total PGD scores and patients' employment status, place of residence, and marital status ($p > 0.05$). A statistically significant difference was observed in the total PGD score between the groups with and without a current psychiatric diagnosis: $t(175)=2.27$, $p= 0.02$. A statistically significant difference was detected between the use of psychiatric medications and PGD score: $t(175)=2.40$, $p=0.017$. Analyzing individuals with a history of mental illness, a statistically significant difference was found between their PGD: $t(175) = 2.06$, $p = 0.04$. The PGD scores of individuals with HADS-A scores ≥ 8 (n=26) and HADS-D scores ≥ 8 (n=17) were significantly different from those with low scores on these scales: [$t(175.1) = 3.24$, $p < 0.001$; $t(175) = 3.29$, $p < 0.001$, respectively] (Table 2).

A positive correlation was found between PGD and DER ($p < 0.001$). A negative correlation was observed between the PGD and resilience ($p = 0.003$). Furthermore, a negative correlation was identified between PGD and patient age ($p < 0.001$) and total duration of cancer ($p = 0.004$). When examining the correlation between PGD and HADS-A and HADS-D scores, moderate and positive correlations were found (both $p < 0.001$) (Table 3).

The predictors of PGD were assessed using multiple regression analysis. The model included five independent variables (age, total cancer duration, Resilience Scale for Adults (RSA) score, HADS-D score, and DERS-16 score). Collectively, these results explain the variance by 20.7%, $F(5,171) = 10.19$, $p < 0.001$. Accordingly, an increase in age by one unit led to a decrease of 0.15 units in PG-12-Patient Form scores ($p= 0.009$, $OR= -0.186$), an increase in total cancer duration by one unit resulted in a reduction of 0.42 units in PG-12-Patient Form scores ($p= 0.024$, $OR= -0.158$), and an increase in HADS-D scores by one unit led to an increase of 0.7 units in PG-12-Patient Form scores ($p= 0.002$, $OR= 0.250$).

Analysis of the mediation analysis was applied to determine whether DER mediates after adjusting for the effects of age, total cancer duration, education level, tumor stage, and recurrence in the relationship between resilience and PGD. When DER was identified as a partial mediator variable and added to the model, it explained 21.9% of the indirect effect on the PG-12-Patient Form scores (Figure 1).

Analysis of the moderation model assessed whether the depression score moderated the relationship between resilience and PGD after correcting for the effects of covariates (age, total cancer duration, education level, tumor stage, and recurrence). Depression score was identified as a moderator variable, strengthening the pre-existing rela-

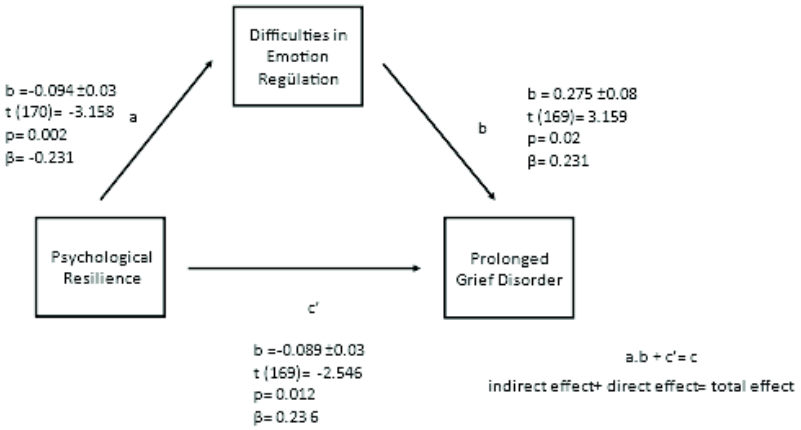

Figure 1. Mediation model after adjusting for age, total cancer duration, education level, tumor stage, and recurrence

tionship between the two variables. Additionally, the interaction term was found to be $R^2 = 0.072$, and when the depression score was added as a moderating variable to the model, its contribution to the model was 7.2% (Figure 2).

DISCUSSION

Breast cancer is the most common cancer type in women (17). Parallel to advancements in early diagnosis and treatment methods, the survival rate of breast cancer has also increased (18). In this study, no significant relationship was found between prolonged grief disorder and clinical variables such as tumor stage, recurrence, or treatment types in breast cancer patients. Positive correlations were found between prolonged grief disorder with a history of mental illness and active psychotropic use. Prolonged grief was inversely associated with age, total cancer duration, and resilience. In addition, difficulty in emotion regulation was found to be a partial mediator variable, and depression was found to be a moderator variable in the relationship between psychological resilience and prolonged grief disorder. As a result, ''surviving'' breast cancer brings along the late psychological effects of the diagnosis and treatment process (19). PGD resulting from disruptions in the grieving process is an important psychological problem for breast cancer patients.

There was a correlation between PGD and variables, such as age, total duration of cancer, history of mental illness, and current psychiatric diagnosis or medication use, which may contribute to the risk of PGD. Although younger women experience more persistent problems related to physical functionality after the diagnosis of breast cancer, they face more difficulties in psychological adaptation to the diagnosis (20). Adapting to the uncertainty of a breast cancer diagnosis, which can result in the loss of career, family life, and fertility, is more challenging when considering these losses (21).

In our study, the longer the time elapsed since cancer diagnosis, the lower the likelihood of PGD.

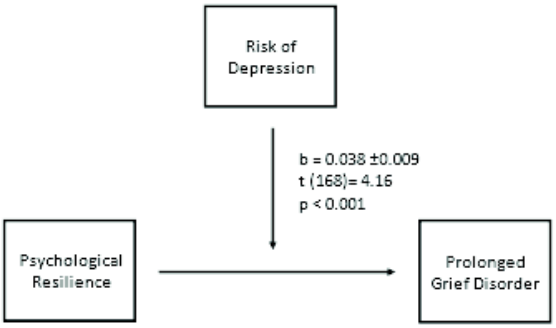

Figure 2. Moderation model after adjusting for age, total cancer duration, education level, tumor stage, and recurrence

This inverse relationship can be explained by the completion of the grief process, adaptation to a new life, the end of the treatment process, and improvement in treatment-related side effects over time after cancer patients receive a diagnosis. It is challenging to determine how long the "healthy" grieving process should last and when prolonged grief begins. From this perspective, the duration, intensity, and functional impact of grief symptoms seem to be less associated with prolonged grief (11). This study considers the grieving process as the period starting from the cancer diagnosis.

Our study found no significant relationship between tumor stage, history of recurrence, and type of treatment received with PGD. The independence of PGD from the characteristics of cancer and the treatments received suggests that other significant factors influence this process. The presence of a pre-loss mental illness in an individual is defined in the literature as one of the factors influencing the grieving process. When there is an underlying depressive disorder, experiencing loss can trigger a worsening of depressive symptoms and affect the ordinary course of the grieving process (22). That is, a history of mental illness, current psychiatric diagnosis, or psychiatric medication use was found to be associated with PGD.

Anxiety disorders were detected in 7.9% of cases based on the DSM-5-oriented clinical interview in this study, a rate similar to that in the general population. According to World Health Organization 2022 data, an estimated 5% of the world's population (6% of women) is experiencing depression (23). The rate of patients diagnosed with depression based on the DSM-5-oriented clinical interview was found to be 5.6% in this study, not significantly higher than in the general population. However, the higher rates of anxiety risk (14.7%) and depression risk (13.0%) associated with the current illness may be due to psychological symptoms remaining at the symptom level rather than reaching the diagnostic level. Considering the significant relationship between increased PG-12-Patient Form scores and the risk of anxiety and depression in our study, it can be suggested that some psychological symptoms are specific to PGD. Distinguishing between PGD and depressive disorders is challenging (24). During this process, individuals may exhibit vegetative symptoms commonly seen in depression, such as social isolation, sleep disturbances, and changes in appetite, in addition to intense grief (25).

Resilience does not imply avoiding efforts to escape from negatives or not experiencing psychological distress; instead, it means being able to emerge stronger from negative experiences and adapt to the changes brought about by challenging life events (26). Resilience is not solely an innate trait; it is a skill shaped by interacting innate biological features with variables such as the social environment, family, and other factors, developing over time (27). The emergence of PGD means the inability to mourn, as individuals cannot digest and internalize their losses. Individuals with high psychological resilience also have a more remarkable ability to mourn and process grief. Our study observed that scores on the PG-12-Patient Form scale decreased as psychological resilience increased. Therapeutic interventions that strengthen an individual's psychological resilience during the six months after learning about breast cancer diagnosis can enhance a person's ability to mourn and prevent the development of PGD.

Coping with cancer is a process involving emotion regulation (28). Patients experience not only positive emotions, such as hope and gratitude, but also negative emotions, such as anxiety, sadness, anger, guilt, and fear (29). The abundance of negative emotions and their inability to be managed in cancer patients leads to the development of psychological disorders and prolonged grief. In the literature, studies on emotion regulation in cancer patients often focus on defense mechanisms that involve not expressing negative emotions (such as emotional suppression or inhibition) (30). In our study, increased difficulty with emotion regulation was associated with increased PGD.

DER was identified as a partial mediator after adjusting for the effects of age, total cancer duration, education level, tumor stage, and recurrence in the relationship between resilience and PGD. In addition to the direct impact of resilience on PGD, there is also an indirect effect. Resilience can determine an individual's ability to mourn based on

the success or failure of their emotion regulation strategies, influencing whether grief turns into PGD (31).

After adjusting for age, total cancer duration, education level, tumor stage, and the impact of recurrence, the patient's depression score was found to be a moderating variable in the relationship between resilience and PGD. According to this result, the relationship between prolonged grief and resilience strengthens in the presence of depression risk. In the etiology of depression, biological factors such as genetics, neural connections, and hormones interact with social and environmental factors. In epigenetics, resilience is an essential factor. Low resilience is associated with more severe depressive symptoms (32). Therefore, if individuals with low resilience also have a risk of depression, PGD may increase.

Study Limitations and Strengths

Our study had some limitations that should be considered. The sample size of our study was limited to patients with a diagnosis of breast cancer who were followed at a single center. When evaluating PGD in patients, only the grief process related to cancer was considered, and whether the participants had recently experienced other losses that could create grief was overlooked. Owing to the cross-sectional nature of our study, the long-term effects of patients' prolonged grief processes could not be assessed, which is a significant limitation of this study. In addition, it was not evaluated whether the patients who participated in our study had social support, especially family support. Finally, many parameters not included in the study could have affected the relationship between grief, difficulty in emotion regulation, and resilience.

Despite these limitations, this study had several strengths. First, to our knowledge, this is the first study to examine the relationship between prolonged grief, emotion regulation difficulty, and resilience in individuals diagnosed with breast cancer. Second, conducting a study with an adequate sample size would enhance its power. Third, evaluating patients' clinical mental symptoms not only with self-report scales but also with DSM-5-oriented interviews ensures a more accurate assessment of the mental diagnoses.

Grieving is necessary because it facilitates the letting go of attachments and habits that no longer serve a purpose, thus enabling growth and development. When we distort the truth and deny loss, grieving becomes impossible. Each loss involves a grieving process, and the inability to grieve leads to prolonged grief disorder. Women diagnosed with breast cancer lose their health, breasts, hair, eyebrows, fertility, sexual lives, and future ideals. During the treatment process, they experience various physical difficulties, such as nausea, vomiting, pain, and fatigue, and have to abandon many daily habits. Additionally, breast cancer is an unpredictable disease in terms of recurrence, and the uncertainty and fear of getting sick again contribute to the risk of prolonged grief disorder. Therefore, cancer not only has physical consequences but also severe psychological consequences.

We determined that a history of mental illness, current psychiatric diagnosis, and use of psychiatric medication had an impact on PGD. We found that PGD was less prevalent with advancing age and over time since cancer diagnosis. Additionally, PGD increases as psychological resilience decreases and DER intensifies. Furthermore, to investigate the relationship between resilience and PGD, we identified DER as a partial mediating variable and disease-related depression risk as a moderating variable after adjusting for the effects of age, total cancer duration, education level, tumor stage, and recurrence. Upon reviewing the literature, we observed a scarcity of studies examining disease-related grief processes and PGD in patients with cancer. Existing studies on PGD have predominantly focused on the examination of PGD in individuals who have lost close relatives or the exploration of anticipatory grief in terminal-stage cancer patients. Further large-scale longitudinal studies are warranted to enhance the generalizability of our study results.

Transparency

Declaration of funding: This research received no

specific grant from any funding agency, commercial or not-for-profit sectors.

Declaration of financial/other relationships: The authors have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.

Author contributions: Buket Er: Conceptualization; writing original draft; investigation; formal analysis; visualization. Şükrü Alperen Korkmaz: Writing original draft; formal analysis; supervision. Lokman Koral: Conceptualization; investigation; supervision. Demet Güleç Öyekçin: Conceptualization; writing original draft; investigation; supervision; project administration.

Acknowledgements: We would like to thank Dr. Çetin Toraman and Dr. Coşkun Bakar from Çanakkale Onsekiz Mart University Faculty of Medicine for their support in the conceptualization of the study and the support of the team working in the clinical oncology department and the patients involved in the study.

Data availability statement: The data underlying this article cannot be shared publicly due to the privacy of individuals willing to share their clinical information for quality improvement purposes. The data will be shared with the corresponding author upon reasonable request.

Ethics statement: The study has been approved by the Çanakkale Onsekiz Mart University Faculty of Medicine Clinical Research Ethics Committee with the decision dated 18.01.2023 and numbered 2023/02-17.

Correspondence address: Assoc. Prof., Sukru Alperen Korkmaz, Department of Psychiatry, Çanakkale Onsekiz Mart University, Çanakkale, Türkiye alperen.korkmaz@comu.edu.tr

REFERENCES

1. Özel Y, Özkan B. Kayıp ve yasa psikososyal yaklaşım. Current Approaches in Psychiatry 2020; 12(3):352-367.

2. Bildik T. Ölüm, kayıp, yas ve patolojik yas. Ege Journal of Medicine 2013; 52:223-229.

3. Gökler Danışman I, Yalçınay M, Yıldız N. Measuring grief symptoms in cancer patients: The reliability and validity study of the Turkish version of Prolonged Grief Disorder Scale. Turk J Psychiatry 2017 Fall; 28(3):190-197.

4. Prigerson HG, Horowitz MJ, Jacobs SC, Parkes CM, Aslan M, Goodkin K. Prolonged grief disorder: Psychometric validation of criteria proposed for DSM-V and ICD-11. PLoS Med August 2009; 6(8):e1000121.

5. Moules NJ, Simonson K, Prins M, Angus P, Bell JM. Making room for grief: walking backwards and living forward. Nurs Inq. June 2004; 11(2):99-107.

6. Aldao A, Nolen-Hoeksema S, Schweizer S. Emotion-regulation strategies across psychopathology: A meta-analytic review. Clin Psychol Rev 2010; 30(2):217-237.

7. Cesur G. Kayıp Yaşantılarının Sonrası: Tartışmalı bir kavram "Karmaşık Yas". Nesne Psikoloji Dergisi 2017; 5(10):289-310.

8. Tusaie K, Dyer J. Resilience: a historical review of the construct. Holist Nurs Pract 2004; 18(1):3-8.

9. Becker G, Newsom E. Resilience in the face of serious illness among chronically ill African Americans in later life. J Gerontol B Psychol Sci Soc Sci. 2005; 60(4):214-223.

10. Yu NX, Chan CLW, Zhang J, Stewart SM. Resilience and vulnerability: prolonged grief in the bereaved spouses of marital partners who died of AIDS. AIDS Care 2016; 28(4):441-444.

11. Jacobsen JC, Zhang B, Block SD, Maciejewski PK, Prigerson HG. Distinguishing symptoms of grief and depression in a cohort of advanced cancer patients. Death Stud. 2010; 34(3):257-273.

12. Yiğit İ, Guzey Yiğit M. Psychometric Properties of Turkish Version of Difficulties in Emotion Regulation Scale-Brief Form (DERS-16). Curr Psychol. Dec 2019; 38(6):1503-1511.

13. Friborg O, Hjemdal O, Rosenvinge JH, Martinussen M. A new rating scale for adult resilience: what are the central protective resources behind healthy adjustment? Int J Methods Psychiatr Res. 2003; 12(2):65-76.

14. Basım N. Çetin F. Yetişkinler için Psikolojik Dayanıklılık Ölçeği'nin Güvenilirlik ve Geçerlilik Çalışması. Türk Psikiyatri Derg 2011; 22(2):104– 114.

15. Aydemir Ö. Hastane anksiyete ve depresyon ölçeği türkçe formunun geçerlilik ve güvenilirlik çalışması. Türk Psikiyatri Derg 1997; 8(4):280-287.

16. Tabachnick BG, Fidell LS, Ullman JB. Using multivariate statistics. 7th ed. NY: Pearson; 2019.

17. Saglik.gov.tr [homepage on the internet] T.C. Sağlık Bakanlığı Sağlık Bilgi Sistemleri Genel Müdürlüğü Sağlık İstatistikleri Yıllıkları. [Cited 2023 April 10] Available from: https://www.saglik.gov.tr/

18. Coleman MP, Forman D, Bryant H, Butler J, Rachet B, Maringe C. Cancer survival in Australia, Canada, Denmark, Norway, Sweden, and the UK, 1995- 2007 (the International Cancer Benchmarking Partnership): an analysis of population-based cancer registry data. Lancet Lond Engl. Jan 2011; 377(9760):127-138.

19. Allen JD, Savadatti S, Gurmankin Levy A. The transition from breast cancer 'patient' to 'survivor'. Psychooncology 2009; 18(1):71-78.

20. Cimprich B, Ronis DL, Martinez-Ramos G. Age at diagnosis and quality of life in breast cancer survivors. Cancer Pract. 2002; (2):85-93.

21. Mor V, Malin M, Allen S. Age differences in the psychosocial problems encountered by breast cancer patients. J Natl Cancer Inst Monogr. 1994; (16):191-197.

22. Lotterman JH, Bonanno GA, Galatzer-Levy I. The heterogeneity of long-term grief reactions. J Affect Disord. 2014; 167:9-12.

23. Who.int [homepage on the internet] Depressive disorder (depression). [Cited 2023 June 30] Available from: http://www.who.int/.

24. Boelen PA, van den Bout J, de Keijser J. Traumatic grief as a disorder distinct from bereavement-related depression and anxiety: a replication study with bereaved mental health care patients. Am J Psychiatry 2003; 160(7):1339-1341.

25. Friedman RA. Grief, depression, and the DSM-5. N Engl J Med. May 2012; 366(20):1855-1857.

26. Babić R, Babić M, Rastović P, Ćurlin M, Šimić J, Mandić K, vd. Resilience in Health and Illness. Psychiatr Danub. 2020; 32(Suppl 2):226-232.

27. Sisto A, Vicinanza F, Campanozzi LL, Ricci G, Tartaglini D, Tambone V. Towards a transversal definition of psychological resilience: a literature review. Med Kaunas Lith. 2019; 55(11):745.

28. Brandão T, Tavares R, Schulz MS, Matos PM. Measuring emotion regulation and emotional expression in breast cancer patients: A systematic review. Clin Psychol Rev. Feb 2016; 43:114-127.

29. Conley C, Bishop B, Andersen B. Emotions and emotion regulation in breast cancer survivorship. Healthcare 2016; 4(3):56.

30. Batenburg A, Das E. Emotional coping differences among breast cancer patients from an online support group: a cross-sectional study. J Med Internet Res. 2014; 16(2):e28.

31. Troy AS, Mauss IB. Resilience in the face of stress: emotion regulation as a protective factor. In Resilience and Mental Health: Challenges Across the Lifespan, Cambridge: Cambridge University Press, 2011.

32. Shaffer KM, Riklin E, Jacobs JM, Rosand J, Vranceanu AM. Psychosocial resiliency is associated with lower emotional distress among dyads of patients and their informal caregivers in the neuroscience intensive care unit. J Crit Care 2016; 36:154-159