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Pre-Death Grief in Caregivers of Cancer Patients: Associations with Caregiver Burden, Depression, and Disease-Related Variables — A Cross-Sectional Study

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Abstract

Background:

Pre-death grief is an increasingly recognised psychological phenomenon among family caregivers of cancer patients. Although it intersects with depression, it is conceptualised as a distinct construct encompassing loss-specific processes such as personal sacrifice, longing, and worry. Its predictors remain insufficiently understood, particularly in non-Western cultural contexts.

Methods:

This cross-sectional, correlational study was conducted at the Medical Oncology Outpatient Clinic of Ondokuz Mayıs University Faculty of Medicine. Of 129 caregivers approached, 10 (7.7%) were excluded due to missing data confirmed as completely at random (Little's MCAR test: χ^2=74.123, df = 62, p = 0.139); the final sample comprised 119 participants. Sample size was determined via a priori power analysis (f^2=0.15, α = 0.05, power = 95%). Data were collected using the Marwit–Meuser Caregiver Grief Inventory–Short Form (MM-CGI-SF), Caregiver Reaction Assessment (CRA), Beck Depression Inventory (BDI), and a sociodemographic form. Pearson correlation and multiple linear regression were conducted; multicollinearity was assessed via VIF values (1.451–2.574).

Results:

CRA subscales collectively accounted for 81.6% of the variance in MM-CGI-SF total scores [F(6,112) = 82.557, p < 0.001]. Lack of family support (β = 0.512, p < 0.001) and schedule disruption (β = 0.430, p < 0.001) were the strongest independent predictors. Depression significantly predicted the Heartfelt Sadness and Longing (β = 0.343) and Worry and Felt Isolation (β = 0.536) subscales, but was not a significant predictor of Personal Sacrifice Burden. Duration of caregiving and disease stage were also significant predictors of MM-CGI-SF total scores [F(2,116) = 21.929, p < 0.001, R^2=0.274].

Conclusions:

Pre-death grief in cancer caregivers is closely associated with caregiver burden, depressive symptoms, and lack of social support. The failure of depression to predict the Personal Sacrifice Burden subscale supports the conceptual distinction between grief and depression, and underscores that depression screening alone may not fully capture caregivers' grief experience. Caregivers of patients with advanced disease and long-term caregivers constitute a high-risk group. Grief-specific assessment instruments should be incorporated alongside depression screening in routine palliative oncology practice.

Background

Cancer remains one of the leading causes of mortality and morbidity worldwide; as its global burden continues to grow, it profoundly affects not only patients but also the family members and informal caregivers who actively participate in the care process [1, 2]. From the moment of diagnosis, the treatment trajectory generates intense psychological stress for both patients and caregivers due to physical symptom burden, functional decline, disease progression, and the constant proximity of death [3]. In advanced and metastatic cancer in particular, caregiving may become prolonged, exhausting, and emotionally depleting; caregivers must adapt simultaneously to multiple roles — meeting the patient's emotional needs, coordinating treatment, managing financial demands, and coping with profound uncertainty [4, 5].

Depression, anxiety, burnout, and caregiver burden are well-documented psychological sequelae among cancer caregivers, and are associated with deterioration in quality of life, social isolation, and psychiatric morbidity [6, 7, 8]. In recent years, increasing attention has been directed towards pre-death grief (also referred to as anticipatory grief in the literature) as a distinct psychological phenomenon experienced by caregivers [9]. Pre-death grief refers to the emotional, cognitive, and behavioural grief responses that arise before an anticipated death, encompassing fear of loss, uncertainty, loneliness, role transitions, and functional decline [10, 11].

Although pre-death grief shares certain features with depression, it is conceptualised as a psychologically distinct construct. Whereas depression represents a broader mood disturbance, pre-death grief involves loss-specific processes including longing, anticipatory coping, and a sense of sacrifice tied to the caregiving role [9, 12, 13]. Prior literature has shown that grief and depressive symptoms frequently co-occur in caregivers, yet these two constructs can be clinically distinguished. Studies involving caregivers experiencing prolonged grief demonstrate that grief symptoms may persist independently of depressive symptomatology [14].

The Marwit–Meuser Caregiver Grief Inventory (MM-CGI) was originally developed in long form by Marwit and Meuser (2002) [15], and subsequently adapted into a short form (MM-CGI-SF) validated across diverse patient populations including cancer caregivers [16]. The instrument operationalises pre-death grief across three subscales: Personal Sacrifice Burden, Heartfelt Sadness and Longing, and Worry and Felt Isolation [9]. Previous studies have demonstrated associations between caregiver burden, depressive symptoms, and pre-death grief, showing that longer caregiving duration, greater disease severity, and lack of social support are associated with higher grief levels [9, 17, 18]. Sun et al. (2024) showed that caregiver burden exerts a strong and direct effect on pre-death grief [19], while Li et al. (2025) demonstrated that social support and positive coping strategies mediate this relationship [20].

The present study aimed to examine the relationships between pre-death grief and caregiver burden, depressive symptoms, duration of caregiving, and disease stage, and to identify the independent predictors of pre-death grief and its subscales among caregivers of cancer patients.

Methods

Study Design and Setting

This cross-sectional, correlational study was conducted at the Medical Oncology Outpatient Clinic of Ondokuz Mayıs University Faculty of Medicine, Turkey. Caregivers were eligible if they were aged 18 years or older, had been providing active caregiving for at least three months, and provided voluntary written informed consent. Individuals with severe cognitive impairment, communication barriers, or who declined participation were excluded.

Sample Size and Missing Data

Sample size was determined a priori using G*Power (version 3.1.9.7), based on a medium effect size (f^2=0.15), α=0.05, and 95% statistical power (1−β=0.95), yielding a minimum required sample of 119 participants. Of 129 caregivers approached during the data collection period, 10 (7.7%) were excluded due to incomplete questionnaire completion. The pattern of missingness was evaluated using Little's Missing Completely at Random (MCAR) test, which confirmed that data were distributed completely at random (χ^2=74.123, df=62, p=0.139). Accordingly, a complete-case analysis approach was applied, and the final analytic sample comprised 119 caregivers.

Data Collection Instruments

Sociodemographic and Clinical Data Form. Caregiver variables included age, sex, marital status, educational level, employment status, income level, relationship to patient, co-residence status, caregiving duration, and caregiving intensity. Patient-related clinical data included cancer type, disease stage, metastasis status, ECOG performance score, treatment type, and disease progression status.

Marwit–Meuser Caregiver Grief Inventory – Short Form (MM-CGI-SF). Pre-death grief was assessed using the MM-CGI-SF, an 18-item Likert-type instrument (1=strongly disagree to 5=strongly agree) comprising three subscales: Personal Sacrifice Burden, Heartfelt Sadness and Longing, and Worry and Felt Isolation. Higher scores indicate greater grief. The Turkish validation study reported a Cronbach's alpha of α=.92 [16].

Caregiver Reaction Assessment (CRA). Caregiver burden was measured using the CRA, which comprises five subscales: self-esteem, lack of family support, financial burden, schedule disruption, and health impact. The Turkish version demonstrated an internal consistency of α=.88 [21].

Beck Depression Inventory (BDI). Depressive symptom severity was assessed using the 21-item BDI; higher scores indicate greater depressive symptomatology. The Turkish adaptation reported a Cronbach's alpha of α=.80 [22].

Statistical Analysis

Analyses were performed using SPSS for Windows (version 22.0). Normality was evaluated using the Kolmogorov–Smirnov and Shapiro–Wilk tests. Relationships between MM-CGI-SF total and subscale scores and CRA subscales and BDI scores were examined using Pearson correlation analysis. Independent predictors of pre-death grief were identified through multiple linear regression analyses. Multicollinearity was assessed via variance inflation factors (VIF range: 1.451–2.574; tolerance range: 0.388–0.689), with all values within acceptable limits. Statistical significance was set at p<0.05.

Ethics

Ethical approval was obtained from the Clinical Research Ethics Committee of Ondokuz Mayıs University. Written informed consent was obtained from all participants. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Results

Sociodemographic and Clinical Characteristics

The sample comprised 119 caregivers; 52.1% were female (n=62) and 47.9% were male (n=57). The majority were married (74.8%, n=89). More than half (51.3%) had an educational level below high school, 58.8% were employed, and 69.7% (n=83) reported a moderate income level. The majority of caregivers were spouses or adult children of the patient (68.9%), and 59.7% co-resided with the patient. Detailed sociodemographic and clinical characteristics are presented in Table 1.

The most common cancer diagnoses were gastrointestinal malignancies (26.9%), followed by breast (24.4%) and lung cancer (13.4%). The majority of patients had Stage IV disease (68.9%) and metastatic disease (72.3%). Most patients (94.1%) were receiving systemic treatment, and disease progression was present in 50.4% of cases.

Correlation Analysis

Pearson correlation analysis revealed that the strongest positive association with MM-CGI-SF total scores was observed for lack of family support (r=0.847, p<0.01), followed by schedule disruption (r=0.792), depression (r=0.493), health impact (r=0.484), and financial burden (r=0.401) (all p<0.01). Self-esteem was negatively associated with MM-CGI-SF total scores (r=−0.311, p<0.01). Subscale-level correlations are presented in Table 2.

Regression Analyses

The regression model including CRA subscales and depression was statistically significant [$F(6,112)$=82.557, p<0.001; R^2=0.816; Adjusted R^2=0.806]. Lack of family support (β=0.512, p<0.001) and schedule disruption (β=0.430, p<0.001) were the strongest independent predictors of total pre-death grief; depression

also contributed significantly (β=0.176, p=0.001). VIF-controlled regression results are presented in Table 3.

In subscale-level analyses, schedule disruption (β=0.594) and lack of family support (β=0.303) were significant predictors of the Personal Sacrifice Burden subscale, whereas depression was not a significant predictor of this subscale. For Heartfelt Sadness and Longing, schedule disruption (β=0.382), lack of family support (β=0.379), depression (β=0.343), and health impact (β=−0.323) each contributed significantly. For Worry and Felt Isolation, lack of family support was the strongest predictor (β=0.623), followed by schedule disruption (β=0.260) and depression (β=0.536).

Duration of caregiving and disease stage explained 27.4% of the variance in MM-CGI-SF total scores [$F(2,116)=21.929$, $p<0.001$; $R^2=0.274$; Adjusted $R^2=0.262$]. Duration of caregiving (β=0.434, p<0.001) and disease stage (β=0.244, p=0.003) were both significant independent predictors. Multicollinearity analysis yielded acceptable VIF values (VIF=1.016). A comprehensive regression summary for all predictors is presented in Table 4.

Dıscussıon

The present study examined predictors of pre-death grief in caregivers of cancer patients, comprehensively addressing the contributions of adverse dimensions of caregiver burden, depressive symptoms, caregiving duration, and disease stage to the grief experience.

Caregiver Burden and Pre-Death Grief

The most prominent finding was that CRA subscales collectively accounted for 81.6% of MM-CGI-SF variance, compared with the 37–61% reported by Marwit et al. (2008) [9]. This difference warrants consideration from two complementary perspectives.

The first explanation is cultural. In Turkey, family caregiving is predominantly assumed within the household; recourse to institutional care is limited by both economic constraints and cultural norms. Caregiving is experienced less as individual choice than as social obligation, and the associated burdens permeate self-concept and identity more deeply, potentially tightening the link between caregiving and grief and partly explaining the model's elevated explanatory power. This situation closely aligns with the concepts of cultural collectivism and familism frequently described in Mediterranean and Latin American caregiving cultures, where caregiving is traditionally perceived as a moral obligation and a collective family responsibility rather than an individual choice. Consequently, the strong cultural internalization of caregiving roles in Turkey may partly explain the close association observed between caregiver burden and pre-death grief in our model [23, 24].

The second explanation is methodological. The CRA and MM-CGI-SF contain conceptually proximate constructs: the "lack of family support" and "Worry and Felt Isolation" subscales both index perceived social isolation, while "schedule disruption" and "Personal Sacrifice Burden" share overlapping content. This proximity may inflate the inter-instrument correlation, and the 81.6% figure should therefore be interpreted with caution; future structural validity analyses would help clarify construct boundaries.

Notwithstanding the high variance explained, VIF and tolerance values remained within acceptable limits (VIF = 1.451–2.574; Tolerance = 0.388–0.689), confirming independent predictor contributions and ruling out artificial multicollinearity.

Lack of family support (β = 0.512) and schedule disruption (β = 0.430) emerged as the strongest predictors. Sun et al. (2024) showed that caregiver burden exerts a direct effect on pre-death grief with cognitive appraisal and coping as chain mediators [19], while Li et al. (2025) demonstrated that social support attenuates this relationship [20]. The dominance of lack of family support in predicting Worry and Felt Isolation (β = 0.623) aligns with Marwit et al. (2008) [9], and the primacy of schedule disruption for Personal Sacrifice Burden (β = 0.594) confirms the direct link between daily-life disruption and primary loss experiences.

Depression and Pre-Death Grief

Depression as measured by the BDI significantly predicted MM-CGI-SF total scores (β = 0.176) and the emotional grief subscales. However, depression was not a significant predictor of the Personal Sacrifice Burden subscale. This differential pattern is of considerable clinical importance, as it highlights the structural distinctness of pre-death grief from depressive symptomatology.

Marwit et al. (2008) reported that depressive symptoms relate primarily to emotional grief subscales, whereas Personal Sacrifice Burden links more strongly with caregiver burden [9]. Coelho et al. (2018) emphasised that pre-death grief is conceptually distinct from depression and should be assessed independently [12]. Wen et al. (2022) further demonstrated that grief disorder and depression are distinguishable syndromes, and that grief may remain clinically significant in the absence of prominent depressive symptoms [14].

These findings indicate that clinicians should not rely exclusively on depression screening when assessing cancer caregivers. A caregiver screening negative for depression may simultaneously experience significant pre-death grief; the Personal Sacrifice Burden dimension in particular falls outside the scope of standard depression instruments. Grief-specific tools should therefore complement routine depression screening in palliative oncology settings [12, 14].

Disease Severity, Caregiving Duration, and Pre-Death Grief

Disease stage and caregiving duration were significant predictors of pre-death grief. Marwit et al. (2008) identified perceived illness severity as a predictor of both MM-CGI total scores and the Heartfelt Sadness and Longing subscale [9]. The present finding that caregivers of patients with advanced disease reported greater grief intensity is consistent with this earlier evidence. Stajduhar (2013) showed that family members assuming long-term caregiving roles exhibit higher levels of emotional exhaustion and grief responses [5]. Sun et al. (2024) emphasised that time-dependent burden and developmental

restriction constitute primary stressors for caregivers; as caregiving duration extends, stressful events tend to be appraised as increasingly threatening and grief responses deepen [19].

General Considerations and Clinical Implications

The dominance of family support deficits and schedule disruption highlights the need for interventions targeting the family system and social network, not only the individual. Li et al. (2025) showed that strengthening social support and coping skills protects against grief [20], and given that patient distress may be transmitted to caregivers [25], dyadic approaches are warranted. Nielsen et al. (2016) demonstrated nationally that psychological distress in caregivers of terminally ill patients substantially exceeds population norms [26], while Otis-Green et al. (2009) showed that systematic psychosocial assessment in palliative oncology improves both grief outcomes and treatment adherence [27].

Limitations

This study has several limitations. The cross-sectional design precludes causal inferences regarding the directionality of the associations observed; longitudinal designs would more adequately address temporal relationships. The single-centre nature of the study limits the generalisability of findings; multi-centre studies involving larger samples are warranted. In addition, data were collected using self-report instruments, which may introduce social desirability bias. Certain psychosocial variables that may influence grief — including external and perceived social support (e.g., friend and community networks, distinct from the intrafamilial support indexed by the CRA), coping styles, and family resilience — were not incorporated into the model. Finally, given the conceptual overlap between certain CRA and MM-CGI-SF subscales, future research employing structural equation modelling would be valuable for more precisely delineating the relational structure between these instruments and identifying potential mediating mechanisms.

Conclusıons

Pre-death grief in caregivers of cancer patients is closely associated with caregiver burden, depressive symptoms, and lack of social support. Lack of family support and schedule disruption emerged as the strongest independent predictors of grief, and long-term caregivers and those caring for patients with advanced disease may be considered a high-risk group. The dissociation between depression and the Personal Sacrifice Burden subscale of pre-death grief demonstrates that depression screening alone is insufficient to identify caregivers at elevated grief risk. In oncology practice, routine psychosocial assessment of caregivers should treat grief and depression as distinct constructs, and intervention programmes targeting the family system and social support networks should be developed.

Abbreviations

BDI: Beck Depression Inventory

CRA: Caregiver Reaction Assessment

ECOG: Eastern Cooperative Oncology Group

ICMJE: International Committee of Medical Journal Editors

MCAR: Missing Completely at Random

MM-CGI: Marwit–Meuser Caregiver Grief Inventory

MM-CGI-SF: Marwit–Meuser Caregiver Grief Inventory–Short Form

SE: Standard error

SPSS: Statistical Package for the Social Sciences

VIF: Variance Inflation Factor

Declarations

Ethics approval and consent to participate

This study was approved by the Clinical Research Ethics Committee of Ondokuz Mayıs University (Approval number: 2026/1; dated 16 April 2026). Written informed consent was obtained from all individual participants included in the study. All procedures were conducted in accordance with the ethical standards of the Declaration of Helsinki.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Artificial intelligence statement

Artificial intelligence-based language model tools were used for editorial language support during manuscript preparation. All scientific judgements, interpretations, and final content responsibility remain with the authors.

Authors' contributions

MA: Conceptualization, Methodology, Data curation, Formal analysis, Investigation, Visualization, Writing – original draft, Writing – review & editing.**İA**: Methodology, Validation, Investigation, Data curation, Writing – review & editing.**TD**: Investigation, Data curation, Resources, Writing – review & editing.**GD**: Conceptualization, Supervision, Validation, Writing – review & editing

All authors meet all four ICMJE criteria for authorship and agree to be accountable for all aspects of the work, ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Tables

Table 1. Sociodemographic and Clinical Characteristics of Caregivers and Patients (N = 119)

Variable	n	%
Sex		
Female	62	52.1
Male	57	47.9
Marital status		
Married	89	74.8
Single	30	25.2
Educational level		
Below high school	61	51.3
High school and above	58	48.7
Employment status		
Employed	70	58.8
Unemployed	49	41.2
Income level		
Good	24	20.2
Moderate	83	69.7
Poor	12	10.1
Relationship to patient		
Spouse / Child	82	68.9
Parent / Sibling	25	21
Other	12	10.1
Co-residence with patient		
Yes	71	59.7
No	48	40.3
Sole caregiver		
Yes	50	42
No	69	58
Family financial role		
Primary earner	46	38.7
Contributing earner	50	42
No contribution	23	19.3
Cancer type		
Breast	29	24.4
Gastrointestinal	32	26.9
Lung	16	13.4
Prostate	15	12.6
Ovarian	2	1.7
Other	25	21
Disease stage		
Stage I	8	6.7
Stage II	16	13.4
Stage III	13	10.9
Stage IV	82	68.9

Metastasis		
Present	86	72.3
Absent	33	27.7
ECOG performance status		
0 — Fully active	22	18.5
1 — Restricted but ambulatory	36	30.3
2 — Ambulatory, capable of self-care	27	22.7
3 — Limited self-care	32	26.9
4 — Completely disabled	2	1.7
Disease progression		
Yes	60	50.4
No	59	49.6
Increased caregiving burden		
Yes	65	54.6
No	54	45.4

Note. ECOG = Eastern Cooperative Oncology Group performance scale.

Table 2. Pearson Correlations Between CRA Subscales, BDI, and MM-CGI-SF Scores (N = 119)

	MM-CGI-SF Total	Personal Sacrifice	Heartfelt Sadness	Worry/Isolation
Variable	**r**	**r**	**r**	**r**
1. Self-esteem	−.311**	−.279**	−.162	−.355**
2. Schedule disruption	.792**	.826**	.585**	.730**
3. Financial burden	.401**	.402**	.315**	.371**
4. Health impact	.484**	.489**	.237**	.531**
5. Lack of family support	.847**	.751**	.611**	.874**
6. BDI (Depression)	.493**	.394**	.343**	.536**

Note. CRA = Caregiver Reaction Assessment; BDI = Beck Depression Inventory; MM-CGI-SF = Marwit–Meuser Caregiver Grief Inventory-Short Form. Personal Sacrifice = Personal Sacrifice Burden subscale; Heartfelt Sadness = Heartfelt Sadness and Longing subscale; Worry/Isolation = Worry and Felt Isolation subscale. ** p < .01 (two-tailed).

Table 3. Multiple Linear Regression Analysis Predicting MM-CGI-SF Total Score: CRA Subscales and Depression (VIF-Controlled)

Predictor	B	SE	β	t	p	Tolerance	VIF
Constant	11.692	4.820	—	2.426	.017	—	—
BDI (Depression)	.274	.079	.176	3.456	.001	.633	1.580
Self-esteem	−.566	.862	−.035	−.656	.513	.572	1.747
Schedule disruption	7.383	1.050	.430	7.030	< .001	.441	2.268
Financial burden	.203	.688	.014	.295	.769	.689	1.451
Health impact	−2.085	1.069	−.127	−1.951	.054	.388	2.574
Lack of family support	8.322	1.011	.512	8.233	< .001	.426	2.348

Note. B = unstandardised regression coefficient; SE = standard error; β = standardised regression coefficient; BDI = Beck Depression Inventory; MM-CGI-SF = Marwit–Meuser Caregiver Grief Inventory-Short Form. All VIF values are within acceptable limits (VIF = 1.451–2.574; Tolerance = 0.388–0.689). Model fit: R = .903, R^2 = .816, Adjusted R^2 = .806, $F(6,112) = 82.557$, p < .001. * p < .05.

Table 4. Summary of Regression Analyses Predicting MM-CGI-SF Subscales

	Personal Sacrifice Burden					Heartfelt Sadness and Longing					Worry and Felt Isolation					
Predictor	**B**	**SE**	**β**	**t**	**p**	**B**	**SE**	**β**	**t**	**p**	**B**	**SE**	**β**	**t**	**p**	**R²**
A. CRA Subscales																
																.746* / .476* / .816*
Self-esteem	−.049	.410	−.008	−.120	.905	−.181	.468	−.035	−.387	.699	−.234	.316	−.040	−.740	.461	
Schedule disruption	4.138	.499	.594	8.287	< .001	2.119	.571	.382	3.714	< .001	1.643	.385	.260	4.268	< .001	
Financial burden	.161	.327	.028	.492	.623	.431	.374	.095	1.153	.251	−.217	.252	−.042	−.861	.391	
Health impact	−.213	.508	−.032	−.420	.675	−1.709	.581	−.323	−2.945	.004	−.196	.392	−.032	−.500	.618	
Lack of family support	1.995	.481	.303	4.151	< .001	1.985	.549	.379	3.615	< .001	3.720	.370	.623	10.042	< .001	
B. BDI (Depression) [Simple regression; also included as covariate in other models]																
BDI (Depression)	.048	.038	.076	1.268	.207	.172	.044	.343	3.953	< .001	.306	.045	.536	6.867	< .001	.155* / .118* / .287*

Note. *B* = unstandardised regression coefficient; *SE* = standard error; β = standardised regression coefficient. R^2 values are presented as Personal Sacrifice Burden / Heartfelt Sadness and Longing / Worry and Felt Isolation, respectively. Section A models include BDI as a covariate: Personal Sacrifice Burden: $F(6,112) = 54.856$, $R^2 = .746$, $p < .001$; Heartfelt Sadness and Longing: $F(6,112) = 16.982$, $R^2 = .476$, $p < .001$; Worry and Felt Isolation: $F(6,112) = 82.865$, $R^2 = .816$, $p < .001$. Section B models are simple regressions; BDI is also included as a covariate in other models: Personal Sacrifice Burden: $F(1,117) = 21.434$, $R^2 = .155$, $p < .001$; Heartfelt Sadness and Longing: $F(1,117) = 15.614$, $R^2 = .118$, $p < .001$; Worry and Felt Isolation: $F(1,117) = 47.355$, $R^2 = .287$, $p < .001$. * $p < .05$.