

Relationship between caregiver burden and levels of depression, anxiety, and stress among palliative care caregivers

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ABSTRACT

Aims: To assess the relationship between caregiver burden and levels of depression, anxiety, and stress among primary caregivers of patients hospitalized in a palliative care unit.

Methods: In this descriptive cross-sectional study, 96 primary caregivers were enrolled. Data were obtained through face-to-face interviews using a sociodemographic data form, the 19-item Zarit Caregiver Burden Interview (ZBI-19), and the Depression Anxiety Stress Scale-21 (DASS-21). Nonparametric group comparisons were conducted with the Mann-Whitney U test and the Kruskal-Wallis test, followed by appropriate post-hoc pairwise analyses when needed. Relationships between variables were assessed using Spearman's rank correlation. Factors independently associated with caregiver burden were examined using multiple linear regression models.

Results: Participants were predominantly female (72.9%), married (72.9%), and unemployed (58.3%), with a mean age of 52.2±11.7 years. Moderate-to-extremely severe symptoms were observed in 29.2% for depression, 39.6% for anxiety, and 18.8% for stress. Moderate-to-severe and severe caregiver burden was present in 33.3%. Female gender was associated with higher depression and anxiety scores, whereas unemployment, lower education, and lower income level were associated with higher psychological distress and higher caregiver burden ($p<0.05$). In multivariable analysis, higher depression scores ($p<0.001$) and longer caregiving duration ($p=0.050$) were independently associated with increased caregiver burden, explaining nearly half of the variance in burden scores.

Conclusion: Primary caregivers in palliative care experience substantial psychological distress and caregiver burden, particularly those with socioeconomic vulnerabilities. Depression severity and caregiving duration are key factors associated with caregiver burden, highlighting the need for routine screening and targeted psychosocial support in clinical practice.

Keywords: Palliative care, caregivers, caregiver burden, depression, anxiety, stress

INTRODUCTION

Palliative care is a holistic model of care that focuses on the early recognition, comprehensive assessment, and effective management of physical, psychological, social, and spiritual problems arising in the course of life-threatening illness.¹ The World Health Organization (WHO) defines palliative care as a multidisciplinary approach intended to improve quality of life for patients and their families through the prevention and relief of pain and other distressing symptoms.¹ Core principles include affirming life, acknowledging dying as a natural process, and neither hastening nor postponing death, while supporting patients to live as actively and comfortably as possible.² As the burden of chronic and advanced illnesses increases, palliative care has become an essential component of contemporary health services.³

Progressive chronic disease is often accompanied by functional decline and challenges in cognitive and psychological adjustment, which can increase the need for sustained and structured care.⁴ In many settings, this care is largely provided by family members—most commonly spouses, adult children, or close relatives—within an informal caregiving role.⁵ Although caregiving is frequently framed as a natural family responsibility, it may substantially reshape daily routines and social roles, and it can also create financial strain, particularly when care is prolonged or intensive.^{6,7}

A key concept in this context is caregiver burden, commonly understood as the multidimensional strain experienced while providing ongoing care to a dependent or chronically

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ill person, affecting the caregiver's physical capacity, emotional balance, social relationships, and economic resources.^{8,9} Caregiver burden is therefore not limited to physical fatigue; it may include emotional exhaustion, social isolation, role conflict, and economic pressure.⁹ Evidence syntheses consistently indicate that higher caregiver burden is associated with greater symptoms of depression and anxiety among informal caregivers.¹⁰ Findings from studies conducted in palliative care and other high-dependency conditions also suggest that psychological distress among caregivers is common and may persist over time.¹¹

Although caregiver burden and psychological distress have been widely studied in oncology and dementia settings, data from inpatient palliative care units—particularly in middle-income countries—remain limited. Moreover, few studies have simultaneously examined depression, anxiety, stress, and caregiving duration within a multivariable framework to identify factors independently associated with caregiver burden. Against this background, the present study aimed to examine the relationship between caregiver burden and levels of depression, anxiety, and stress among primary caregivers of patients hospitalized in a tertiary palliative care unit. The results are expected to support the early identification of caregivers at higher risk and to inform the development of targeted psychosocial support strategies within palliative care teams.

METHODS

This study was approved by the Clinical Researches Ethics Committee of the University of Health Sciences, İzmir Bozyaka Training and Research Hospital (Date: 02.06.2025, Decision No: 2025/12). All procedures were conducted in accordance with ethical guidelines and the principles of the Declaration of Helsinki.

A descriptive cross-sectional design was implemented at the Palliative Care Center, University of Health Sciences İzmir Bozyaka Training and Research Hospital (İzmir, Türkiye), between February and May 2025.

The study population comprised primary caregivers—both informal (family) caregivers and paid caregivers—who were primarily responsible for the care of patients hospitalized in the palliative care unit during the study period. The sample included caregivers who met the eligibility criteria and agreed to participate voluntarily.

An a priori power analysis was conducted in G*Power (version 3.1.9.7) to estimate the sample needed to detect a correlation between Zarit caregiver burden and Depression–Anxiety–Stress scores. Based on an anticipated effect size of $r=0.35$, a two-sided $\alpha=0.05$, and power of 0.90, at least 78 participants were required. Allowing for potential attrition and incomplete questionnaires, 96 primary caregivers were enrolled, and the study was finalized with this cohort.¹²

Adults (≥ 18 years) who could read and understand Turkish, had sufficient cognitive capacity to complete the questionnaires, and had no severe psychiatric condition that would preclude participation were eligible. Participants were required to be the patient's primary caregiver during hospitalization and to provide written informed consent. Individuals were excluded if they were < 18 years old,

were unable to read/write Turkish, had marked cognitive impairment or communication/behavioral problems that interfered with data collection, or declined consent.

Dependent variables were: total and subscale scores of the Zarit Caregiver Burden Interview (ZBI-19) and the mean subscale scores of the Depression Anxiety Stress Scale–21 (DASS-21) (depression, anxiety, stress). Independent variables included caregiver age, gender, marital status, education, employment, income level, relationship to the patient, caregiving duration (months), sharing caregiving responsibilities and presence of caregiver health problems.

Data were collected through face-to-face interviews conducted by the researcher at the palliative care unit. Each participant completed (i) a descriptive information form, (ii) ZBI-19, and (iii) DASS-21. The descriptive information form was developed based on relevant caregiving literature and included sociodemographic characteristics and caregiving-related variables.^{13,14}

The form captured caregiver sociodemographic features (age, gender, marital status, education, income, employment), caregiving characteristics (duration of caregiving, relationship to the patient, receiving support in caregiving, caregiver comorbidity), and selected patient-related information (indication for admission and dependency level), consistent with prior caregiver research.^{13,14}

Caregiver burden was assessed using the 19-item Turkish short form of the ZBI-19. Items are rated on a 0 (“never”) to 4 (“nearly always”) scale, summed to yield a total score (0–76), with higher scores indicating greater burden. Burden severity was categorized as 0–17 (none/very mild), 18–35 (mild), 36–52 (moderate), and ≥ 53 (severe). In addition to the total score, we examined burden across the validated five-factor structure: psychological strain/disruption of private life (items 2, 3, 10, 11, 12, 17, 19), irritability/restriction (items 5, 9, 22), deterioration in social relations (items 6, 13, 18), economic burden (items 7, 15, 20, 21), and dependency (items 8, 14). Three items from the original pool (1, 4, 16) were not assigned to any subscale in the Turkish validation; therefore, subscale analyses were based on the 19-item structure.¹⁵ In the present sample, internal consistency of the ZBI-19 total scale was good (Cronbach's $\alpha=0.862$).

Psychological symptom severity was assessed with the DASS-21, developed by Lovibond and Lovibond.¹⁶ Evidence supporting the Turkish version has been reported in both community and clinical samples.¹⁵ Scores were calculated for three symptom dimensions (depression, anxiety, and stress), each derived from seven items answered on a four-point response format (0–3). To align scoring with the full-length DASS (42-item) framework, each subscale total was rescaled by a factor of two, and standard severity cut-offs from the original scoring scheme were applied.^{17,18} In the present sample, internal consistency was acceptable to good across the three subscales (Cronbach's α : depression=0.851, anxiety=0.812, stress=0.856).

Statistical Analysis

The data procedures were performed using IBM SPSS Statistics for Windows, version 27.0. Descriptive statistics are reported as mean and standard deviation for variables showing an approximately normal distribution, and as

median with interquartile range [Q1–Q3] for non-normally distributed variables. Categorical data are summarized as counts and percentages. Normality was evaluated by visual inspection of histograms and by examining skewness and kurtosis values.

For comparisons between two independent groups, the independent-samples *t* test was applied when distributional assumptions were satisfied; otherwise, the Mann–Whitney *U* test was used. For comparisons involving three or more groups, one-way ANOVA was used under normality and the Kruskal–Wallis test otherwise. When the Kruskal–Wallis test indicated a significant difference, Bonferroni-adjusted pairwise comparisons were conducted to determine which groups accounted for the overall effect.

Associations between categorical variables were assessed using the Chi-square test; Fisher's exact test or the Fisher–Freeman–Halton exact test was used when expected cell counts were low. Relationships between continuous/ordinal variables were examined using Spearman's rank-order correlation (ρ). To identify factors independently associated with caregiver burden, a multiple linear regression model was constructed with the ZBI total score as the dependent variable. Given the modest sample size ($n=96$), we restricted the number of independent variables to minimize model overfitting. Therefore, only variables showing statistically significant associations with caregiver burden in univariate analyses ($p<0.05$ in group comparisons and/or correlation analyses) were selected as candidate variables and entered into the multivariable model. The final model included depression, anxiety, stress (DASS-21 subscale scores), caregiving duration (months), caregiver relationship (0=first-degree family member, 1=paid caregiver), prior caregiving experience (0=no, 1=yes), and income status (1=income<expenses, 2=income=expenses, 3=income>expenses). All selected variables were entered simultaneously using the Enter (forced-entry) method to obtain fully adjusted estimates. Regression results are reported as unstandardized coefficients (*B*) and standardized coefficients (β) with 95% confidence intervals, along with R^2 /adjusted R^2 and *p* values. Multicollinearity was evaluated using variance inflation factors (VIF). Model assumptions were checked by inspecting residual histograms, normal probability plots, and standardized residuals versus standardized predicted values. A two-sided *p* value <0.05 was considered statistically significant.

RESULTS

A total of 96 primary caregivers were included in the study. The mean age of the participants was 52.2 ± 11.7 years, and the median caregiving duration was 2.5 months [Q1–Q3: 1.0–10.5]. The majority of caregivers were female (72.9%), married (72.9%), and unemployed (58.3%). Regarding the relationship to the patient, 56.3% were adult children, whereas 22.9% were paid caregivers. Two-thirds of the participants reported receiving support in caregiving (66.7%), and 52.1% were providing care for the first time (Table 1).

Based on the DASS-21 severity categories, most caregivers were within the normal range for depression (66.7%), anxiety (54.2%), and stress (70.8%). Nevertheless, moderate-to-extremely severe symptom levels were prevalent, observed in 29.2% of the participants for depression, 39.6% for anxiety,

Table 1. Sociodemographic and caregiving characteristics of the participants ($n=96$)

Variable	Category	n (%)
Age (years)	Mean $\pm$ SD	52.2 $\pm$ 11.7
Caregiving duration (months)	Median (Q1–Q3)	2.5 [1.0–10.5]
Gender	Female	70 (72.9)
	Male	26 (27.1)
Education level	Literate	8 (8.3)
	Primary school	24 (25.0)
	Middle school	10 (10.4)
	High school	24 (25.0)
	Bachelor's degree	26 (27.1)
	Postgraduate (master's/PhD)	4 (4.2)
Marital status	Married	70 (72.9)
	Single	26 (27.1)
Employment status	Employed	40 (41.7)
	Unemployed	56 (58.3)
Income perception	Income less than expenses	22 (22.9)
	Income equal to expenses	62 (64.6)
	Income more than expenses	12 (12.5)
Relationship to patient	Spouse	14 (14.6)
	Child	54 (56.3)
	Sibling	6 (6.3)
	Paid caregiver	22 (22.9)
Support in caregiving	Yes	64 (66.7)
	No	32 (33.3)
Caregiving experience	Previous experience	46 (47.9)
	First-time caregiver	50 (52.1)

Values are presented as mean $\pm$ standard deviation (SD) for age and as median [Q1–Q3] for caregiving duration; all other variables are shown as n (%). Percentages may not total 100% due to rounding.

and 18.8% for stress. Regarding caregiver burden (ZBI-19), 18.8% reported little to no burden, 47.9% had mild-to-moderate burden, 25.0% experienced moderate-to-severe burden, and 8.3% indicated severe burden (Table 2).

Comparisons of psychological distress and caregiver burden according to caregiver characteristics are detailed in Table 3. Female caregivers exhibited significantly higher depression and anxiety scores compared to males ($p=0.041$ and $p=0.012$, respectively), whereas stress and ZBI-19 total scores did not differ significantly by gender.

Education level was significantly associated with depression ($p=0.017$) and anxiety ($p=0.006$), but not with stress ($p=0.483$) or caregiver burden ($p=0.092$). Bonferroni-adjusted pairwise comparisons revealed that caregivers with primary school education or below had significantly higher depression scores than those with secondary–high school education (adjusted $p=0.014$), and higher anxiety scores than both secondary–high school (adjusted $p=0.027$) and university or above groups (adjusted $p=0.011$).

Unemployed caregivers reported significantly higher depression ($p<0.001$), anxiety ($p=0.001$), and stress scores ($p=0.003$) than employed caregivers, whereas caregiver burden did not differ significantly by employment status ($p=0.182$).

Income perception was significantly associated with all three DASS-21 subscales and caregiver burden (depression:

Table 2. Severity levels of depression, anxiety, stress, and caregiver burden (n=96)

Scale/domain	Category	n (%)
Depression (DASS-21)	Normal (0–9)	64 (66.7)
	Mild (10–13)	4 (4.2)
	Moderate (14–20)	18 (18.8)
	Severe (21–27)	2 (2.1)
	Extremely severe (≥ 28)	8 (8.3)
Anxiety (DASS-21)	Normal (0–7)	52 (54.2)
	Mild (8–9)	6 (6.3)
	Moderate (10–14)	18 (18.8)
	Severe (15–19)	8 (8.3)
	Extremely severe (≥ 20)	12 (12.5)
Stress (DASS-21)	Normal (0–14)	68 (70.8)
	Mild (15–18)	10 (10.4)
	Moderate (19–25)	6 (6.3)
	Severe (26–33)	6 (6.3)
	Extremely severe (≥ 34)	6 (6.3)
Caregiver Burden (ZBI)	Little or no burden (0–17)	18 (18.8)
	Mild to moderate burden (18–35)	46 (47.9)
	Moderate to severe burden (36–52)	24 (25.0)
	Severe burden (53–76)	8 (8.3)

Severity cut-offs were adapted from conventional ZBI-22 thresholds by proportional rescaling to the ZBI-19 total score range (0–76). DASS-21: Depression Anxiety Stress Scale 21, ZBI: Zarit Caregiver Burden Interview

p=0.005, anxiety: p=0.003, stress: p=0.002, ZBI-19: p=0.033). Bonferroni-adjusted pairwise comparisons indicated that caregivers reporting income less than expenses had significantly higher depression (adjusted p=0.004) and anxiety scores (adjusted p=0.006) than those reporting income equal to expenses, and higher caregiver burden than the income-equal-to-expenses group (adjusted p=0.032). For stress, caregivers reporting income greater than expenses had significantly higher scores than those reporting income equal to expenses (adjusted p=0.004).

Family caregivers reported significantly higher depression (p<0.001), anxiety (p=0.008), stress (p=0.003), and caregiver burden (p=0.001) than paid caregivers. First-time caregivers experienced significantly higher stress (p=0.027) and caregiver burden (p=0.039) than those with prior caregiving experience (Table 3).

Overall, total ZBI was positively associated with psychological distress, showing a moderate correlation with total DASS-21 ($\rho=0.64$, p<0.001) and the strongest correlation with depression ($\rho=0.71$, p<0.001); correlations with anxiety ($\rho=0.51$, p<0.001) and stress ($\rho=0.56$, p<0.001) were also significant. At the subscale level, F1 was most strongly related to depression ($\rho=0.66$, p<0.001), F4 showed the strongest link with anxiety ($\rho=0.59$, p<0.001), and F5 was modestly associated with DASS total ($\rho=0.36$, p<0.01) and stress

Table 3. Comparison of depression, anxiety, stress, and total caregiver burden by caregivers' characteristics

Variable	Group	n	Depression	Anxiety	Stress	ZBI-19
Gender	Female	70	6 (2–14)	10 (2–16)	10 (2–18)	32.3±14.6
	Male	26	2 (1.5–9)	4 (2–6)	6 (1.5–16)	27.5±13.4
p			0.041†	0.012†	0.233†	0.140‡
Education	Primary school or below ^a	32	10 (4–19.5)	12 (6.5–16)	14 (2–21)	34.9±16.3
	Secondary–high school ^b	34	2 (2–11)	4 (2–10)	8 (3.5–16.5)	27.2±13.9
	University or above ^c	30	4 (2–8)	4 (0–14)	6 (2–14)	31.3±14.4
p			0.017§	0.006§	0.483§	0.092¶
Between-group differences			a>b	a>b,c	—	—
Marital status	Married	70	4 (2–14)	6 (2–14)	8 (2–15)	32.0±13.2
	Single	26	4 (2–15)	6 (2–9)	12 (2–18)	28.5±17.1
p			0.653†	0.702†	0.921†	0.290‡
Employment	Employed	40	2 (0–7.5)	3 (0–9)	4 (2–12.5)	28.7±12.8
	Unemployed	56	8 (2–18)	9 (2.5–15.5)	12 (5–18)	32.7±15.3
p			<0.001†	0.001†	0.003†	0.182‡
Income level	Income<expenses ^a	22	12 (6–18)	10 (6–14)	14 (4–16)	40 (25–49)
	Income=expenses ^b	62	4 (2–8)	4 (2–12)	6 (2–12)	28 (18–43)
	Income>expenses ^c	12	11 (2–20)	15 (2–26)	16 (14–28)	26 (23–33)
p			0.005§	0.003§	0.002§	0.033§
Between-group differences			a>b	a>b	c>b	a>b
Caregiver type	Family caregiver	74	8 (3–15)	8 (2–14.5)	12 (3.5–18)	33.5±14.4
	Paid caregiver	22	2 (0–4)	2 (0–6)	4 (0–8)	22.6±10.9
p			<0.001†	0.008†	0.003†	0.001‡
Support in caregiving	Has support	64	4 (2–13)	6 (2–15.5)	7 (2–18)	29.2±13.8
	No support	32	8 (4–14)	7 (2–13.5)	10 (5–15.5)	34.7±15.0
p			0.060†	0.888†	0.261†	0.092‡
Prior caregiving experience	Yes	46	4 (2–14)	4 (2–10)	8 (0–14)	27.8±16.5
	First-time caregiver	50	8 (3.5–14)	8 (2–14.5)	12 (3.5–19)	34.0±11.5
p			0.051†	0.249†	0.027†	0.039‡

Values are median [Q1–Q3] for DASS-21 and mean±SD for ZBI-19 [income: median [Q1–Q3]]. DASS-21: Depression Anxiety Stress Scale 21, ZBI: Zarit Caregiver Burden Interview, SD: Standard deviation, †: Mann–Whitney U, ‡: t test, §: Kruskal–Wallis, ¶: one-way ANOVA. Bonferroni adjustment was applied for pairwise comparisons when applicable. p<0.05 was considered significant

($p=0.43$, $p<0.001$); weaker but significant correlations were observed for F3–stress ($p=0.22$, $p<0.05$), F5–anxiety ($p=0.23$, $p<0.05$), and F5–F3 ($p=0.26$, $p<0.05$) (**Table 4**).

severe symptoms were observed in 29.2% of caregivers for depression, 39.6% for anxiety, and 18.8% for stress. At least moderate-to-severe caregiver burden was present in 33.3% of

Table 4. Spearman correlations between DASS-21 and the Zarit Caregiver Burden Scale (ZBI) and Its subscales

Variable	DASS-21	Dw	A	S	ZBI-19	F1	F2	F3	F4	F5
DASS-21	1.00									
D	0.87	1.00								
A	0.87	0.67	1.00							
S	0.91	0.74	0.66	1.00						
ZBI-19	0.64	0.71	0.51	0.56	1.00					
F1	0.52	0.66	0.33	0.48	0.88	1.00				
F2	0.38	0.49	0.30	0.31	0.81	0.74	1.00			
F3	0.33	0.43	0.32	0.22	0.75	0.60	0.57	1.00		
F4	0.55	0.43	0.59	0.45	0.46	0.13	0.17	0.33	1.00	
F5	0.36	0.37	0.23	0.43	0.61	0.54	0.55	0.26	0.02	1.00

Note: Cells present Spearman's ρ coefficients. Bold values are significant at $p<0.01$, italic values are significant at $p<0.05$, remaining coefficients are not statistically significant. Abbreviations: DASS-21: Depression Anxiety Stress Scale-21 Total Score, ZBI-19: Zarit Caregiver Burden Interview Total Score, D: Depression, A: Anxiety, S: Stress. ZBI subscales: F1: Psychological strain/private life, F2: Irritability/restriction, F3: Impairment in social relationships, F4: Economic burden, F5: Dependency.

In the multiple linear regression model predicting the ZBI-19 total score ($n=96$), higher depression scores remained independently associated with greater caregiver burden ($B=0.84$, $\beta=0.53$, $p<0.001$). Caregiving duration showed a borderline positive association with caregiver burden ($B=0.04$, $\beta=0.16$, $p=0.050$). In addition, better income status was independently associated with lower caregiver burden ($B=-4.88$, $\beta=-0.20$, $p=0.020$). Anxiety, stress, caregiver relationship (first-degree family member vs paid caregiver), and prior caregiving experience were not significantly associated with caregiver burden after adjustment (all $p>0.05$). Overall model performance was acceptable ($R^2=0.502$, adjusted $R^2=0.462$, $F(7, 88)=12.65$, $p<0.001$), and multicollinearity was not a concern (VIF range: 1.19–3.91). Although the three DASS-21 subscales are theoretically and empirically correlated—a potential source of multicollinearity—VIF values remained well below the conventional threshold of 5.0 for all predictors, indicating that collinearity did not substantially inflate standard errors or compromise the stability of the regression estimates (**Table 5**).

participants. These findings support the view that caregiving in palliative care is not only a practical responsibility but also a sustained psychosocial load that can affect daily functioning and well-being.^{1,7}

The prevalence pattern we observed is broadly consistent with the international literature, where depressive and anxiety symptoms in informal caregivers frequently fall in the 25%–50% range, depending on population and measurement thresholds.¹⁹ In Türkiye, studies conducted in similar settings have also reported elevated rates of depression and anxiety among relatives of palliative care patients, reinforcing that this is a recurrent clinical issue rather than a context-specific anomaly.^{20,21} Of note, Türkiye's palliative care infrastructure has expanded substantially in recent years, with the number of inpatient units growing rapidly under the Ministry of Health's national palliative care program. Despite this expansion, systematic psychosocial support for caregivers remains inconsistently implemented across units. The present study, conducted in an inpatient tertiary palliative care center,

Table 5. Multiple linear regression model predicting Zarit Caregiver Burden (ZBI) total score ($n=96$)

Predictor	B (SE)	Standardized β	p-value	95% CI for B	VIF
Constant	32.79 (4.91)	—	<0.001	23.04 to 42.54	—
Depression	0.84 (0.22)	0.53	<0.001	0.40 to 1.27	3.41
Caregiving duration (months)	0.04 (0.02)	0.16	0.050	0.00 to 0.07	1.19
Anxiety	-0.10 (0.19)	-0.06	0.618	-0.48 to 0.29	2.63
Stress	0.16 (0.21)	0.12	0.432	-0.25 to 0.57	3.91
Caregiver relationship*	-2.66 (3.26)	-0.08	0.417	-9.13 to 3.81	1.62
Prior caregiving experience†	-2.35 (2.90)	-0.08	0.419	-8.11 to 3.40	1.81
Income status‡	-4.88 (2.07)	-0.20	0.020	-8.99 to -0.78	1.27

Model fit: $R^2=0.502$, Adjusted: $R^2=0.462$, $F(7, 88)=12.65$, $p<0.001$. *Caregiver relationship coding: 0=first-degree family member, 1=paid caregiver, † Prior caregiving experience coding: 0=no, 1=yes, ‡ Income status coding: 1=income less than expenses, 2=income equals expenses, 3=income greater than expenses, SE: Standard error, CI: Confidence interval, VIF: Variance inflation factors

DISCUSSION

This cross-sectional study in an inpatient palliative care unit shows that psychological distress and caregiver burden are common among primary caregivers. Moderate-to-extremely

adds locally grounded evidence that caregiver screening and structured psychosocial pathways are needed within the Turkish palliative care context—not only in oncology or home-care settings where most prior Turkish data originate. Taken together, the convergence between our data and prior

reports suggests that routine caregiver assessment is clinically justified, particularly in inpatient palliative care where symptom trajectories and uncertainty are often intense.²²

Caregiver burden is typically conceptualized as multidimensional (emotional strain, restriction of personal time, disruption of social life, and financial concerns), rather than a single construct.^{7,8} Our results align with this framework: the burden profile indicates that caregivers are primarily challenged by the loss of personal time, the sense of constant vigilance, and future-related uncertainty—dimensions that often emerge prominently in caregiver studies, especially in progressive or life-limiting conditions.^{8,23} In practical terms, these “time-dependent” and “psychological strain” elements may be the most actionable targets for brief interventions (education, structured respite planning, and anticipatory guidance) integrated into inpatient palliative routines.

Females constituted the majority of caregivers and showed higher depression and anxiety scores than men. This pattern is frequently observed across caregiver research and is often interpreted in light of gendered role expectations and unequal distribution of emotional labor.^{13,24} While the present study cannot determine mechanisms, the finding underscores a pragmatic implication: caregiver-facing psychosocial interventions should explicitly consider gender-related vulnerabilities and barriers to help-seeking.

Socioeconomic markers mattered in our sample. Unemployment, lower education, and lower income were associated with higher psychological distress, and lower income was also associated with higher caregiver burden. Similar gradients have been documented elsewhere and may reflect reduced access to supportive resources, fewer opportunities for respite, and higher perceived insecurity during prolonged caregiving.^{25,26} Importantly, the relationship between income and distress is not always linear in population studies; higher status or higher income can coincide with specific stress exposures (responsibility load, role conflict), which may partly explain why distress does not always decrease monotonically with income.^{27,28} For palliative care services, the clinical takeaway is straightforward: screening and supportive pathways should not be “one size fits all.” Socioeconomically vulnerable caregivers may require more proactive referral and structured follow-up.

Family caregivers tended to report higher distress and caregiver burden than paid caregivers in univariate analyses, which may reflect greater emotional involvement, anticipatory grief, and role conflict—factors less central in professional caregiving. Similarly, first-time caregivers showed higher stress and burden than those with prior caregiving experience in bivariate comparisons. However, neither caregiver relationship nor prior caregiving experience remained significant in the multivariable model, suggesting that these differences may be partly explained by co-occurring psychological distress and socioeconomic factors. Nevertheless, these findings highlight a modifiable window for practice: early-stage caregiver orientation (what to expect, symptom management basics, communication tips, and how to navigate unit resources) may help reduce distress and prevent escalation of perceived burden, particularly among family caregivers and those new to the caregiving role.

In the multivariable model, higher depression scores remained robustly associated with greater caregiver burden, while better income status was independently associated with lower burden. Caregiving duration showed a borderline positive association with burden, whereas anxiety, stress, caregiver relationship, and prior caregiving experience were not significant after adjustment. Meta-analytic evidence has consistently shown strong associations between subjective burden and depression/anxiety in informal caregivers.¹⁰ Our finding—depression remaining central even when anxiety and stress are modeled together—suggests that depressive symptom severity may be a particularly useful clinical marker of high-burden trajectories in this setting. Clinically, a brief depression screen, repeated over time (especially as caregiving duration extends), may be an efficient way to identify caregivers most likely to benefit from targeted psychosocial support.

Guidelines increasingly emphasize that palliative care should address family/caregiver needs alongside patient symptom control.²² Evidence-based caregiver interventions (psychoeducation, skills training, structured psychological support) can reduce depressive symptoms and perceived overload, and improve caregiver quality of life.^{29,30} In a resource-constrained inpatient unit, stepped support may be realistic: (i) routine screening at admission, (ii) brief targeted counseling for high-risk caregivers (female, unemployed, low-income, family caregivers, first-time caregivers), and (iii) referral pathways for those with clinically significant depressive symptoms or persistent high burden.

Limitations

Several limitations warrant consideration. First, this was a single-center study conducted in one inpatient palliative care unit; therefore, the findings may not fully represent caregiver experiences in other institutions or care models. Second, the cross-sectional design does not allow causal inferences. Psychological distress and caregiver burden may influence each other in both directions, and the temporal sequence cannot be established. Third, all outcomes were assessed using self-report scales, which may introduce reporting bias. In addition, we did not include detailed patient-level indicators (e.g., functional status, symptom burden, or disease severity) that could contribute to caregiver distress and burden and act as unmeasured confounders. Finally, although we aimed to keep the regression model conservative given the sample size, variables were selected based on significant univariate associations; thus, the stability of some coefficients—especially borderline effects—should be interpreted with caution and confirmed in larger, multi-center studies.

Alongside these limitations, several strengths merit acknowledgment. The study employed two validated, psychometrically sound instruments with good internal consistency in the present sample. The multivariable regression approach, with VIF-confirmed model stability, allowed for adjusted estimates beyond simple correlational analysis. Additionally, the inpatient tertiary palliative care setting represents a relatively underrepresented context in the caregiver literature, particularly in middle-income countries, which adds to the generalizability of the findings within similar healthcare systems.

CONCLUSION

Caregivers in inpatient palliative care frequently experience substantial psychological distress and caregiver burden. Depression severity and longer caregiving duration are key factors associated with caregiver burden, and these findings are consistent across sociodemographic subgroups. Integrating routine caregiver screening and targeted psychosocial support into palliative care workflows—particularly for socioeconomically vulnerable family caregivers—should be considered a clinical priority. This is especially relevant in the Turkish palliative care context, where inpatient units have expanded rapidly but structured caregiver support pathways remain inconsistently implemented. Future research should adopt longitudinal and multi-center designs to confirm these associations and evaluate the effectiveness of tailored interventions for high-risk caregiver subgroups.

ETHICAL DECLARATIONS

Ethics Committee Approval

This study was approved by the Clinical Researches Ethics Committee of the University of Health Sciences, İzmir Bozyaka Training and Research Hospital (Date: 02.06.2025, Decision No: 2025/12).

Informed Consent

This retrospective study used pre-existing anonymized patient data. No additional intervention was performed, and there was no direct patient contact. The study was approved by the Ethics Committee, and the requirement for written informed consent was waived by the ethics committee.

Peer Review Process

This manuscript was subject to external peer review.

Conflict of Interest

The authors declare no conflicts of interest related to this study.

Financial Disclosure

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Author Contributions

Concept: GGE; Design: GGE; Control: ÖT; Resources: ÖT; Materials: GGE; Data Collection and/or Processing: GGE; Analysis and/or Interpretation: İE; Literature Review: İE; Writing the Article: GGE; Critical Review: ÖT, İE.

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