

## Frequency of depression and its severity among family caregivers of cancer patients

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**Abstract:** Family caregivers of patients with cancer experience substantial psychological burden, with depression being one of the most frequently reported mental health outcomes. Evidence from low- and middle-income countries remains limited, and context-specific data are needed to guide screening and supportive care strategies in oncology settings in Pakistan. **Objective:** To determine the frequency and severity of depression among family caregivers of patients with cancer and to examine its association with selected socio-demographic and caregiving-related factors at a tertiary care hospital in Pakistan. **Methods:** This descriptive cross-sectional study was conducted in the Department of Psychiatry, Nishtar Hospital, Multan, over six months from May 2024 to October 2024. A total of 196 family caregivers of patients with a confirmed diagnosis of cancer were enrolled using non-probability consecutive sampling. Depression was assessed using the depression subscale of the Hospital Anxiety and Depression Scale (HADS-D). A cut-off score of >8 was used to define the presence of depression, and severity was categorized as mild, moderate, or severe. Socio-demographic variables and caregiving characteristics were recorded using a structured proforma. Data were analysed using SPSS version 23. Associations between depression and explanatory variables were examined using chi-square tests, with  $p \leq 0.05$  considered statistically significant. **Results:** The mean age of caregivers was  $38.6 \pm 9.1$  years, and 56.1% were female. Overall, 55.1% of caregivers screened positive for depression. Among those with depression, 44.4% had mild, 36.1% had moderate, and 19.4% had severe depressive symptoms. Depression was significantly more prevalent among female caregivers, those residing in rural areas, and caregivers from low and lower-middle socioeconomic groups. Higher depression severity was associated with longer duration of the patient's illness. Lower educational attainment was also linked to a higher prevalence of depression, while caregiver age showed no significant association. **Conclusion:** Depression is highly prevalent among family caregivers of patients with cancer in this tertiary care setting in Pakistan, with a substantial proportion experiencing moderate to severe symptoms. Female gender, rural residence, lower socioeconomic status, lower educational level, and longer caregiving duration were associated with higher depressive burden. Routine psychological screening of caregivers and the integration of structured psychosocial support within oncology services may help mitigate caregiver distress and improve the overall quality of cancer care.

**Keywords:** Depression, Caregivers, Neoplasms, Mental Health

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### Introduction

Family caregivers of patients with cancer provide essential physical and emotional support throughout the illness trajectory but often experience significant psychological challenges themselves. Research across diverse settings has consistently shown elevated rates of depressive symptoms among cancer caregivers compared with general population samples, reflecting the emotional burden associated with intensive caregiving responsibilities, ongoing concerns about the patient's health and prognosis, and disruptions to daily life. Systematic reviews and meta-analyses indicate that depression is common in this population, with pooled prevalence estimates ranging broadly depending on study design, geographic context, and assessment tools used; one comprehensive synthesis reported a pooled prevalence of depression of approximately 42% among caregivers of cancer patients across multiple countries and settings. (1-3)

The presence of depressive symptoms in caregivers has been linked with reduced quality of life, impaired physical well-being, and compromised caregiving capacity, underscoring the broader impact of psychological distress beyond subjective mood states. (1,4) Individual observational studies corroborate these findings, demonstrating that depressive symptoms and psychological distress tend to increase with greater caregiving burden, longer duration of care, and heightened caregiving demands. (5,6) Specific socio-demographic characteristics, such as female gender, lower educational attainment, and lower socioeconomic status, have been identified as additional correlates of higher depression

levels in caregivers of cancer patients, suggesting that both personal and contextual factors shape mental health outcomes in this group. (1,3,5)

In low- and middle-income countries where formal psychosocial support services are often limited, and sociocultural expectations emphasize family caregiving, the psychological burden on caregivers may be particularly pronounced. Regional studies from South Asia and neighbouring settings have reported high levels of depressive symptoms among family caregivers of cancer patients, although the literature remains limited and heterogeneous in methodology. (7,8) Examining depressive symptom prevalence and associated factors among caregivers in tertiary care settings in Pakistan can help fill this evidence gap and inform clinical screening, supportive care, and policy strategies tailored to local health systems. Against this backdrop, the present study aimed to determine the prevalence and severity of depression among family caregivers of patients with cancer attending a tertiary care hospital in Pakistan and to explore its associations with key socio-demographic and caregiving variables.

### Methodology

This descriptive cross-sectional study was conducted in the Department of Psychiatry, Nishtar Hospital, Multan, over a period of six months following formal approval of the study protocol by the institutional ethics review committee from May 2024 to October 2024. The study population comprised family caregivers of patients with a confirmed diagnosis of cancer who were attending the oncology services of the same tertiary care



hospital. Eligible participants were recruited through non-probability consecutive sampling after obtaining written informed consent. Caregivers aged 20 to 55 years, of either gender, who fulfilled the operational definition of a primary caregiver, defined as a first-degree relative or spouse providing care for more than 72 hours per week for at least three months, were included. Caregivers with a prior diagnosis of psychiatric illness, those already receiving treatment for any mental health disorder, and those who declined participation were excluded on the basis of history and available medical records.

Baseline socio-demographic and caregiving-related characteristics were recorded using a structured proforma specifically designed for the study. These variables included age, gender, area of residence (rural or urban), educational status categorized according to years of formal schooling, and socioeconomic status classified using the World Bank income-based categories. Care-related variables included duration of the patient’s cancer diagnosis in months and the number of caregivers involved in the patient’s care. All enrolled caregivers underwent a face-to-face clinical assessment conducted by a consultant psychiatrist to screen for depressive symptoms using the Hospital Anxiety and Depression Scale. The depression subscale of HADS, consisting of seven items with four response options per item, was used to quantify depressive symptomatology. The total depression score ranged from 0 to 21, with scores greater than 8 considered indicative of depression. Severity of depression was categorized as mild (scores 8–10), moderate (11–14), and severe (15–21), in accordance with predefined operational criteria.

Participants who screened positive for depression were offered appropriate counseling and pharmacological management in line with institutional clinical protocols.

All data were coded and entered into SPSS version 23 for statistical analysis. Quantitative variables, including age, duration of cancer diagnosis, number of caregivers per patient, and depression scores, were assessed for normality using the Shapiro–Wilk test and were summarized as mean values with standard deviations. Categorical variables such as gender, area of residence, education level, socioeconomic status, presence of depression, and severity categories were presented as frequencies and percentages. Stratified analyses were performed to explore the association of depression and its severity with key demographic and clinical variables, including age groups, gender, place of residence, educational status, socioeconomic status, and duration of cancer diagnosis. Post-stratification comparisons were conducted using the chi-square test, and a p-value of  $\leq 0.05$  was considered statistically significant for all inferential analyses.

**Results**

A total of 196 family caregivers of patients with cancer were enrolled from the Department of Psychiatry, Nishtar Hospital Multan. The mean age of caregivers was  $38.6 \pm 9.1$  years (range: 20–55 years), with a female predominance (56.1%) (Table 1).

**Table 1. Demographic characteristics of family caregivers (n = 196)**

Variable	Category	n	%
Age (years)	Mean $\pm$ SD	38.6 $\pm$ 9.1	—
Gender	Male	86	43.9
	Female	110	56.1
Area of residence	Rural	122	62.2
	Urban	74	37.8
Education status	Illiterate	42	21.4
	Primary ( $\leq 5$ years)	38	19.4
	Middle ( $\leq 8$ years)	36	18.4
	Secondary ( $\leq 10$ years)	34	17.3
	Higher secondary ( $\leq 12$ years)	26	13.3
	Graduate & above	20	10.2
Socioeconomic status	Low	58	29.6
	Lower middle	82	41.8
	Upper middle	44	22.4
	High	12	6.1
Duration of cancer diagnosis (months)	Mean $\pm$ SD	11.2 $\pm$ 6.4	—
Number of caregivers per patient	Mean $\pm$ SD	1.8 $\pm$ 0.7	—

Overall, 108 caregivers screened positive for depression on HADS, giving a prevalence of 55.1%. Among depressed caregivers, mild

depression was observed in 44.4%, moderate depression in 36.1%, and severe depression in 19.4% (Table 2).

**Table 2. Frequency and severity of depression among caregivers (n = 196)**

Variables	n	%
<b>Depression status</b>		
No depression	88	44.9
Depression present	108	55.1
<b>Severity among depressed caregivers (n = 108)</b>		
Mild	48	44.4
Moderate	39	36.1
Severe	21	19.4

Post-stratification analysis demonstrated that depression was significantly more frequent among female caregivers compared with

males (62.7% vs 45.3%,  $p = 0.018$ ), caregivers residing in rural areas compared with urban residents (60.7% vs 45.9%,  $p = 0.041$ ), and those

belonging to low and lower-middle socioeconomic groups (63.8% vs 41.4%,  $p = 0.006$ ) (Table 3).

**Table 3. Association of depression with selected socio-demographic variables (n = 196)**

Variable	Category	Depression present n (%)	Depression absent n (%)	p-value
Gender	Male	39 (45.3)	47 (54.7)	0.018
	Female	69 (62.7)	41 (37.3)	
Residence	Rural	74 (60.7)	48 (39.3)	0.041
	Urban	34 (45.9)	40 (54.1)	
Socioeconomic status	Low/Lower middle	89 (63.8)	51 (36.2)	0.006
	Upper middle/High	19 (41.4)	27 (58.6)	

The severity of depression showed a significant association with duration of cancer diagnosis. Caregivers of patients with a disease duration of more than 12 months had a higher proportion of moderate

to severe depression compared with those caring for patients with shorter disease duration ( $p = 0.032$ ) (Table 4).

**Table 4. Severity of depression stratified by duration of cancer diagnosis (n = 108 depressed caregivers)**

Duration of cancer diagnosis	Mild n (%)	Moderate n (%)	Severe n (%)	p-value
≤ 12 months (n = 61)	32 (52.5)	21 (34.4)	8 (13.1)	0.032
> 12 months (n = 47)	16 (34.0)	18 (38.3)	13 (27.7)	

No statistically significant association was observed between caregiver age groups and the presence of depression ( $p = 0.217$ ). However, caregivers with lower educational attainment (illiterate to

primary level) demonstrated a higher prevalence of depression compared with those having secondary or higher education (61.9% vs 47.2%,  $p = 0.049$ ) (Table 5).

**Table 5. Association of depression with education level (n = 196)**

Education level	Depression present n (%)	Depression absent n (%)	p-value
Illiterate/Primary	50 (61.9)	30 (38.1)	0.049
Middle or above	58 (47.2)	58 (52.8)	

**Discussion**

The present study identified a depression prevalence of 55.1% among family caregivers of cancer patients using the Hospital Anxiety and Depression Scale, which aligns with evidence indicating a high burden of psychological morbidity in this population. Reported prevalence rates of depression among caregivers vary widely, ranging from 12% to 59% across different settings and assessment tools (9), while approximately 30%–50% of caregivers experience clinically significant depressive symptoms as a common emotional response to caregiving (10). Chen and Lou reported that 66.2% of family caregivers of hospitalised cancer patients exceeded the HADS-D threshold for depression (11). In contrast, Li et al. observed a lower prevalence of 19.2% among caregivers of patients with lung cancer, which may relate to differences in disease stage and clinical trajectory (12). Meta-analytic evidence suggests a global pooled prevalence of approximately 42% (13), indicating that the higher prevalence observed in the present study may reflect the socioeconomically disadvantaged and predominantly rural context of Multan, Pakistan, where access to psychosocial care is limited (14). Among caregivers who screened positive for depression, mild symptoms predominated, followed by moderate and severe categories. Comparable severity patterns have been reported internationally. Sharma et al. documented severe depression in 9% of informal caregivers in Nepal (15), which is lower than the proportion observed in the present cohort. The relatively higher severity distribution in this setting may be influenced by cumulative socioeconomic adversity, lower educational attainment, and limited availability of mental health services (10,14). Xu et al. reported depressive symptom prevalence exceeding 60% among caregivers of patients with advanced gastric cancer, with severity varying by clinical context and disease burden (10), supporting the role of illness characteristics in shaping caregiver psychological outcomes. Female caregivers demonstrated a significantly higher prevalence of depression than male caregivers. This pattern is consistent with

international findings indicating greater vulnerability among women to caregiving-related emotional distress (10). Rambod et al. reported stronger associations between lower resilience and higher levels of depression, anxiety, and stress among female caregivers compared with males (16). Chan and Ng also observed significantly higher anxiety scores among female caregivers in palliative care settings (17). Gendered caregiving roles, greater emotional labour, and constrained access to social and economic resources in low- and middle-income contexts may contribute to this disparity (10,16). Caregivers residing in rural areas experienced higher rates of depression than their urban counterparts. Limited access to mental health services, weaker social support networks, and greater logistical barriers to care in rural settings may contribute to this disparity (14). Similar contextual influences on caregiver depressive symptoms have been reported in palliative care populations in sub-Saharan Africa (14). These findings support the need for community-based and primary care-integrated psychosocial support models tailored to rural populations. Lower socioeconomic status was associated with a higher prevalence of depression among caregivers. Financial strain, treatment-related costs, transportation burdens, and income loss may intensify caregiver stress and psychological vulnerability (9,10). Seo and Park demonstrated that caregiver burden, which is closely linked to depression, is shaped by socioeconomic and contextual factors in families of hospitalised lung cancer patients (18). Pandemic-related disruptions have further amplified caregiver burden and emotional distress in resource-constrained households (19), reinforcing the socioeconomic gradient observed in this study. Longer disease duration was associated with greater depression severity among caregivers. Prolonged caregiving exposure may lead to cumulative emotional exhaustion, anticipatory grief, and sustained psychological strain (20). Longitudinal evidence indicates that caregiver concerns and distress persist and evolve across the disease trajectory, with anxiety and depression remaining elevated over time (21). These findings underscore

the need for ongoing psychological assessment and support for caregivers throughout the continuum of cancer care.

Lower educational attainment was associated with higher depression prevalence. Education may influence caregivers' health literacy, coping strategies, and capacity to navigate healthcare systems, thereby shaping psychological outcomes (14). Resilience and adaptive coping have been shown to vary by educational level, with lower education linked to reduced resilience among caregivers of terminally ill patients (22). Lower engagement in preventive health behaviours among less-educated caregivers may further compound psychological vulnerability (23).

No significant association was observed between caregiver age and depression prevalence in this cohort. Prior studies have reported mixed findings, with some indicating higher distress among middle-aged and older caregivers, while others suggest greater vulnerability among younger caregivers (10). Bereavement-related trajectories of depression may also vary by age (24). The lack of association in the present study may reflect the restricted age range of participants or the stronger influence of gender, socioeconomic status, and education on depression risk in this context.

## Conclusion

More than half of family caregivers of patients with cancer in this tertiary care hospital in Pakistan experienced clinically significant depressive symptoms, with nearly one in five reporting severe depression. The burden of depression was higher among women, caregivers from rural and socioeconomically disadvantaged backgrounds, and those exposed to prolonged caregiving. These findings support the inclusion of routine mental health screening for caregivers within oncology services and the development of context-specific psychosocial support interventions to address caregiver mental health needs in resource-limited settings.

## Declarations

### Data Availability statement

All data generated or analysed during the study are included in the manuscript.

### Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-NHMM-0074-24)

### Consent for publication

Approved

### Funding

Not applicable

## Conflict of interest

The authors declared the absence of a conflict of interest.

## Author Contribution

### IR (Postgraduate Trainee)

Manuscript drafting, Study Design,

### OK (Associate Professor)

Review of Literature, Data entry, Data analysis, and drafting articles.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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