

PSYCHOLOGICAL VULNERABILITIES, CAREGIVER BURDEN, AND SOCIAL SUPPORT AMONG CAREGIVERS OF DIALYSIS PATIENTS IN PAKISTAN

Maryam Mehboob ^{a*}, Ambreen Sadaf ^b, & Saira Majid ^c

^aMS Clinical Psychology, The Superior University, Lahore, Pakistan. Email: maryamrana6677@gmail.com

^bBS Occupational Therapy, The University of Lahore, Lahore, Pakistan. Email: ambreensadafot@gmail.com

^cHead of Department, Department of Clinical Psychology, The Superior University, Lahore, Pakistan. Email: sairamajid@superior.edu.pk

*Correspondence to: Ms. Maryam Mehboob, MS Clinical Psychology, The Superior University, Lahore, Pakistan. Email: maryamrana6677@gmail.com

KEYWORDS:

Dialysis Caregivers, Psychological Vulnerability, Caregiver Burden, Social Support

CITE THIS ARTICLE:

Mehboob, M., Sadaf, A., & Majid, S. (2026). Psychological vulnerabilities, caregiver burden, and social support among caregivers of dialysis patients in Pakistan, 3(7), 17-28.

ABSTRACT

Caregivers of dialysis patients experience considerable emotional, physical, and social strain arising from the prolonged demands of chronic illness management. This study examined psychological vulnerabilities (anxiety, depression, and caregiver burden) and perceived social support among informal caregivers of dialysis patients in Pakistan, guided by the Stress-Process Model. A quantitative cross-sectional survey design was employed with 182 informal caregivers recruited from tertiary care dialysis centres in Karachi, Lahore, and Islamabad. Data were collected using the Hospital Anxiety and Depression Scale (HADS), the Zarit Burden Interview (ZBI), and the Multidimensional Scale of Perceived Social Support (MSPSS), together with a demographic questionnaire. Data were analysed using descriptive statistics, Pearson correlation, independent-samples t-tests, one-way ANOVA, and hierarchical multiple regression. Results showed that 89.0% of caregivers reported at least borderline anxiety ($M = 11.54$, $SD = 3.10$) and 67.6% reported at least borderline depression ($M = 9.06$, $SD = 2.86$), while 41.2% reported moderate-to-severe or severe caregiver burden ($M = 33.59$, $SD = 14.25$). Perceived social support was moderate overall ($M = 3.25$, $SD = 1.20$) and was significantly negatively associated with anxiety ($r = -.377$, $p < .001$) but was unrelated to depression ($r = .007$, $p = .927$) and, unexpectedly, was positively associated with caregiver burden ($r = .588$, $p < .001$). Hierarchical regression confirmed social support as the strongest predictor of lower anxiety ($\beta = -.298$, $p < .001$) and, in the same final model, of higher burden ($\beta = .488$, $p < .001$) after controlling for sociodemographic and caregiving variables. Female and non-employed caregivers reported significantly greater burden, and caregivers with lower education reported significantly greater anxiety. The findings partly support the Stress-Process Model and point to the need for routine psychological screening, practical task-sharing support, and caregiver-inclusive policy within Pakistan's renal care services.

1. INTRODUCTION

Chronic kidney disease (CKD) is one of the leading global health challenges of the 21st century, placing enormous strain on patients, families, and health systems worldwide. According to the Global Burden of Disease Study 2021, an estimated 673.72 million people were living with CKD, with 1.53 million deaths and 44.45 million disability-adjusted life years attributable to the condition (Wang et al., 2025). When CKD progresses to end-stage renal disease (ESRD), patients require dialysis or kidney transplantation to survive (Kalantar-Zadeh et al., 2021). The prevalence of CKD in Pakistan is estimated at 21.2%, and the proportion progressing to ESRD places substantial

strain on the country's limited healthcare system (Jessani et al., 2014), a strain compounded by the cost of dialysis treatment and limited access to transplantation in low- and middle-income countries (Jha et al., 2016). Haemodialysis, the most common form of renal replacement therapy worldwide, typically requires patients to attend treatment three times weekly for approximately four hours per session (Hoff et al., 2020), disrupting their capacity to work, socialise, and fulfil family roles (Almutary et al., 2016). Consequently, the burden of caregiving falls largely on family members, who must coordinate physical, emotional, financial, and medical-care responsibilities (Menati et al., 2020). Informal family caregiving remains the dominant model of chronic-illness care in Pakistan, consistent with cultural expectations of family responsibility and mutual reliance (Jabeen et al., 2024), yet the prolonged and multifaceted nature of dialysis caregiving leaves caregivers particularly vulnerable to psychological difficulty (Vovlianou et al., 2023).

International evidence consistently reports elevated anxiety, depression, and caregiver burden among those caring for dialysis patients (Isjaya et al., 2026; Bahall et al., 2025; Al Maqbali et al., 2025). Caregiver burden is a multidimensional construct spanning physical, emotional, social, and financial strain (Zarit et al., 1980), and dialysis caregivers commonly face role overload, social isolation, financial pressure, and diminished quality of life (Sharif et al., 2020). The chronic and unpredictable trajectory of ESRD, together with the emotional toll of witnessing a loved one's suffering, further compounds this strain (Tao et al., 2020). Social support has repeatedly been identified as a protective resource that can buffer caregivers against these adverse psychological effects (Pearlin et al., 1990), and this study accordingly treats perceived social support as a direct contextual predictor of caregiver wellbeing, consistent with the Stress-Process Model, rather than as a moderating or mediating variable. Despite this evidence base, the accessibility and adequacy of social support vary considerably across cultural and economic settings, and caregivers in low-resource contexts often lack access to formal supports such as respite care, counselling, and financial assistance (Menati et al., 2020).

Problem Statement

Although the psychological vulnerability of dialysis caregivers is increasingly recognised internationally, research examining this phenomenon within Pakistan remains scarce. Existing Pakistani literature has tended to isolate single dimensions of caregiver experience, such as quality of life or burden, without jointly examining psychological vulnerability and social support using validated psychometric instruments (Afzal et al., 2025). This gap is especially concerning given Pakistan's heavy reliance on informal family caregiving in the absence of an established formal support system (Jabeen et al., 2024), and the cultural stigma that can restrict caregivers' help-seeking for their own distress (Husain et al., 2011). High out-of-pocket treatment costs and constrained healthcare access further heighten caregivers' vulnerability to mental morbidity (Jha et al., 2016), and although regional South Asian studies suggest elevated anxiety, depression, and burden among haemodialysis caregivers (Pio et al., 2022), rigorous quantitative evidence from Pakistan specifically linking psychological vulnerability to perceived social support remains limited. This study addresses that gap by examining examination of psychological vulnerabilities, caregiver burden, and perceived social support among caregivers of dialysis patients in Pakistan.

Research Objectives

1. To assess the levels of anxiety, depression, and caregiver burden among caregivers of dialysis patients in Pakistan.
2. To evaluate the perceived social support available to caregivers of dialysis patients across familial, friend, and significant-other domains.
3. To examine the associations between psychological vulnerabilities (anxiety, depression, and caregiver burden) and perceived social support.
4. To compare levels of psychological vulnerability across sociodemographic groups (gender, education, employment status, and relationship to the patient).

Research Questions

1. Do caregivers of dialysis patients in Pakistan experience clinically significant anxiety, depression, and caregiver burden?

2. How adequate is the perceived social support available to caregivers from family, friends, and significant others?
3. Is there a significant relationship between perceived social support and psychological vulnerabilities among caregivers of dialysis patients?
4. Do psychological vulnerabilities differ significantly across sociodemographic characteristics among caregivers of dialysis patients?

II. LITERATURE REVIEW

Caregiving Burden and Psychological Vulnerability in Dialysis Care

Caregiving for a person on dialysis has been consistently linked to elevated psychological morbidity. Systematic and comparative studies report that caregivers of haemodialysis and peritoneal-dialysis patients experience significant strain related to time pressure, physical fatigue, financial cost, role conflict, and disrupted social or personal identity (Alshammari et al., 2021; Joseph et al., 2022). Dialysis caregivers have been described as the "hidden patients" of renal services, since their distress often goes unassessed within routine clinical care (Gilbertson et al., 2019). Objective caregiving demands, particularly the number of hours devoted to care each day, have been shown to remain associated with burden even after controlling for sociodemographic factors and length of caregiving, underscoring the importance of sustained task demands over and above caregiver background characteristics (Pio et al., 2022).

Perceived Social Support among Caregivers

The buffering hypothesis proposes that supportive relationships reduce the perceived threat of demanding circumstances and strengthen caregivers' coping confidence (Cohen & Wills, 1985). Empirical work among haemodialysis caregivers similarly reports that greater perceived support is associated with lower anxiety (Al Maqbali et al., 2025) and lower subjective burden in some samples (Tao et al., 2020; Alnazly, 2021). At the same time, other researchers note that social support functions differently across outcomes: it may ease anxious appraisal without necessarily relieving depressive symptoms or role strain, particularly when family networks are simultaneously a source of both comfort and obligation (Zhang et al., 2025). In collectivist settings, dense kin networks can carry expectations that the primary caregiver remain continuously available, so that support and caregiving pressure may co-occur rather than substitute for one another (Jabeen et al., 2024).

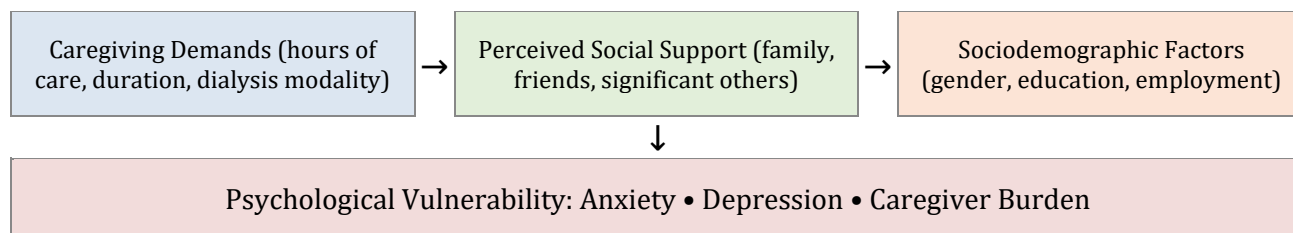
Caregiving in the Pakistani and South Asian Context

Regional evidence from South Asia indicates a high prevalence of anxiety, depression, and burden among dialysis caregivers (Pio et al., 2022; Ishran et al., 2025), but Pakistan-specific quantitative research remains sparse and has largely relied on single-construct measures such as the Zarit Burden Interview alone, without jointly assessing anxiety, depression, and social support using validated instruments (Afzal et al., 2025; Arshad, 2017). Cultural norms around family obligation, stigma toward disclosing psychological distress, and constrained access to formal respite or counselling services distinguish the Pakistani context from Western and East Asian settings where much of the existing caregiver literature originates (Husain et al., 2011; Jabeen et al., 2024). This context-specific gap limits both theoretical understanding of caregiver distress in Pakistan and the design of culturally appropriate interventions (Encinas-Monge et al., 2024).

Theoretical Framework

This study is guided by the Stress-Process Model of caregiving (Pearlin et al., 1990), which conceptualises caregiving as a dynamic process in which caregivers encounter primary stressors linked directly to the care recipient's illness and functional limitations, and secondary stressors arising from disruption to the caregiver's own roles, relationships, and wellbeing. Contextual resources, including perceived social support, are proposed to shape the psychological consequences of these stressors. In the present study, perceived social support (measured across family, friends, and significant others) is examined as a direct predictor of anxiety, depression, and caregiver burden, consistent with prior applications of the model showing that greater support is generally associated with lower psychological distress among caregivers (Pearlin et al., 1990; Tao et al., 2020; Wang et al., 2025). The conceptual framework guiding the analysis is presented in Figure 1.

Figure I: Conceptual framework linking caregiving demands and perceived social support to psychological vulnerability (anxiety, depression, caregiver burden), consistent with the Stress-Process Model (Pearlin et al., 1990)



III. METHOD

Participants

This study used a quantitative, cross-sectional survey design to examine psychological vulnerabilities and social support among caregivers of dialysis patients. Participants were 182 informal caregivers recruited from tertiary-care dialysis centres in Karachi, Lahore, and Islamabad, using a purposive convenience sampling approach appropriate for this exploratory study of a specific, relatively inaccessible population (Stratton, 2021). The target sample size was determined a priori using G*Power 3.1 for a multiple-regression analysis assuming a medium effect size ($f^2 = 0.15$), $\alpha = .05$, and power = .80, yielding a minimum requirement of 92 participants; the achieved sample of 182 exceeded this minimum to accommodate subgroup analyses and strengthen external validity (Faul et al., 2007). Eligible participants were adult (18+) primary informal caregivers who had provided care for at least three months to a family member on maintenance haemodialysis or peritoneal dialysis, were Pakistani residents, and were capable of providing informed consent. Paid professional caregivers, caregivers with an actively treated psychiatric diagnosis, and caregivers of kidney-transplant or early-stage CKD patients were excluded.

Measures

A structured demographic questionnaire captured participants' age, gender, education, employment status, household income, relationship to the patient, duration of caregiving, daily caregiving hours, dialysis modality, and dialysis duration. Anxiety and depression were measured with the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), a 14-item self-report measure comprising two seven-item subscales (HADS-A, HADS-D) scored 0–21, with 0–7 classified as normal, 8–10 as borderline abnormal, and 11–21 as abnormal/case level; the HADS has demonstrated Cronbach's alpha of .80–.93 (anxiety) and .81–.90 (depression) across clinical and caregiver populations (Bjelland et al., 2002). Caregiver burden was measured with the 22-item Zarit Burden Interview (ZBI; Zarit et al., 1980), scored 0–88 and categorised as little/no burden (0–20), mild-to-moderate burden (21–40), moderate-to-severe burden (41–60), and severe burden (61–88); the ZBI has shown internal consistency exceeding .85 in caregiver samples, including caregivers of dialysis patients (Hébert et al., 2000; Sharif et al., 2020). Perceived social support was measured with the 12-item Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988), which yields a total score and three four-item subscales (family, friends, significant other) on a 1–7 scale, with internal consistency generally exceeding .85 for the total score and .80 for subscales across cultural contexts, including South Asian samples (Zimet et al., 1988; Dambi et al., 2018).

Procedure

Following institutional ethical approval, caregivers were approached in dialysis-centre waiting areas before or after their relative's treatment session. After the study purpose and procedures were explained verbally and via an information sheet, interested caregivers provided written informed consent before completing the demographic questionnaire, HADS, ZBI, and MSPSS in their preferred language (English or Urdu); the full battery took approximately 15–20 minutes. Research assistants were available to clarify item wording while participants completed the forms independently to minimise response bias. Data were analysed in IBM SPSS Statistics (Version 28). All 182 cases were complete, so no imputation was required. Descriptive statistics summarised sociodemographic and caregiving characteristics and severity categories on the HADS and ZBI. Normality was assessed with the Kolmogorov–Smirnov and Shapiro–Wilk tests; because all study variables deviated significantly

from normality, Pearson correlations, t-tests, and ANOVA results are interpreted as estimates of linear relationship and mean difference rather than as evidence of a strictly Gaussian distribution (Field, 2024). Bivariate associations among anxiety, depression, burden, and social support were examined using Pearson correlation, interpreted per Cohen's (1992) conventions. Hierarchical multiple regression tested the incremental contribution of sociodemographic variables (Block 1), caregiving demands (Block 2), and total perceived social support (Block 3) to each psychological outcome. Independent-samples t-tests (with Welch correction where variances were unequal) compared gender and employment groups, and one-way ANOVA with Bonferroni-corrected post-hoc tests compared education and relationship-to-patient groups. Statistical significance was set at $p < .05$ (two-tailed), and effect sizes (Cohen's d , partial η^2) accompanied all group comparisons.

IV. RESULTS

All analyses are based on the full sample of 182 caregivers, with no missing data on any demographic, caregiving, or outcome variable.

Table I: Sociodemographic Profile of Participants (N = 182)

Variables	Categories	<i>n</i>	%
Age	18–25 years	56	30.8
	26–35 years	54	29.7
	36–45 years	38	20.9
	46–55 years	22	12.1
	56 years and above	12	6.6
Gender	Male	114	62.6
	Female	68	37.4
Education	No formal education	25	13.7
	Primary	35	19.2
	Secondary	41	22.5
	Higher secondary/intermediate	25	13.7
	Bachelor's degree	34	18.7
	Master's degree or above	22	12.1
Employment	Employed full-time	59	32.4
	Employed part-time	23	12.6
	Self-employed	31	17.0
	Unemployed	20	11.0
	Homemaker	15	8.2
	Student	25	13.7
	Retired	9	4.9
Monthly Household Income	Less than PKR 30,000	65	35.7
	PKR 30,000–60,000	42	23.1
	PKR 60,001–100,000	39	21.4
	More than PKR 100,000	36	19.8

The sample was relatively young, with 60.4% under 36 years of age, and was 62.6% male and 37.4% female — a male predominance that contrasts with the female predominance typically reported in the international caregiving literature. Education and income were widely distributed: 33.0% had primary education or below while 30.8% held a bachelor's degree or higher, and 58.8% of households reported a monthly income of PKR 60,000 or less. Sixty-two percent of caregivers were employed in some capacity (full-time, part-time, or self-employed). Full details are presented in Table I.

Table II: Caregiving and Dialysis Characteristics (N = 182)

Variables	Categories	n	%
Relationship to Patient	Spouse	42	23.1
	Son/Daughter	29	15.9
	Parent	32	17.6
	Sibling	39	21.4
	Other relative	40	22.0
Duration Providing Care	3–6 months	71	39.0
	7–12 months	48	26.4
	1–2 years	44	24.2
	More than 2 years	19	10.4
Hours of Care Per Day	Less than 4 hours	56	30.8
	4–8 hours	60	33.0
	9–12 hours	42	23.1
	More than 12 hours	24	13.2
Dialysis Type	Haemodialysis	119	65.4
	Peritoneal dialysis	63	34.6
Patient Dialysis Duration	Less than 6 months	70	38.5
	6–12 months	53	29.1
	1–3 years	32	17.6
	More than 3 years	27	14.8

Spouses were the largest single relationship category (23.1%), followed closely by other relatives (22.0%) and siblings (21.4%). Most caregivers were relatively new to the role: 39.0% had provided care for 3–6 months and only 10.4% for more than two years. Caregiving intensity was high, with 36.3% providing nine or more hours of care per day. Haemodialysis was the more common modality (65.4%). Details are shown in table 2.

Table III: Descriptive Statistics and Severity Categories for Psychological Vulnerabilities

Measure	M	SD	Category	n	%
HADS Anxiety	11.54	3.10	Normal	20	11.0
			Borderline abnormal	47	25.8
			Abnormal/case	115	63.2
HADS Depression	9.06	2.86	Normal	59	32.4
			Borderline abnormal	66	36.3
			Abnormal/case	57	31.3
ZBI Caregiver Burden	33.59	14.25	Little or no burden	38	20.9
			Mild-moderate burden	69	37.9
			Moderate-severe burden	74	40.7
			Severe burden	1	0.5

Anxiety was the most prevalent difficulty: the mean HADS-A score of 11.54 (SD = 3.10) fell in the abnormal/case range, and 63.2% of caregivers scored in this range, rising to 89.0% when borderline cases were included. Depression was somewhat less severe (M = 9.06, SD = 2.86, borderline range), with 31.3% scoring in the abnormal range and 67.6% at least borderline. Caregiver burden averaged 33.59 (SD = 14.25), corresponding to mild-to-moderate burden overall, though the distribution was heterogeneous: 79.1% reported some degree of burden and 41.2% reported moderate-to-severe or severe burden. These findings, summarised in Table III, indicate clinically meaningful levels of psychological vulnerability across the sample.

Table IV: Perceived Social Support Scores

MSPSS domain	<i>M</i>	<i>SD</i>	Range
Significant other	3.15	1.32	1–7
Family	3.20	1.42	1–7
Friends	3.29	1.39	1–7
MSPSS total	3.25	1.20	1–6

Perceived social support was moderate across all domains, with friends producing the highest mean ($M = 3.29$, $SD = 1.39$), followed by family ($M = 3.20$, $SD = 1.42$) and significant others ($M = 3.15$, $SD = 1.32$); the total mean was 3.25 ($SD = 1.20$). The narrow spread across domains (a difference of only 0.14 points) suggests support was distributed relatively evenly across the caregivers' networks rather than concentrated in a single source (Table 4).

Table V: Pearson Correlations among Psychological Vulnerabilities and Social Support

Variables	1	2	3	4
1. HADS anxiety	—			
2. HADS depression	-.032	—		
3. ZBI burden	-.309***	.183*	—	
4. MSPSS total	-.377***	.007	.588***	—

* $p < .05$, *** $p < .001$.

Anxiety and depression were not significantly correlated, $r = -.032$, $p = .670$. Caregiver burden was moderately negatively associated with anxiety, $r = -.309$, $p < .001$, but positively associated with depression, $r = .183$, $p = .013$. Total perceived social support was significantly negatively associated with anxiety, $r = -.377$, $p < .001$, unrelated to depression, $r = .007$, $p = .927$, and significantly positively associated with caregiver burden, $r = .588$, $p < .001$. All three MSPSS subscales followed the same pattern, with correlations to burden ranging from .474 to .558 (all $p < .001$) and no significant relationships with depression (Table 5).

Table VI: Hierarchical Regression Model Summaries

Outcome	Model	<i>R</i>	<i>R</i> ²	Adj. <i>R</i> ²	<i>F</i>	<i>p</i>	ΔR^2
Anxiety	1: Demographics	.231	.053	.032	2.498	.044	.053
	2: + caregiving demands	.339	.115	.085	3.795	.001	.062**
	3: + MSPSS total	.432	.186	.154	5.697	<.001	.071***
Depression	1: Demographics	.079	.006	-.016	0.279	.891	.006
	2: + caregiving demands	.195	.038	.005	1.151	.335	.032
	3: + MSPSS total	.199	.040	.001	1.028	.413	.002
Caregiver Burden	1: Demographics	.399	.159	.140	8.376	<.001	.159***
	2: + caregiving demands	.482	.232	.206	8.825	<.001	.073***
	3: + MSPSS total	.651	.423	.400	18.243	<.001	.191***

Hierarchical regression tested the contribution of social support to each psychological outcome after controlling for sociodemographic (Block 1) and caregiving (Block 2) variables. For anxiety, the final model explained 18.6% of variance, adjusted $R^2 = .154$, $F(7, 174) = 5.697$, $p < .001$, with MSPSS total the only significant predictor, $B = -.771$, $\beta = -.298$, $p < .001$ — each one-point increase in perceived support was associated with a 0.77-point decrease in anxiety. Depression models were not significant at any step, with the final model explaining only 4.0% of variance, adjusted $R^2 = .001$, $F(7, 174) = 1.028$, $p = .413$. For caregiver burden, the final model explained 42.3% of variance, adjusted $R^2 = .400$, $F(7, 174) = 18.243$, $p < .001$; MSPSS total was again the strongest predictor, $B = 5.800$, $\beta = .488$, $p < .001$, and daily care hours also remained significant, $B = 1.871$, $\beta = .134$, $p = .040$. Contrary to the hypothesised protective direction, higher perceived support was independently associated with higher, not lower, burden. Model summaries are presented in Table 6.

Table VII: Gender and Employment Group Comparisons

Grouping	Outcome	Group 1 M (SD)	Group 2 M (SD)	t (df)	p	d
Gender	Anxiety	Male 11.86 (3.00)	Female 11.00 (3.21)	1.821 (180)	.070	.28
	Depression	Male 9.05 (2.74)	Female 9.07 (3.06)	-.048 (180)	.962	-.01
	Burden	Male 30.39 (14.71)	Female 38.97 (11.70)	-4.341 (165.60)	<.001	-.63
Employment	Anxiety	Employed 11.77 (3.11)	Not employed 11.16 (3.06)	1.291 (180)	.198	.20
	Depression	Employed 8.95 (2.64)	Not employed 9.25 (3.20)	-.654 (123.26)	.514	-.10
	Burden	Employed 30.88 (14.94)	Not employed 38.03 (11.87)	-3.564 (167.82)	<.001	-.52

Female caregivers reported significantly higher burden than males ($M = 38.97$ vs. 30.39), Welch's $t(165.60) = -4.341$, $p < .001$, $d = -.63$, though gender differences in anxiety and depression were not significant. Non-employed caregivers similarly reported higher burden than employed caregivers ($M = 38.03$ vs. 30.88), Welch's $t(167.82) = -3.564$, $p < .001$, $d = -.52$, with no significant differences in anxiety or depression by employment status (Table VII). One-way ANOVA showed that education was significantly associated with anxiety, $F(2, 179) = 3.592$, $p = .030$, partial $\eta^2 = .039$ (caregivers with primary education or below reported more anxiety than those with tertiary education, $p = .037$), and with burden, $F(2, 179) = 6.743$, $p = .002$, partial $\eta^2 = .070$ (tertiary-educated caregivers reported higher, not lower, burden than those with primary education or below, $p = .001$). Relationship to the patient was significantly associated with both anxiety, $F(4, 177) = 3.958$, $p = .004$, partial $\eta^2 = .082$ (spouses highest), and burden, $F(4, 177) = 4.567$, $p = .002$, partial $\eta^2 = .094$ (spouses lowest); neither education nor relationship to patient was associated with depression.

V. DISCUSSION

This study examined psychological vulnerability and perceived social support among 182 informal caregivers of dialysis patients in Pakistan. Anxiety emerged as the most prevalent difficulty, with 89.0% of caregivers reporting at least borderline symptoms — a substantially higher rate than the 27.8% of clinically significant anxiety reported among Greek haemodialysis caregivers (Vovlianou et al., 2023), a contrast plausibly attributable to differences in financial protection, formal caregiver support, and out-of-pocket treatment costs in Pakistan (Afzal et al., 2025; Jabeen et al., 2024). Depression, while somewhat less pronounced, was still clinically relevant for a substantial subgroup, consistent with evidence that subjective stress appraisal, rather than caregiving duration alone, better predicts psychological distress among dialysis caregivers (Al Maqbali et al., 2025). Nearly 80% of caregivers reported some degree of burden, and over 40% reported moderate-to-severe or severe burden, echoing descriptions of dialysis caregivers as the “hidden patients” of renal services whose distress commonly escapes routine clinical attention (Gilbertson et al., 2019; Alshammari et al., 2021). Perceived social support was consistently and negatively associated with anxiety, both in bivariate correlations and as the sole significant predictor in the final regression model, supporting the buffering role of social support proposed by Cohen and Wills (1985) and consistent with findings among haemodialysis caregivers elsewhere (Al Maqbali et al., 2025). Support was unrelated to depression, suggesting that support may ease anxious appraisal without necessarily relieving the fatigue, hopelessness, or low mood central to depressive symptoms, which may instead be driven by unmeasured factors such as financial strain, sleep disruption, or patient deterioration (Zhang et al., 2025).

The most unexpected finding was the strong positive association between perceived social support and caregiver burden, both bivariately ($r = .588$) and in the final regression model ($\beta = .488$), directly contradicting the hypothesised protective direction. Several explanations are plausible. Because the design was cross-sectional, causal direction cannot be established: high burden may itself mobilise support from family and friends, so that caregivers under greater strain report more support precisely because their need has become visible (Alnazly, 2021; Tao et al., 2020). Alternatively, the MSPSS captures perceived emotional availability, whereas the ZBI captures interference with personal time and role strain; a caregiver may feel loved and supported while still shouldering most day-to-day tasks alone. In a collectivist cultural context, dense family networks may also carry obligations and expectations alongside comfort, such that support and caregiving pressure co-occur rather than substitute for one another (Jabeen et al., 2024). This finding should therefore not be read as evidence that support increases burden, but rather that the relationship between perceived support and burden in this sample was positive and warrants further, ideally longitudinal, investigation.

Sociodemographic and Relationship Differences

Female caregivers and non-employed caregivers reported significantly greater burden than their male and employed counterparts, respectively, consistent with literature linking gender and financial or occupational constraints to caregiver strain (Alshammari et al., 2021; Bahall et al., 2025), though anxiety and depression did not differ significantly by gender or employment. Lower education was associated with greater anxiety, consistent with prior evidence (Alnazly, 2021), yet caregivers with tertiary education reported greater burden — possibly reflecting greater involvement in complex financial and medical decision-making, or heightened awareness of long-term caregiving demands. Spouses reported the highest anxiety but the lowest burden among relationship groups, a pattern that may reflect emotional intimacy and anticipatory concern for a partner's future alongside a tendency to normalise spousal caregiving as an expected marital role rather than report it as burdensome.

Implications for the Stress-Process Model

These findings offer partial support for the Stress-Process Model (Pearlin et al., 1990): objective caregiving demands (daily care hours) remained associated with burden, and social support was associated with reduced anxiety, consistent with the model's core logic of primary stressors, contextual resources, and psychological outcomes. However, the positive support–burden relationship and the largely unexplained variance in depression indicate that social support did not function uniformly as a protective resource across outcomes in this sample, suggesting that models applied to Pakistani caregiving contexts may need to distinguish emotional support from practical task-sharing and to account for the dual role of family networks as both a resource and a source of obligation.

Recommendations

Dialysis services should incorporate brief, routine psychological screening (e.g., using the HADS and ZBI) at treatment initiation and at key clinical transitions, given the high prevalence of anxiety and burden and the likelihood that caregivers will not proactively disclose distress. Because the positive support–burden association suggests that emotional support alone may not reduce workload, interventions should extend beyond encouraging family involvement to include concrete task-sharing — for example, structured family meetings to allocate transport, medication collection, meal preparation, and financial administration — alongside peer-support groups and psychoeducation on dialysis schedules, self-care, and coping. Female caregivers, non-employed caregivers, those providing nine or more hours of daily care, and spousal caregivers (for anxiety specifically) represent priority groups for targeted support. Health systems and policymakers should recognise caregivers as integral members of the renal-care team and expand low-cost supports such as telephone counselling, caregiver education sessions, and referral pathways to psychological services.

Limitations of the Study

This study's cross-sectional design precludes causal inference regarding the direction of relationships, particularly the unexpected support–burden association. Data relied on self-report measures, which may be subject to response bias and social desirability. The convenience sample was drawn from three major urban centres, which may limit generalisability to rural or less-resourced regions of Pakistan. Finally, the study did not measure patient-level variables such as functional dependence or symptom severity, which the discussion suggests may partly account for the positive support–burden relationship and merit inclusion in future dyadic or longitudinal research.

VI.CONCLUSION

This study demonstrates that caregivers of dialysis patients in Pakistan experience substantial psychological vulnerability: the large majority reported at least borderline anxiety, a substantial minority reported clinically significant depression, and over 40% reported moderate-to-severe or severe caregiver burden. Perceived social support was moderate overall and was associated with lower anxiety but, unexpectedly, with higher rather than lower burden, and was unrelated to depression — indicating that social support does not operate as a uniform protective factor across psychological outcomes in this population. Female caregivers, non-employed caregivers, and those providing intensive daily care emerged as particularly vulnerable to burden, while lower education was associated with greater anxiety. These findings partly support the Stress-Process Model while highlighting the

need for its adaptation to the Pakistani caregiving context. Embedding caregiver wellbeing — through routine screening, practical family task-sharing, and accessible psychological referral — into standard dialysis care is recommended as a means of supporting both caregivers and the continuity of patient care.

Disclosure Statement

No potential conflict of interest was reported by the authors.

Funding

The author received no funding from any organizations.

VII. REFERENCES

- Afzal, A., Rahman, H. S., Rauf, M. A., Rafique, Z., Gulzar, A., Rasheed, W., Mobushar, J. A., Bajwa, B. A., Naeem, I., Jamil, M. I., & Rauf, M. A., IV. (2025). Quality of life among attendants/caregivers of dialysis patients. *Cureus*, 17(5).
- Al Maqbali, A., Al Omari, O., Sharour, L. A., Al-Naamani, Z., Al Khatri, M., Sanad, H. M., & Al Omari, D. (2025). The perceived levels of stress, anxiety and depression among family caregivers of patients undergoing haemodialysis and their association with quality of life. *BJPsych Open*, 11(3), Article e100.
- Almutary, H., Bonner, A., & Douglas, C. (2016). Which patients with chronic kidney disease have the greatest symptom burden? A comparative study of advanced CKD stage and dialysis modality. *Journal of Renal Care*, 42(2), 73–82.
- Alnazly, E. K. (2021). Burden and depression among Jordanian caregivers of hemodialysis patients: A cross-sectional study. *The Open Nursing Journal*, 15(1).
- Alshammari, B., Noble, H., Alshammari, F., & McAneney, H. (2021). Factors associated with burden in caregivers of patients with end-stage kidney disease: A systematic review. *Healthcare*, 9(9), 1212.
- Arshad, F. (2017). Assessment of caregiver burden of patients receiving dialysis treatment in Rawalpindi. *Journal of the Pakistan Medical Association*.
- Bahall, M., Harry, A. D., Kisseur, A., Ramdass, V., Gransaul, D., Alexander, S., & Kisseur, A. D. (2025). Self-reported socio-economic and psychological burdens for caregivers of patients undergoing dialysis: A cross-sectional study. *Cureus*, 17(3).
- Bjelland, I., Dahl, A. A., Haug, T. T., & Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale: An updated literature review. *Journal of Psychosomatic Research*, 52(2), 69–77.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310–357.
- Dambi, J. M., Corten, L., Chiwaridzo, M., Jack, H., Mlambo, T., & Jelsma, J. (2018). A systematic review of the psychometric properties of the cross-cultural translations and adaptations of the Multidimensional Perceived Social Support Scale (MSPSS). *Health and Quality of Life Outcomes*, 16(1), Article 80.
- Encinas-Monge, C., Hidalgo-Fuentes, S., Cejalvo, E., & Martí-Vilar, M. (2024). Interventions to relieve the burden on informal caregivers of older people with dementia: A scoping review. *Nursing Reports*, 14(3), 2535–2549.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191.
- Field, A. (2024). *Discovering statistics using IBM SPSS statistics* (6th ed.). SAGE Publications.
- Gilbertson, E. L., Krishnasamy, R., Foote, C., Kennard, A. L., Jardine, M. J., & Gray, N. A. (2019). Burden of care and quality of life among caregivers for adults receiving maintenance dialysis: A systematic review. *American Journal of Kidney Diseases*, 73(3), 332–343.
- Hébert, R., Bravo, G., & Prévile, M. (2000). Reliability, validity and reference values of the Zarit Burden Interview for assessing informal caregivers of community-dwelling older persons with dementia. *Canadian Journal on Aging*, 19(4), 494–507.
- Hoff, B. M., Maker, J. H., Dager, W. E., & Heintz, B. H. (2020). Antibiotic dosing for critically ill adult patients receiving intermittent haemodialysis, prolonged intermittent renal replacement therapy, and continuous renal replacement therapy: An update. *Annals of Pharmacotherapy*, 54(1), 43–55.

- Husain, N., Parveen, A., Husain, M., Saeed, Q., Jafri, F., Rahman, R., & Chaudhry, I. B. (2011). Prevalence and psychosocial correlates of perinatal depression: A cohort study from urban Pakistan. *Archives of Women's Mental Health*, 14(5), 395–403.
- Ishran, B., Sharma, R., Kushwah, S., Dawman, L., Kohli, H. S., Ramachandran, R., ... Tiewsoh, K. (2025). Psychological distress and quality of life in CKD caregivers: Exploring neurobehavioral correlates across disease stages. *Annals of Neurosciences*.
- Isjaya, A. N., Abdullah, R. P. I., & Ningsi, I. W. (2026). Caregivers in hemodialysis patient care: Psychosocial burden, impact on quality of life, and implications for psychosocial interventions (narrative literature review). *Journal of Community Health Provision*, 6(1), 200–211.
- Jabeen, S., Zakar, R., Zakar, M. Z., & Fischer, F. (2024). Experiences of family caregivers in dealing with cases of advanced breast cancer: A qualitative study of the sociocultural context in Punjab, Pakistan. *BMC Public Health*, 24(1), Article 1030.
- Jessani, S., Bux, R., & Jafar, T. H. (2014). Prevalence, determinants, and management of chronic kidney disease in Karachi, Pakistan—A community based cross-sectional study. *BMC Nephrology*, 15(1), Article 90.
- Jha, V., Arici, M., Collins, A. J., Garcia-Garcia, G., Hemmelgarn, B. R., Jafar, T. H., & Zakharova, E. (2016). Understanding kidney care needs and implementation strategies in low- and middle-income countries: Conclusions from a “Kidney Disease: Improving Global Outcomes” (KDIGO) Controversies Conference. *Kidney International*, 90(6), 1164–1174.
- Joseph, S. J., Bhandari, S. S., Dutta, S., Khatri, D., & Upadhyay, A. (2022). Assessing burden and its determinants in caregivers of chronic kidney disease patients undergoing haemodialysis. *Open Journal of Psychiatry & Allied Sciences*, 12(2), 96.
- Kalantar-Zadeh, K., Jafar, T. H., Nitsch, D., Neuen, B. L., & Perkovic, V. (2021). Chronic kidney disease. *The Lancet*, 398(10302), 786–802.
- Menati, L., Torabi, Y., Andayeshgar, B., & Khatony, A. (2020). The relationship between care burden and coping strategies in caregivers of haemodialysis patients in Kermanshah, Iran. *Psychology Research and Behavior Management*, 13, 133–140.
- Pearlin, L. I., Mullan, J. T., Semple, S. J., & Skaff, M. M. (1990). Caregiving and the stress process: An overview of concepts and their measures. *The Gerontologist*, 30(5), 583–594.
- Pio, T. M. T., Prihanto, J. B., Jahan, Y., Hirose, N., Kazawa, K., & Moriyama, M. (2022). Assessing burden, anxiety, depression, and quality of life among caregivers of haemodialysis patients in Indonesia: A cross-sectional study. *International Journal of Environmental Research and Public Health*, 19(8), Article 4544.
- Sharif, L., Basri, S., Alsahafi, F., Altaylouni, M., Albugumi, S., Banakhar, M., & Wright, R. J. (2020). An exploration of family caregiver experiences of burden and coping while caring for people with mental disorders in Saudi Arabia—A qualitative study. *International Journal of Environmental Research and Public Health*, 17(17), Article 6405.
- Stratton, S. J. (2021). Population research: Convenience sampling strategies. *Prehospital and Disaster Medicine*, 36(4), 373–374.
- Tao, X., Chow, S. K. Y., Zhang, H., Huang, J., Gu, A., Jin, Y., & Li, N. (2020). Family caregiver's burden and the social support for older patients undergoing peritoneal dialysis. *Journal of Renal Care*, 46(4), 222–232.
- Vovlianou, S., Koutlas, V., Papoulidou, F., Tatsis, V., Millionis, H., Skapinakis, P., & Dounousi, E. (2023). Burden, depression and anxiety effects on family caregivers of patients with chronic kidney disease in Greece: A comparative study between dialysis modalities and kidney transplantation. *International Urology and Nephrology*, 55(6), 1619–1628.
- Wang, L., He, Y., Han, C., Zhu, P., Zhou, Y., Tang, R., & He, W. (2025). Global burden of chronic kidney disease and risk factors, 1990–2021: An update from the Global Burden of Disease Study 2021. *Frontiers in Public Health*, 13, Article 1542329.
- Zarit, S. H., Reever, K. E., & Bach-Peterson, J. (1980). Relatives of the impaired elderly: Correlates of feelings of burden. *The Gerontologist*, 20(6), 649–655.
- Zhang, L., Zhang, X., Tang, W., Wang, Q., Zou, L., Zhou, L., & Chen, Y. (2025). Dyadic effects of social support and coping on quality of life and caregiver burden among hemodialysis patient–caregiver dyads: An actor–partner interdependence mediation model. *Renal Failure*, 47(1), 2612439.
- Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 67(6), 361–370.

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, 52(1), 30–41.