

MENTAL HEALTH PROBLEMS AMONG CAREGIVERS OF INDIVIDUALS WITH NEUROCOGNITIVE, NEURODEVELOPMENTAL AND MOOD DISORDERS: A QUANTITATIVE COMPARATIVE STUDY OF PAKISTANI ADULTS

Original Article

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ABSTRACT

Background: Caregivers of individuals with chronic mental and neurological conditions often experience adverse mental health outcomes, particularly in low- and middle-income countries where healthcare and psychosocial support systems are limited. While global literature has addressed caregiver burden, comparative data across neurodevelopmental, neurocognitive, and mood disorders remain sparse, especially within the Pakistani context. This study was conducted to explore the levels of depression, anxiety, and stress among caregivers in relation to the type of disorder being managed.

Objective: To compare psychological distress—specifically depression, anxiety, and stress—among caregivers of individuals diagnosed with neurodevelopmental, neurocognitive, and mood disorders in Pakistan.

Methods: A cross-sectional correlational study was conducted with 237 caregivers recruited through purposive sampling from Lahore, Islamabad, Rawalpindi, and Karachi. Participants had been providing care for at least one year and possessed a minimum intermediate-level education. Data were collected using the Depression Anxiety Stress Scale (DASS-21). Internal reliability was confirmed with Cronbach's alpha values of 0.88 for depression, 0.82 for anxiety, and 0.90 for stress. Statistical analyses included Pearson's correlation and one-way ANOVA, performed using SPSS version 27.

Results: Significant positive correlations were observed among depression, anxiety, and stress ($p < .01$). Caregivers of individuals with mood disorders reported the highest distress levels: depression ($M = 7.86$, $SD = 5.42$), anxiety ($M = 7.76$, $SD = 5.30$), and stress ($M = 7.86$, $SD = 5.42$). Comparatively, caregivers of individuals with neurodevelopmental disorders reported moderate levels, while those caring for neurocognitive disorders reported the lowest. ANOVA confirmed statistically significant differences across all groups ($p = .001$).

Conclusion: This study highlights the elevated psychological burden faced by caregivers, particularly those supporting individuals with mood disorders. The findings underscore the need for early screening, culturally appropriate interventions, and policy initiatives to support caregiver mental health in Pakistan.

Keywords: Anxiety, Caregivers, Depression, Mood Disorders, Neurocognitive Disorders, Neurodevelopmental Disorders, Psychological Stress.

INTRODUCTION

Neurodevelopmental disorders (NDDs) such as autism spectrum disorder, attention-deficit/hyperactivity disorder (ADHD), intellectual disability, specific learning disabilities, tic disorders, and cerebral palsy are lifelong conditions that impair brain function and significantly affect communication, behavior, motor coordination, and cognitive processing (1). The burden of care for individuals with NDDs often falls on family members, who, in the absence of adequate social and healthcare support, become vulnerable to psychological issues such as anxiety, depression, and chronic stress, especially in low- and middle-income countries (LMICs) where these challenges are exacerbated by resource constraints (2,3). In South Asian countries, several studies have underscored the psychological toll on caregivers. For instance, a study in Nepal using the General Health Questionnaire-12 (GHQ-12) found high levels of distress among caregivers, affecting not only their mental health but also their economic stability and family dynamics (4). Similarly, evidence from India and Pakistan has consistently shown that caregivers—particularly mothers—of children with NDDs experience heightened levels of depression, anxiety, and perceived stress, with anxiety often mediating the relationship between stress and depression (5). Parallel to NDDs, neurocognitive disorders (NCDs), including dementia and delirium, are characterized by progressive cognitive decline and impairments in memory, reasoning, and daily functioning (6). These conditions place significant emotional and physical burdens on caregivers, who frequently report symptoms of depression, sleep disturbances, and caregiver fatigue. In China, a recent study highlighted how female caregivers and those with a prior history of mental health conditions are particularly at risk of psychological distress (7). Likewise, research in Greece indicated that memory deficits and neuropsychiatric symptoms in care recipients directly correlate with heightened stress among caregivers (8). Notably, a recent study conducted in Pakistan revealed that caregivers of individuals with NDDs experienced significantly higher levels of depression, anxiety, and stress compared to caregivers of those with NCDs, suggesting varying degrees of mental health burden based on the nature of the disorder being cared for (9,10).

Mood disorders, including major depressive disorder and bipolar disorder, are also recognized for their substantial impact on caregivers. These disorders are typified by disruptions in emotional regulation, behavior, and cognitive function, often necessitating long-term management (11). Caregivers in such contexts may endure prolonged exposure to emotional volatility, unpredictability in patient behavior, and social stigma. Empirical evidence from Egypt suggests that structured family support programs can significantly enhance the mental health and quality of life of these caregivers (12). Additionally, caregivers of individuals with bipolar disorder have been found to access mental health services more frequently and report elevated levels of depressive symptoms themselves (13). Despite the wealth of global data highlighting the psychological toll faced by caregivers across these three domains—neurodevelopmental, neurocognitive, and mood disorders—there remains a notable absence of comparative research from Pakistan that systematically examines the differential mental health impacts within this population. Addressing this gap is essential for informing culturally sensitive and disorder-specific caregiver support strategies. Therefore, this study seeks to assess and compare levels of depression, anxiety, and stress among caregivers of individuals with NDDs, NCDs, and mood disorders in Pakistan. It is hypothesized that a significant positive association exists between depression, anxiety, and stress in all caregiver groups, and that significant differences in mental health outcomes will be observed among these groups. The objective of this study is to generate evidence that can guide targeted interventions and policy measures to enhance caregiver well-being in the context of chronic mental and neurological illness care in Pakistan.

METHODS

This study employed a cross-sectional correlational research design to examine the mental health status of caregivers providing long-term care to individuals diagnosed with neurodevelopmental, neurocognitive, or mood disorders. A total of 237 caregivers were recruited through purposive sampling from four major cities in Pakistan: Lahore, Islamabad, Rawalpindi, and Karachi. Eligible participants were those who had been the primary caregiver for at least one year, were at least 18 years old, and had attained a minimum education level equivalent to intermediate (12 years of schooling). Both male and female caregivers were included, while individuals with a known psychiatric diagnosis or those receiving psychological treatment themselves were excluded to avoid confounding mental health outcomes. Data collection involved a self-administered questionnaire comprising a demographic profile and the Depression Anxiety Stress Scale (DASS-21), a standardized 21-item instrument widely used to assess symptoms of depression, anxiety, and stress. The DASS-21 uses a four-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time), with higher cumulative scores indicating more severe symptoms. The tool demonstrated strong internal consistency in the current study population, with Cronbach's alpha coefficients of 0.88 for depression, 0.82 for anxiety, and 0.90 for stress, consistent with previously reported psychometric properties (1).

All participants provided informed written consent prior to participation. They were assured of their confidentiality, anonymity, and right to withdraw at any stage without penalty. The survey required approximately 20 minutes to complete. Ethical approval was obtained from the relevant institutional review board (IRB). Additionally, permission to use the DASS-21 was formally acquired from the scale developers. Data were analyzed using IBM SPSS Statistics version 27. Descriptive statistics were computed to summarize demographic characteristics and scale scores. Pearson's product-moment correlation was used to examine associations among depression, anxiety, and stress scores. To compare mental health outcomes across the three caregiver groups (neurodevelopmental, neurocognitive, and mood disorders), a one-way analysis of variance (ANOVA) was performed. All statistical tests were conducted with a significance threshold set at $p < 0.05$.

RESULTS

The sample comprised 237 caregivers with a mean age of 39.82 years ($SD = 10.14$). Among them, 66 individuals (28%) were caring for persons with neurodevelopmental disorders, 87 (37%) for those with neurocognitive disorders, and 84 (35%) for individuals diagnosed with mood disorders. The gender distribution included 68 men (29%) and 169 women (71%), indicating a predominance of female caregivers across all groups. Correlation analysis revealed significant positive associations among all three mental health domains. Depression was strongly correlated with stress ($r = .99, p < .01$) and moderately with anxiety ($r = .31, p < .01$). Similarly, anxiety and stress were also positively correlated ($r = .31, p < .01$). These findings indicate that as one symptom domain increases, the others tend to rise proportionally. Group comparisons using one-way ANOVA demonstrated statistically significant differences in depression, anxiety, and stress levels among caregiver groups. Caregivers of individuals with mood disorders reported the highest mean scores in all three domains—depression ($M = 7.86, SD = 5.42$), anxiety ($M = 7.76, SD = 5.30$), and stress ($M = 7.86, SD = 5.42$). In contrast, caregivers of individuals with neurocognitive disorders showed the lowest mean scores—depression ($M = 5.12, SD = 4.81$), anxiety ($M = 4.96, SD = 4.78$), and stress ($M = 5.03, SD = 4.75$). Caregivers of individuals with neurodevelopmental disorders reported intermediate levels of psychological distress—depression ($M = 7.19, SD = 4.96$), anxiety ($M = 7.50, SD = 4.94$), and stress ($M = 7.24, SD = 5.92$). The between-group differences were statistically significant for all three variables: depression ($F(235) = 6.71, p = .001$), anxiety ($F(235) = 7.90, p = .001$), and stress ($F(235) = 7.35, p = .001$), with effect sizes (Cohen's d) ranging from 0.53 to 0.58, indicating moderate practical significance.

Subgroup analysis by gender revealed that female caregivers reported higher mean scores across all psychological domains compared to their male counterparts. Women exhibited greater levels of depression ($M = 7.3, SD = 5.1$), anxiety ($M = 7.1, SD = 5.0$), and stress ($M = 7.6, SD = 5.3$) than men, who had respective mean scores of 6.2 ($SD = 4.8$), 6.0 ($SD = 4.7$), and 6.4 ($SD = 5.0$). This pattern suggests a greater psychological burden among female caregivers. Additionally, analysis by age groups—using 40 years as an approximate median cutoff—indicated that caregivers over 40 years of age experienced higher distress. Those above 40 had mean depression, anxiety, and stress scores of 7.4 ($SD = 5.3$), 7.2 ($SD = 5.2$), and 7.8 ($SD = 5.5$), respectively, compared to 6.5 ($SD = 5.0$), 6.2 ($SD = 4.9$), and 6.6 ($SD = 5.2$) among those aged 40 or younger. These findings highlight age and gender as potential moderating factors influencing caregiver mental health, reinforcing the importance of tailored psychological support for subgroups at elevated risk.

Table 1: Demographic Characteristics of the Participants (N=237)

Characteristics	f	%	M	SD
Age			39.82	10.14
Caregivers				
Caregivers of Individuals with NDD	66	28		
Caregivers of Individuals with NCD	87	37		
Caregivers of Individuals with MD	84	35		
Gender				
Men	68	29		
Women	169	71		

Note. f= Frequency, %= Percentage, M= Mean, SD= Standard Deviation, NDD= Neurodevelopmental Disorders, NCD= Neurocognitive Disorders, MD= Mood Disorders

Table 2: Correlational Analysis between Study Variables (N=237)

Variables	1	2	3
1.Depression	-	.31**	.99**
2.Anxiety		-	.31**
3.Stress			-

Note. **p<.01

Table 3: ANOVA Analysis (N=237)

Variables	COIWNDD (n=66)		COIWNCD (n=87)		COIWMD (n=84)		F (235)	p	Cohen's d
	M	SD	M	SD	M	SD			
Depression	7.19	4.96	5.12	4.81	7.86	5.42	6.71	.001	0.53
Anxiety	7.50	4.94	4.96	4.78	7.76	5.30	7.90	.001	0.58
Stress	7.24	5.92	5.03	4.75	7.86	5.42	7.35	.001	0.54

Note. ***p<.001, M= Mean, SD= Standard Deviation, COIWNDD= Caregivers of Individuals with Neurocognitive Disorders, COIWNCD=Caregivers of Individuals with Neurocognitive Disorders, COIWMD= Caregivers of Individuals with Mood Disorders

Table 4: Subgroup Analysis by Gender

Variable	Men Mean	Men SD	Women Mean	Women SD
Depression	6.2	4.8	7.3	5.1
Anxiety	6	4.7	7.1	5
Stress	6.4	5	7.6	5.3

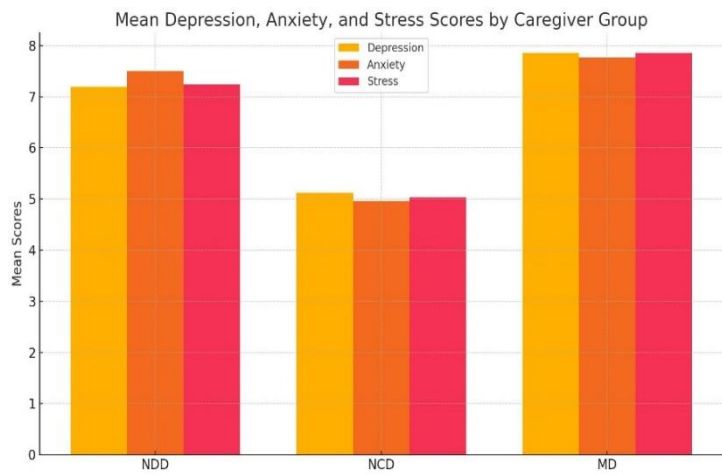


Figure 1 Mean Depression, Anxiety and Stress Scores by Caregiver Group

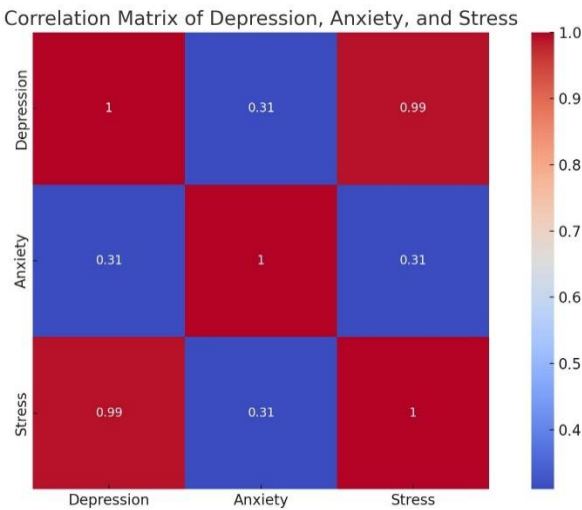


Figure 2 Correlation Matrix of Depression, Anxiety and Stress

DISCUSSION

The findings of this study offer significant insight into the psychological distress experienced by caregivers of individuals with neurodevelopmental, neurocognitive, and mood disorders in a low- and middle-income country context. The first hypothesis was supported, demonstrating a strong and statistically significant association between depression, anxiety, and stress among caregivers. These outcomes are consistent with existing international and regional evidence highlighting that caregiving responsibilities for individuals with chronic mental and neurological conditions are often emotionally taxing and lead to substantial psychological burden

(14,15). This pattern of comorbidity between psychological symptoms has been observed across various caregiver populations, reaffirming the pervasive nature of caregiver stress and the complex interplay between emotional health variables. This study also established significant differences in mental health outcomes among the caregiver groups, with those caring for individuals with mood disorders reporting the highest levels of depression, anxiety, and stress. These findings reflect previous observations that caregiving in the context of mood disorders involves unique challenges, such as managing erratic behaviors, social dysfunction, and recurrent crises associated with manic and depressive episodes (16,17). Within the cultural and societal framework of Pakistan—where mental health stigma remains widespread and professional resources are scarce—these behaviors can severely impact caregivers' emotional stability. Episodes involving impulsivity, risk-prone actions, and behavioral disruptions impose not only psychological strain but also social and financial burdens on families, intensifying caregiver distress. Compared to caregivers of individuals with neurodevelopmental or neurocognitive conditions, those supporting patients with mood disorders often face a greater sense of unpredictability and lack of control, likely contributing to the elevated distress levels observed in this study (18,19).

One notable strength of this research lies in its comparative approach, which offers a differentiated understanding of caregiver mental health across disorder types within a single population. Additionally, the study contributes to the scarce literature from South Asia and particularly from Pakistan, a region where caregiver mental health remains under-researched (20). However, limitations exist that temper the generalizability of the findings. The cross-sectional correlational design restricts causal inferences, and the sample size, although adequate for initial exploration, was limited in scope and demographic diversity. Participants were required to have an intermediate level of education, which excludes a significant proportion of caregivers in rural and underserved populations. Furthermore, gender representation was skewed, with women comprising the majority of respondents. This imbalance, although reflective of societal caregiving norms, restricts deeper analysis of male caregiving experiences and gender-based differences in psychological responses. The exclusion of non-literate and low-literacy caregivers also limits applicability, as their experiences may differ significantly in terms of coping resources, awareness, and access to care. While the study effectively captures associations between variables, it does not delve into the mediating or moderating roles of sociodemographic factors such as income, marital status, or social support systems, which are known to influence caregiver mental health. Additionally, the study did not incorporate qualitative data, which could have enriched understanding by capturing the lived experiences and nuanced stressors unique to each caregiving context.

Despite these limitations, the study highlights several actionable implications. There is an urgent need to develop contextually appropriate interventions to support caregivers, including mental health literacy programs, targeted counseling services, and community support initiatives. Awareness campaigns must address societal stigma while empowering families to seek timely help. Integrating caregiver education into healthcare delivery—through workshops, seminars, and digital platforms—can offer coping strategies and foster resilience. Importantly, policies should promote equitable access to mental health care, subsidized services, and the establishment of special education and rehabilitation centers tailored to the needs of individuals with chronic mental and neurodevelopmental conditions (21). Future research should employ longitudinal designs to track changes in caregiver well-being over time and examine the impact of specific interventions. Broader samples that include rural, low-income, and less-educated caregivers are essential for ensuring inclusivity and enhancing external validity. There is also a critical need to investigate protective factors that mitigate caregiver burden, such as family cohesion, religious coping, or social support networks. Expanding research in this direction will enable a more comprehensive and culturally sensitive understanding of caregiver mental health in Pakistan and similar resource-constrained settings.

CONCLUSION

This study underscored the significant psychological burden faced by caregivers of individuals with neurodevelopmental, neurocognitive, and mood disorders, particularly highlighting the elevated levels of depression, anxiety, and stress among those caring for individuals with mood disorders. By drawing comparisons across caregiver groups, the research addressed a critical gap in the literature and emphasized the urgent need for tailored mental health support in caregiver populations. The findings reinforce the importance of implementing accessible and culturally sensitive interventions, raising awareness, and strengthening caregiver support systems within low-resource settings like Pakistan. This contribution serves as a foundation for future research and policy development aimed at improving caregiver well-being and enhancing the quality of care for individuals with chronic mental health and neurological conditions.

AUTHOR CONTRIBUTION

Author	Contribution
Raeesa Tabassum*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Sidra Khan	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Havaida Munir	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Zainab Izzah	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Fariha Naz	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Sana Liaqat	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Ayesha Parvaiz Malik	Contributed to study concept and Data collection Has given Final Approval of the version to be published

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