Mental Health Outcomes in Caregivers of Individuals with Neurocognitive and Neurodevelopmental Disorders: A Quantitative Comparative Study of a Pakistani Cohort

Sania Irshad[1], Sarwat Meran[2], Afifa Noreen[3], Hadeeqa Anmol[4], Murk Kumari[5], Shanzey Nadeem[6] and Ambreen Fatima[7]

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Abstract

Literature is scarce regarding the mental health outcomes of caregivers of individuals with neurocognitive and neurodevelopmental disorders, particularly when comparing caregivers of both disorders, specifically in Pakistan. This study aims to fill this gap, provide implications and policy recommendations, and contribute to future research. The mental health outcomes are operationalized as depression, anxiety, and stress. A cross-sectional correlational design and purposive sampling were used to collect data from caregivers of children with neurodevelopmental disorders (under 18) and caregivers of individuals with neurocognitive disorders (at least 65 years old). The study included 210 participants: 100 caregivers of individuals with neurodevelopmental disorders and 110 caregivers with neurocognitive disorders, with a mean age of 37.78 and a standard deviation of 9.62. The Depression Anxiety Stress Scale (DASS-21) was used to measure depression, stress, and anxiety. Findings revealed a significant positive relationship between stress, anxiety, and depression. An independent samples t-test showed that caregivers of individuals with neurodevelopmental disorders scored significantly higher on depression, anxiety, and stress than caregivers of individuals with neurocognitive disorders. The study discussed these findings about relevant literature and provided implications and policy recommendations for the social welfare of caregivers of individuals with neurodevelopmental and neurocognitive disorders.

Keywords: Caregivers, Neurocognitive, Neurodevelopmental, Mental Health Outcomes.

Introduction

Neurodevelopmental disorders (NDDs) impair brain function, ranging from mild to severe, and can affect language, motor skills, behaviour, memory, and learning (Bishop & Rutter, 2008; Mahone et al., 2008; Msall, 2005). Examples include ADHD, autism, intellectual disability,

[1]*MS Scholar, Department of Applied Psychology, Riphah International University, Islamabad, Pakistan. Corresponding Author Email: saniairshad2017@gmail.com https://orcid.org/0009-0004-5407-2533*
[2]*Institute of Professional Psychology, Bahria University Lahore Campus, Pakistan. Email: sarwatmeran888@gmail.com https://orcid.org/0009-0007-8071-6154*
[3]*Institute of Professional Psychology, Bahria University, Lahore Campus, Pakistan. Email: afifanoreen344@gmail.com https://orcid.org/0009-0000-3185-1199*
[4]*Consultant Clinical Psychologist, CMH Lahore, Lahore, Pakistan. Email: mindwellness117@gmail.com https://orcid.org/0009-0001-9463-3225*
[5]*BS Scholar, Institute of Professional Psychology, Bahria University, Karachi Campus, Pakistan. Email: murkkella@gmail.com*
[6]*MS Scholar, Institute of Professional Psychology, Bahria University Islamabad, Lahore Campus, Pakistan. Email: shanzeyna77@gmail.com*
[7]*Alumni, Riphah International University Islamabad, Lahore Campus, Pakistan. Email: arishkhanlodhi@gmail.com*

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and cerebral palsy (Ogundele & Morton, 2022; Church, 2020; Patel et al., 2010). Caring children with NDDs is associated with higher rates of adverse mental health outcomes, i.e., anxiety (a state of tension, worry, and uneasiness), depression (feeling sad most of the time, being upset, lacking interest in daily life and pleasurable activities, and having difficulty making decisions), and stress (a state of emotional strain and pressure), particularly in low- and middle-income countries (LMICs) where resources are limited (D'Souza & Karmiloff-Smith, 2017; Thapar et al., 2017; Scattolin et al., 2022).

A study in rural Nepal examined psychological distress among 63 caregivers of children with NDDs. Using the General Health Questionnaire-12 (GHQ-12), researchers found high distress levels, with 90.5% scoring above the threshold for common mental disorders (CMDs) and 46% reporting severe distress. Significant correlations were found between caregiver distress and child disability severity, caregiver burden, and lack of support (Maridal et al., 2021). In India, a study of 120 mothers of children with NDDs found high rates of depression (37.5%) and anxiety (43.3%), with 30% experiencing both. These findings underscore the need for routine screening and counselling for caregivers (Fatima et al., 2021). Similarly, in Pakistan, research involving 222 parents of children with autism found that anxiety mediated the relationship between stress and depression among fathers (Fatima et al., 2025). Perceived stress and anxiety were found to be significantly associated among parents of children with autism in a sample of 216 from Pakistan. The study also reported that mothers of children with autism experienced substantially higher perceived stress and anxiety than their counterparts, fathers of children with autism. The study recommends more similar studies and provides implications for caregivers of neurodevelopmental disorders (Zahid et al., 2025). A survey of 216 parents of children with ADHD in Pakistan revealed significant gender differences in psychological distress. Mothers reported higher stress, anxiety, and depression than fathers, with anxiety mediating the stress-depression relationship (Tareen et al., 2025).

Neurocognitive disorders (NCDs) involve decreased mental function due to medical conditions, categorized as delirium, mild NCD (some cognitive decline but independence maintained), and major NCD (dementia, with loss of daily functioning) (Sachdev et al., 2014; McDonald et al., 2017; Maldonado & Sher, 2024). Caregivers of individuals with NCDs often experience mental health challenges, including anxiety, depression, and sleep problems. A study in China found high prevalence rates of anxiety (46.9%), depression (36.3%), and sleep issues (9.4%) among caregivers. Women and those with preexisting mental disorders were at higher risk for anxiety and depression (Li et al., 2021). Another study in Greece highlighted that patient memory deficits and neuropsychiatric symptoms influenced caregiver distress (Alexopoulos et al., 2021).

The above literature depicts substantial evidence regarding mental health outcomes, i.e., depression, stress, and anxiety, among caregivers of individuals with neurodevelopmental and neurocognitive disorders. However, there has never been a study comparing caregivers of individuals with neurodevelopmental and neurocognitive disorders concerning mental health outcomes, i.e., depression, anxiety, and stress, specifically in Pakistan. The goal of this study is to fill the gap in previous studies and provide implications for caregivers with adverse mental health outcomes.

Hypotheses

1. There is likely to be a positive and significant association between depression, anxiety, and stress among caregivers of neurodevelopmental and neurocognitive disorders in Pakistan.
2. There is likely to be a significant mean difference between caregivers of neurodevelopmental and neurocognitive disorders concerning mental health outcomes: depression, anxiety, and stress in Pakistan.

Methodology

Research Design

The study adopted a cross-sectional correlational research design, employing a purposive sampling technique to collect data from 210 caregivers of individuals with neurodevelopmental and neurocognitive disorders.

Inclusion Criteria of Study

The inclusion criteria required that participants care for a child diagnosed with a neurodevelopmental disorder under 18 for at least one year or for an elderly individual with a neurocognitive disorder aged at least 65 for at least one year. Additionally, the caregiver must have at least an intermediate level of qualification and must be a citizen of Pakistan. Both male and female caregivers were included in the study.

Instrument

The Depression Anxiety Stress Scale (DASS), a 21-item shorter version with a four-point Likert scale (ranging from "did not apply to me [0]" to "applied to me most of the time [4]"), was used to measure depression, anxiety, and stress. Developed by Dr. Sydney Lovibond and Dr. Peter F. Lovibond in 1995, the scale has Cronbach's alpha values of 0.88 for depression, 0.82 for anxiety, and 0.90 for stress, with higher scores indicating higher levels of these conditions.

Ethical Consideration

Ethical considerations were strictly followed by the APA 7 ethical code of conduct. Permission was obtained from the department for data collection, and the author of the questionnaire was contacted for its use in the study. After authorization, the questionnaire was combined with a demographic questionnaire and consent form. Participants were approached through purposive sampling at various special needs children's institutes, and their confidentiality was maintained throughout the process. Written consent was obtained from each participant, emphasizing voluntary participation and the right to withdraw at any time. Participants completed the questionnaires in approximately 20 minutes and were thanked for participating.

Result

Table 1: Demographic Characteristics of the Participants (N=210)

Characteristics	*f*	*%*	*M*	*SD*
Age			37.78	9.62
Caregivers				
Caregivers of Individuals with NDD	100	48		
Caregivers of Individuals with NCD	110	52		
Gender				
Men	46	22		
Women	164	78		

Note: f= Frequency, *%*= Percentage, *M*= Mean, *SD*= Standard Deviation, NDD= Neurodevelopmental Disorders, NCD= Neurocognitive Disorders

The demographic characteristics of caregivers include 100 (48%) caring for individuals with neurodevelopmental disorders and 110 (52%) caring for individuals with neurocognitive disorders. The mean age of participants is 37.78 ± 9.62, with 46 (22%) male caregivers and 164 (78%) female caregivers.

Table 2: Correlational Analysis between Study Variables (N=210)

Variables	1	2	3
1.Depression	-	.31**	.99**
2.Anxiety		-	.30**
3.Stress			-

*Note: **p<.01*

The table above shows a significant positive relationship between stress, anxiety, and depression among caregivers of individuals with neurodevelopmental and neurocognitive disorders.

Table 3: Mean differences between Caregivers of Individuals with Neurocognitive Disorders, and Caregivers of Individuals with Neurocognitive disorder (N=210)

	COIWNDD(n=100)		COIWNCD (n=110)				
	M	*SD*	*M*	*SD*	*t(208)*	*p*	Cohen's d
Depression	7.36**	5.07	5.36	4.93	2.88	.004	0.39
Anxiety	7.40**	5.02	5.33	4.95	3.01	.003	0.41
Stress	7.39**	5.05	5.32	4.91	2.99	.003	0.42

*Note: **p<.01, M*= Mean, *SD*= Standard Deviation, COIWNDD= Caregivers of Individuals with Neurocognitive Disorders, COIWNCD= Caregivers of Individuals with Neurocognitive Disorder

The table above depicts that caregivers of individuals with neurodevelopmental disorders scored significantly higher on depression, anxiety, and stress than their counterparts, caregivers of individuals with neurocognitive disorders.

Discussion

There has been substantial literature regarding the adverse mental health outcomes of caregivers of individuals with neurodevelopmental disorders and neurocognitive disorders across the globe. However, limited studies have compared caregivers of individuals with neurodevelopmental disorders and neurocognitive disorders concerning mental health outcomes such as depression, anxiety, and stress in Pakistan. Therefore, this study was conducted to address this gap and encourage more similar studies for the well-being of caregivers.

The first hypothesis of the study was supported, as there is a significant association between mental health outcomes—depression, anxiety, and stress—among caregivers of individuals with neurodevelopmental and neurocognitive disorders in Pakistan. The results of our study align with those of similar studies, which depict that mental health outcomes, such as depression, anxiety, and stress, are significantly and positively associated with one another among parents of children with autism (Fatima et al., 2025). Another study also aligns with our results, stating that mental health problems, including depression, anxiety, and stress, are significantly associated among parents of children with attention deficit hyperactivity disorder (Tareen et al., 2025). Recent studies have also shown a significant association between anxiety, stress, and depression among caregivers of individuals with neurocognitive disorders (Li et al., 2021; Alexopoulos et al., 2021; Piersol et al., 2017; Lim et al., 2024; Devita et al., 2022). The reason caregivers report significant stress, anxiety, and depression is due to physical, emotional, and financial burdens, as well as a lack of support systems from the community. The study was conducted in Pakistan, where facilities are limited, awareness is very low, and the stigma associated with neurocognitive and neurodevelopmental disorders is high, leading caregivers to experience psychological distress.

The study's second hypothesis states that there would likely be significant differences between caregivers of individuals with neurodevelopmental and neurocognitive disorders in Pakistan. The mean differences depict that caregivers of individuals with neurodevelopmental disorders scored significantly higher on stress, anxiety, and depression than their counterparts caring for individuals with neurocognitive disorders in Pakistan. This means it is harder to deal with individuals with neurodevelopmental disorders than those with neurocognitive disorders. Some studies align with our results, indicating that caregivers find it more challenging to deal with children with neurodevelopmental disorders, such as ADHD, autism, and intellectual disability, while caregivers of individuals with neurocognitive disorders report less stress, anxiety, and depression, as well as higher satisfaction and happiness (Tareen et al., 2025; Zahid et al., 2025; Fatima et al., 2025; Vidigal et al., 2024; Cheng et al., 2016; Vellone et al., 2012). Although there is limited literature comparing caregivers of individuals with neurodevelopmental and neurocognitive disorders concerning mental health outcomes such as stress, anxiety, and depression, there are a few reasons that could explain why caregivers of individuals with neurodevelopmental disorders score significantly higher than their counterparts. These reasons include the fact that neurodevelopmental disorders are lifelong, caregivers are often immediately exposed to a lack of awareness and managing skills, and there is immense societal stigma in Pakistan regarding neurodevelopmental disorders and children with special needs. The lack of support and facilities isolates parents, leading to psychological distress. In contrast, neurocognitive disorders are not as stigmatized in Pakistani society due to its collectivistic culture, which places higher value on elders. Additionally, caregivers of individuals with neurocognitive disorders in this study may have been more experienced than caregivers of individuals with neurodevelopmental disorders.

Conclusion

The study concluded that there is a significant association between stress, depression, and anxiety among caregivers of individuals with neurodevelopmental and neurocognitive disorders in Pakistan. Moreover, the mean differences depict that caregivers of individuals with neurodevelopmental disorders scored significantly higher than caregivers of individuals with neurocognitive disorders in Pakistan. The study encourages more similar studies and provides implications for enhancing the well-being of caregivers.

Implications

The study highlights the need for more interventions, such as awareness programs led by mental health professionals through seminars, workshops, and webinars. These programs should target caregivers of individuals with neurodevelopmental and neurocognitive disorders and the general population to strengthen the support network for caregivers. It is essential to encourage parents to seek professional mental health help and engage in therapy to manage challenges effectively. Caregivers should be provided with guidelines on managing individuals with neurocognitive and neurodevelopmental disorders more effectively. Additionally, efforts should be made to establish more affordable special education institutions and proper hospitals for individuals with neurocognitive disorders. The government should also implement programs aimed at improving the mental health and well-being of both caregivers and individuals with neurocognitive and neurodevelopmental disorders.

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