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PREVALENCE OF DEPRESSION AND ANXIETY AMONG PARENTS OF CHILDREN WITH CEREBRAL PALSY

Original Research

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ABSTRACT

Background: Parents of children with cerebral palsy (CP) encounter enduring physical, emotional, and financial challenges that can profoundly affect their mental well-being. These caregiving demands often increase the risk of depression and anxiety, yet there remains limited evidence regarding their prevalence within local populations. Understanding these psychological impacts is essential for developing integrated, family-centered rehabilitation strategies that address both the child's and the caregiver's needs.

Objective: This study aimed to determine the prevalence of depression and anxiety among parents of children diagnosed with cerebral palsy and to examine their association with demographic and caregiving-related variables.

Methods: A descriptive cross-sectional study was conducted from August 2023 to April 2024 at the National Institute of Rehabilitation Medicine (NIRM), Islamabad. A total of 145 parents (64 fathers and 81 mothers) of children aged 5–14 years with cerebral palsy were recruited using non-probability convenience sampling. Data were collected through a self-developed demographic questionnaire, the Beck Depression Inventory (BDI), and the Beck Anxiety Inventory (BAI). Statistical analysis was performed using SPSS version 23, applying descriptive and inferential tests, including chi-square, with a significance level set at $p < 0.05$.

Results: Out of 145 participants, 72 (49.7%) exhibited depressive symptoms, while 43 (29.7%) demonstrated moderate to severe anxiety. Depression was more prevalent among mothers (63%) than fathers (32.8%). Similarly, anxiety levels were significantly higher in mothers, with 59.3% classified as low anxiety, 29.6% as moderate, and 11.1% as severe, compared to fathers (84.4% low, 10.9% moderate, and 4.7% severe). Gender showed a statistically significant association with both depression ($p = 0.002$) and anxiety ($p = 0.004$), while child age did not exhibit a significant relationship.

Conclusion: The study revealed a substantial psychological burden among parents of children with cerebral palsy, particularly among mothers, emphasizing the necessity for mental health screening and targeted interventions within rehabilitation programs. Integrating psychological support into pediatric care may improve caregiver well-being and enhance the overall quality of life for families affected by cerebral palsy.

Keywords: Anxiety, Beck Depression Inventory, Beck Anxiety Inventory, Caregivers, Cerebral Palsy, Depression, Mental Health.

INTRODUCTION

Mental health is widely recognized as a state of well-being in which an individual realizes personal potential, manages normal life stresses, works productively, and contributes meaningfully to the community. Over the last decade, mental disorders have emerged as a major global public health concern, with their prevalence steadily increasing (1). Among these, anxiety and depression are the most common, often coexisting and significantly impairing quality of life. The global prevalence of depression and anxiety disorders was estimated at 3.4% and 3.8%, respectively, in the most recent 2021 update (2). Anxiety is characterized by an abnormal and overwhelming sense of apprehension or fear, often accompanied by physiological manifestations such as muscle tension, sweating, and elevated pulse rate, coupled with uncertainty about one's ability to cope with perceived threats (3). Depression, or major depressive disorder, on the other hand, is a debilitating condition that alters mood, cognition, and behavior, frequently manifesting as a persistent loss of interest or pleasure in usual activities (4). According to the World Health Organization, depression is a common mental disorder distinguished by prolonged sadness or disinterest in daily life activities, differing from ordinary mood fluctuations (5). Cerebral palsy (CP) encompasses a group of permanent neurological disorders that appear in infancy or early childhood, primarily affecting motor function, muscle coordination, and posture (6). It remains the most prevalent diagnostic category encountered in pediatric rehabilitation settings (7). The condition arises from structural or functional abnormalities within the developing brain, impairing the neural control of movement, posture, and balance (6).

Caring for a child with CP poses substantial emotional, physical, and financial demands on caregivers, often resulting in elevated stress levels and an increased risk of mental health disorders such as depression and anxiety (8). Evidence consistently indicates that parents of children with chronic or developmental disabilities experience greater psychological distress than parents of typically developing children. Households with a special-needs child are disproportionately burdened by depression, suicidal ideation, financial difficulties, strained relationships, and a heightened risk of divorce and bankruptcy (9,10). Although some caregivers report positive emotional growth or enhanced resilience, the cumulative pressures of caregiving, medical management, and social isolation often exacerbate mental health vulnerabilities among parents (11). Despite substantial global research underscoring the psychological challenges of raising a child with cerebral palsy, there remains a paucity of region-specific data, particularly within Pakistan. Studies investigating the prevalence of depression and anxiety among parents of children with CP in Islamabad are scarce, leaving an essential knowledge gap in understanding the psychosocial impact within this unique cultural and healthcare context. This research therefore seeks to determine the prevalence and associated factors of depression and anxiety among parents of children with cerebral palsy in Islamabad, aiming to inform tailored interventions, strengthen family-centered care, and enhance the mental well-being of caregivers in local rehabilitation settings.

METHODS

This study employed a descriptive cross-sectional design to determine the prevalence of depression and anxiety among parents of children diagnosed with cerebral palsy (CP). The cross-sectional approach was selected to provide an instantaneous overview of the mental health status of parents, enabling assessment of prevalence rates and their possible associations with sociodemographic and clinical factors at a single point in time. The research was conducted at the National Institute of Rehabilitation Medicine, Islamabad, between August 2023 and April 2024. A sample size of 145 participants was calculated using the Raosoft sample size calculator (5). Participants were selected through a non-probability convenience sampling technique, as this method allowed the recruitment of accessible and willing participants within the specified study period. The inclusion criteria comprised parents of children aged 5 to 14 years with a confirmed diagnosis of cerebral palsy. Parents of children with CP who had additional diagnosed comorbidities, as well as those who themselves had any pre-existing mental health disorders, were excluded to minimize potential confounding effects. The age range for children was carefully restricted to 5–14 years to reduce variability associated with differing caregiving demands in very young or adult children. Ethical approval for the study was obtained from the Departmental Ethical Research Committee of the Institute of Rehabilitation Sciences, Shaheed Zulfiqar Ali Bhutto Medical University (Ref/IRS/REC-0024). All participants were briefed regarding the study's objectives, procedures, and their rights as research participants. Written informed consent was obtained prior to data collection, ensuring that participation was voluntary and that confidentiality was maintained throughout the study.

Data collection was carried out by trained research staff who visited the institute and distributed printed questionnaires to parents meeting the inclusion criteria. The data collection tools included a self-developed demographic questionnaire and two standardized psychological assessment scales: the Beck Depression Inventory (BDI) and the Beck Anxiety Inventory (BAI). The BDI and BAI are well-validated self-report instruments designed to assess the severity of depressive and anxiety symptoms, respectively, and have been widely used in both clinical and community-based research settings. In this study, the independent variable was the caregiving status of parents of children with cerebral palsy, while the dependent variables were the levels of anxiety and depression as measured by the BAI and BDI. The child's age was considered a potential confounding variable because caregiving demands and parental stress may vary with developmental stage; this was controlled by restricting the inclusion age range. Data were entered and analyzed using SPSS version 23. Descriptive statistics, including means and standard deviations, were computed to summarize participant characteristics and the prevalence of anxiety and depression. Associations between categorical demographic variables and mental health outcomes were analyzed using the chi-square test, with the level of statistical significance set at $p < 0.05$. Data completeness was ensured by verifying all entries before analysis, with no missing or incomplete responses included in the dataset.

RESULTS

The study comprised 145 participants, including 64 fathers (44.23%) and 81 mothers (55.86%), indicating a slight predominance of female participants. The majority of respondents, 91 (62.8%), were parents of children aged between 5 and 8 years, while 36 (24.8%) were parents of children aged 8–11 years, and 18 (12.4%) had children older than 11 years. Participants represented a range of socioeconomic backgrounds from upper-middle to lower classes, ensuring diversity in demographic representation. The prevalence of depression varied considerably between fathers and mothers. Among fathers, 67.2% were categorized as having a normal mood, 18.8% exhibited mild mood disturbance, 1.6% showed borderline depression, 9.4% reported moderate depression, and 3.1% were classified as having severe depression, with no cases of extreme depression. In contrast, mothers demonstrated higher depressive symptomatology: only 37.0% were within the normal range, 18.5% reported mild mood disturbance, 17.3% exhibited borderline depression, 19.8% experienced moderate depression, 6.2% suffered from severe depression, and 1.2% presented with extreme depression. Similarly, anxiety prevalence differed markedly by gender. Among fathers, 84.4% exhibited low anxiety, 10.9% showed moderate anxiety, and 4.7% experienced severe anxiety. In comparison, mothers displayed higher levels of anxiety, with 59.3% having low anxiety, 29.6% moderate anxiety, and 11.1% severe anxiety. These results collectively indicate that mothers of children with cerebral palsy experienced significantly greater levels of both depression and anxiety compared to fathers.

The chi-square test confirmed a statistically significant association between gender and both depression and anxiety levels. For depression, the Pearson chi-square value was 19.014 with 5 degrees of freedom ($p = 0.002$), while for anxiety, the value was 10.831 with 2 degrees of freedom ($p = 0.004$), confirming that gender had a significant effect on the prevalence of mental health conditions in this cohort. When stratified by the age of the children, no statistically significant association was found between child age and the prevalence of either depression or anxiety among parents. In the 5–8 years group, 47.3% of parents were within the normal range for depression, and 69.2% exhibited low anxiety. For the 8–11 years group, 58.3% had normal depression scores and 80.6% displayed low anxiety levels. Among parents of children older than 11 years, 50% had normal mood scores, and 55.6% had low anxiety, while the remainder experienced varying levels of depressive and anxious symptoms. The Pearson chi-square test for depression and child age yielded a value of 11.701 ($df = 10$, $p = 0.306$), and for anxiety, a value of 4.719 ($df = 4$, $p = 0.317$), confirming no significant association. Overall, these findings underscore the gender disparity in psychological burden, with mothers being more affected than fathers by depressive and anxiety symptoms.

Table 1: Prevalence of Depression and Anxiety with Respect to Gender of Parent

Parents	**Father**		**Mother**	
Level of Depression				
	Frequency	Percentage	Frequency	Percentage
Normal	43	67.2%	30	37.0%
Mild Mode Disturbance	12	18.8%	15	18.5%
Borderline Depression	1	1.6%	14	17.3%
Moderate Depression	6	9.4%	16	19.8%
Severe Depression	2	3.1%	5	6.2%
Extreme Depression	0	0%	1	1.2%
Total	64	100.0%	81	100%
Level of Anxiety				
Low Anxiety	54	84.4%	48	59.3%
Moderate Anxiety	7	10.9%	24	29.6%
Severe Anxiety	3	4.7%	9	11.1%
Total	**64**	**100.0%**	**81**	**100.0%**

Table 2: Prevalence of Depression and Anxiety with Respect to Age of Children

Age of Child	**5-8 Years**		**8-11 Years**		**>11 Years**	
Level of Depression						
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Normal	43	47.3%	21	58.3%	9	50.0%
Mild Mode Disturbance	19	20.9%	6	16.7%	2	11.1%
Borderline Depression	11	12.1%	2	5.6%	2	11.1%
Moderate Depression	14	15.4%	6	16.7%	2	11.1%
Severe Depression	4	4.4%	1	2.8%	2	11.1%
Extreme Depression	0	0%	0	0%	1	5.6%
Total	91	100.0%	36	100.0%	18	100.0%
Level of Anxiety						
Low Anxiety	63	69.2%	29	80.6%	10	55.6%
Moderate Anxiety	20	22.0%	6	16.7%	5	27.8%
Severe Anxiety	8	8.8%	1	2.8%	3	16.7%
Total	91	100.0%	36	100.0%	18	100.0%

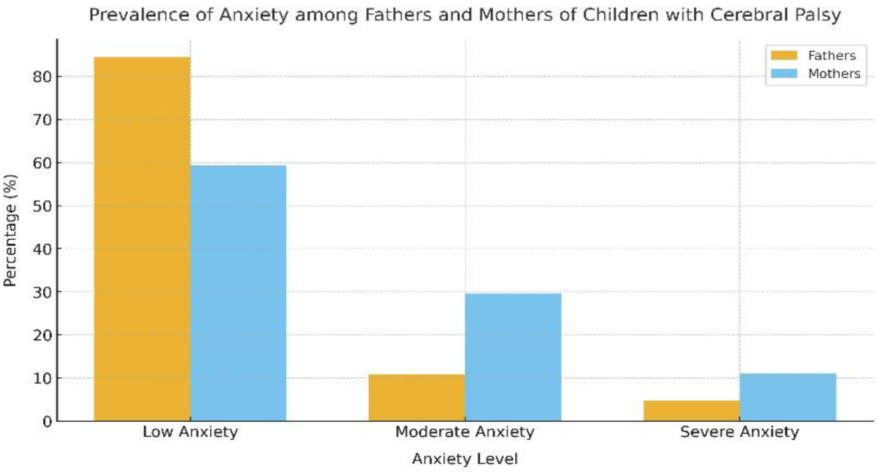

Figure 1 Prevalence of Anxiety Among Fathers and Mothers of Children with Cerebral Palsy

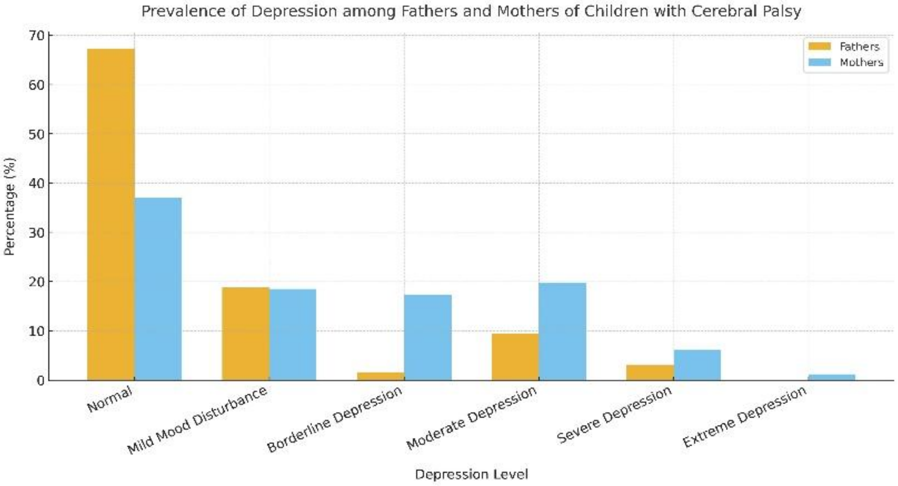

Figure 2 Prevalence of Depression among Fathers and Mothers of Children with Cerebral Palsy

DISCUSSION

The present study revealed a high prevalence of depression and anxiety among parents of children with cerebral palsy, with a marked gender disparity indicating that mothers were significantly more affected than fathers. Out of 145 participants, 72 exhibited depressive symptoms, while 43 experienced moderate to severe anxiety. Female participants demonstrated a notably higher prevalence of both depression (63%) and anxiety (40.7%) compared to their male counterparts (32.8% and 15.6%, respectively). These findings underscore the considerable emotional and psychological burden borne by mothers in families caring for a child with cerebral palsy. The results are consistent with previously published evidence indicating that caregiving mothers experience greater psychological distress, including moderate to severe depressive symptoms, compared to fathers who typically remain within the subclinical range (12-14). The observed gender differences align with the broader literature on caregiver mental health, where mothers of children with chronic or developmental disabilities consistently report higher levels of psychological morbidity. Various authors have reported similar patterns, suggesting that caregiving responsibilities, emotional attachment, and societal expectations contribute to greater vulnerability among mothers (15-17). Studies conducted in diverse settings have confirmed that caregivers of children with cerebral palsy display significantly elevated depression and anxiety scores compared to control groups of parents with typically developing children. The cumulative evidence, including the present findings, reinforces the hypothesis that the chronic and demanding nature of caregiving, coupled with inadequate psychosocial and institutional support, predisposes caregivers—particularly mothers—to poor mental health outcomes (18).

The finding that the age of the child did not significantly influence the levels of depression or anxiety among parents suggests that the psychological strain persists irrespective of the child's developmental stage. This observation supports the notion that the burden of caregiving for a child with lifelong disability remains constant over time, driven more by the chronicity of care needs, functional limitations, and social isolation rather than the age of the affected child. The lack of significant association may also reflect that coping mechanisms and family adaptation do not vary substantially across the developmental stages of the child once disability has been established. The implications of these findings are critical for clinical practice and public health policy. The high prevalence of mental health disturbances among parents of children with cerebral palsy calls for systematic mental health screening and psychosocial support as integral components of pediatric rehabilitation programs (19,20). Early identification of depressive and anxiety symptoms in caregivers may facilitate timely intervention, reduce psychological distress, and improve overall family functioning. Multidisciplinary support models that include mental health professionals, social workers, and rehabilitation specialists can provide a more holistic approach to family-centered care. The incorporation of caregiver counseling, stress management programs, and peer support networks within rehabilitation services would likely mitigate the psychosocial burden experienced by parents and enhance the quality of care provided to the child (21). The study's strengths lie in its use of validated instruments such as the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI), which ensured reliable measurement of psychological symptoms. The inclusion of both fathers and mothers also allowed for gender-based comparisons, adding depth to the findings. Moreover, by focusing on a specific and clinically relevant population—parents of children with cerebral palsy—the study contributes valuable data to an underexplored domain within Pakistan's healthcare context.

However, several limitations must be acknowledged. The cross-sectional design restricts causal inference, as it cannot establish whether caregiving leads to mental health deterioration or if pre-existing vulnerabilities contribute to distress. The study was conducted in a single rehabilitation center in Islamabad, limiting generalizability to other regions or cultural settings. The reliance on self-reported data may have introduced response bias due to underreporting or overreporting of symptoms influenced by social desirability or stigma surrounding mental illness. Additionally, potential confounding factors such as the severity of cerebral palsy, availability of social support, duration of caregiving, and socioeconomic pressures were not statistically analyzed, which may have influenced the results. Future research should adopt longitudinal designs to explore changes in caregiver mental health over time and identify predictive factors contributing to psychological distress. Expanding the study population to include multiple rehabilitation centers and diverse socio-economic settings would improve external validity. Furthermore, qualitative investigations could provide deeper insight into coping mechanisms, resilience factors, and culturally specific experiences of caregiving. Incorporating objective clinical assessments alongside self-reported scales would enhance the accuracy of mental health evaluation (22). In summary, the findings from this study confirm a significant psychological burden among parents of children with cerebral palsy, particularly mothers, emphasizing the urgent need for integrated mental health interventions within pediatric rehabilitation frameworks. Addressing caregiver well-being is essential not only for the mental health of parents but also for optimizing the developmental and emotional outcomes of children with cerebral palsy.

CONCLUSION

In conclusion, the study highlights a clear and significant psychological burden among parents of children with cerebral palsy, with mothers experiencing greater emotional distress than fathers. The findings underscore the profound impact of chronic caregiving responsibilities on parental mental health and emphasize the need for comprehensive, family-centered care that integrates mental health screening and support into rehabilitation services. By addressing the emotional well-being of caregivers, healthcare providers can enhance both parental resilience and the overall quality of life for families affected by cerebral palsy.

AUTHOR CONTRIBUTION

Author	Contribution
Mamoona Tasleem Afzal*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Muhammad Abdullah	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
Hafsa Javid	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Aatika Mastoor	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Unzillah Baig	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Muntaha Noor	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published

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