



Original Article



Association between Functioning and Dynamics in Families of Children with ADHD in Pakistani Context

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ARTICLE INFO

Keywords:

Family Dynamics, Parental Discord, Socioeconomic Factors, Family Functioning

How to Cite:

Rajput, A. H., Dahri, S., Baloch, F., Channa, S., Ahmed, S., & Ansari, M. A. (2025). Association between Functioning and Dynamics in Families of Children with ADHD in Pakistani Context: Functioning and Dynamics in Families of Children with ADHD . Pakistan Journal of Health Sciences, 6(3), 200-205. <https://doi.org/10.54393/pjhs.v6i3.2937>

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ABSTRACT

Attention-Deficit/Hyperactivity Disorder (ADHD) affects multiple aspects of a child's development, including family dynamics. Understanding the association between family functioning and ADHD can provide insights into its social determinants. **Objectives:** To evaluate family functioning and dynamics in families of children with ADHD and compare them with healthy controls. **Methods:** A comparative cross-sectional study was conducted at the Child Psychiatry Clinic, Liaquat University Hospital, Hyderabad, from August 2024 to January 2025. A total of 120 participants (60 ADHD cases and 60 age-matched controls) were recruited using non-probability consecutive sampling. Family structure, socioeconomic status, parental employment, education, and family discord were assessed through structured interviews. Data were analyzed using SPSS version 25.0. **Results:** Family dysfunction was significantly associated with nuclear family structure (39.2% vs. 88.9%, $p=0.044$), lower socio-economic status (41.2% vs. 11.1%, $p=0.031$), and maternal educational level (33.3% vs. 11.1%, $p=0.038$). Additionally, a history of parental/family discord was significantly more prevalent in families with dysfunction (52.9% vs. 11.1%, $p=0.005$). **Conclusions:** It was concluded that family discord is significantly associated with ADHD, highlighting the need for family-based interventions. Addressing family conflict may help improve outcomes for children with ADHD.

INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most prevalent neurodevelopmental disorders of childhood, characterized by persistent patterns of inattention and hyperactivity-impulsivity. In 2016, the National Survey of Children's Health (NSCH) estimated that 9.4% of children and adolescents in the United States had been diagnosed with ADHD, accounting for approximately 6.1 million children [1]. A meta-analysis published in 2023 stated the global prevalence of ADHD in children and adolescents as 8.0 % [2]. The symptoms of ADHD, if left untreated, can significantly impair the patient's academic performance, family relationships, and social interactions

[3-5]. Conversely, inadequate parental care and support can exacerbate ADHD symptoms [6]. Therefore, family functioning is crucial in managing ADHD, as family dynamics play a pivotal role in influencing children's behavior [7]. Previous research has established a link between negative family functioning and increased ADHD symptoms [6]. Cultural factors also play a significant role in shaping family functioning and perceptions of ADHD. For instance, a study from Korea suggested lower ADHD prevalence in Asian countries, potentially due to cultural norms emphasizing quiet and respectful behavior in public [8]. This cultural context may impact the subjective



assessment of ADHD symptoms and family dynamics, which, as defined by Chan and colleagues, involve the internal psychological processes, behaviors, and communication methods that regulate interactions within the family and between the family unit and the external environment [9, 10]. Systematic Family Therapy, over the past 40 years, is based on the theory of family dynamics and has shown promise in addressing ADHD symptoms [11]. Several studies highlight that the characteristics of families of patients with different types of mental disorders, including ADHD, vary significantly, particularly in terms of family dynamics and functioning [12, 13]. For instance, Bhide et al., reported that families of children with ADHD or subthreshold ADHD experience higher levels of family conflict and lower levels of cohesion compared to families without ADHD, with these patterns persisting over three years [12]. Similarly, Chu et al., found that families of children with ADHD often exhibit disrupted communication patterns, a lack of emotional warmth, and increased parental stress, which can exacerbate the child's symptoms [13]. However, one study in Pakistan has assessed the family dynamics of families with children with ADHD. In Pakistan, where cultural and family dynamics differ from Western and other Asian contexts, there is a need to explore how family functioning and dynamics influence ADHD symptoms.

This study aimed to investigate the association between family functioning and dynamics in families of children with ADHD in the Pakistani context, which can provide foundations for the development of culturally tailored interventions for managing ADHD in this population.

METHODS

This comparative cross-sectional study was carried out at the Child Psychiatry Clinic. The duration of the study was from August 2024 to January 2025. Children (aged 6 to 13 years) with a diagnosis of ADHD, having at least 6 diagnostic criteria (out of the total 18) in the DSM-5-TR and brought by the parents, shall be included. Equal age and gender matched healthy control children were taken too, whose parents self-reportedly mentioned absence of any behavioral abnormalities in children and were screened with the Strengths and Difficulties Questionnaire (Hyperactivity Subscale) for any behavioral problem. Children were chosen via convenience sampling, based on the availability and willingness of the parents. Informed written consent from all the parents was taken. The study was approved by the Research Review Committee of Liaquat University of Medical and Health Sciences, Jamshoro vide letter NO. LUMHS/REC/-369. A total of 60 children with ADHD were studied, with equal age- and gender matched healthy controls taken as a control group. WHO Open epi sample size was used for sample size calculation. The sample size was calculated by taking the

expected prevalence of ADHD as 4%. [14] Margin of error was 5%, and the confidence level was set at 95%. Family Functioning was assessed using the Family Assessment Device (FAD) [15]. The Family Assessment Device [15] is a tool used to assess family functioning across different dimensions (problem-solving, communication, roles, affective responsiveness, affective involvement, behavior control, and general functioning). It consists of 60 items divided into seven subscales, each measuring a different aspect of family dynamics. Responses are typically given on a 4-point Likert scale (Strongly Agree, Agree, Disagree, Strongly Disagree). A score of ≥ 2.00 indicates problematic or unhealthy family functioning. Family dynamics included parental occupational and educational status, as well as information regarding the family dynamics, like type of family, family size, total number of children, and birth order of the ADHD child. Data were analyzed using SPSS version 25.0. The normality of the data was assessed using the Shapiro-Wilk test. As the data were found to be normally distributed, parametric tests were applied. An independent t-test was used to measure the difference in the mean values in both groups, while a chi-squared test was applied to check for the significance of the association between family association and family dynamics. p-value ≤ 0.05 was considered statistically significant.

RESULTS

The mean age of children in the ADHD group was 9.3 ± 2.1 years, with a male predominance (63.3%). A significantly higher proportion of ADHD children were not enrolled in school (80.0% vs. 6.7%, $p < 0.05$) and had a positive psychiatric family history (46.7% vs. 13.3%, $p < 0.05$), (Table 1).

Table 1: Demographic Characteristics of ADHD Cases and Controls

Variables	ADHD	Healthy Children
Mean Age of Child	9.3 ± 2.1	9.7 ± 2.0
Mean Age of Mother	35.4 ± 4.2	34.8 ± 4.5
Mean Age of Father	39.2 ± 5.1	38.7 ± 5.4
Gender		
Male	38 (63.3%)	36 (60.0%)
Female	22 (36.7%)	24 (40.0%)
Residence		
Urban	42 (70.0%)	40 (66.7%)
Rural	18 (30.0%)	20 (33.3%)
Enrolled in a School		
Yes	12 (20.0%)	56 (93.3%)
No	48 (80.0%)	4 (6.7%)
Positive Psychiatric Family History		
Yes	28 (46.7%)	8 (13.3%)
No	32 (53.3%)	52 (86.7%)
Psychiatric Family History Member		
Mother	9 (15.0%)	5 (8.3%)

Father	7(11.7%)	2(3.3%)
Sibling	12(20.0%)	1(1.7%)
Psychiatric History Noted		
Before ADHD Onset	20(33.3%)	NA
After ADHD Onset	8(13.3%)	

Inattention (85.0%) was the most reported complaint among ADHD children, followed by impulsiveness (78.3%) and hyperactivity (76.7%). Procrastination (75.0%) and disorganization (71.7%) were also prevalent. Academic problems (65.0%), aggression (58.3%), and low self-esteem (51.7%) highlight emotional and behavioral struggles. Mood/anxiety issues affect 50.0%, which was the least reported concern, (Figure 1).

PRESENTING COMPLAINTS AMONG ADHD CHILDREN

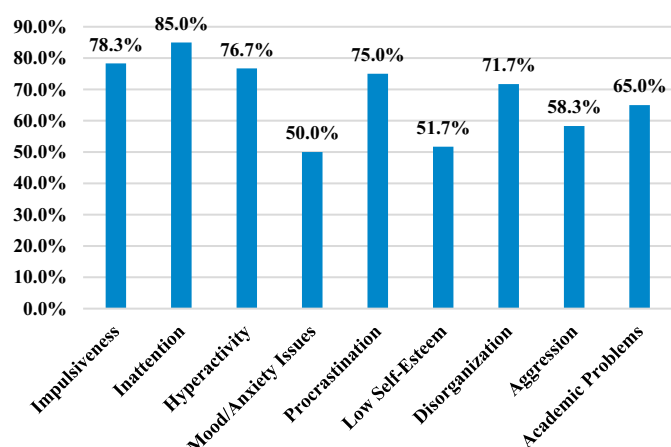


Figure 1: Presenting Complaints among ADHD Children

The analysis of family dynamics revealed no significant differences in mean child's birth order, number of siblings, and family size between ADHD cases and controls. While nuclear families were more common in controls (63.3%) than ADHD cases (48.3%), the difference was not statistically significant. Socioeconomic status distribution showed a higher proportion of ADHD cases in the lower-income group (36.7% vs. 16.7%), but the difference was not significant. Fathers of ADHD children were less frequently employed (81.7% vs. 93.3%), and mothers were more often unemployed (78.3% vs. 68.3%), though these differences were not statistically meaningful. Educational status of both parents showed no significant association with ADHD. However, a significantly higher proportion of ADHD cases had a history of parental or family discord (46.7% vs. 21.7%, $p=0.002$), suggesting a possible link between family conflict and ADHD, (Table 2).

Table 2: Family Dynamics of ADHD Cases and Controls

Variables	ADHD	Healthy Children	p-value
Mean Child's Birth Order	2.3 ± 1.2	2.0 ± 1.1	0.221
Mean No. of Siblings	3.4 ± 1.5	2.9 ± 1.3	0.119
Mean Family Size	6.8 ± 2.2	6.2 ± 2.0	0.172

Family Type			
Nuclear	29 (48.3%)	38 (63.3%)	0.193
Joint	31 (51.7%)	22 (36.7%)	
Socio-Economic Status			
Lower	22 (36.7%)	10 (16.7%)	0.08
Middle	30 (50.0%)	36 (60.0%)	
Higher	8 (13.3%)	14 (23.3%)	
Occupational Status of Father			
Employed	49 (81.7%)	56 (93.3%)	0.089
Unemployed	11 (18.3%)	4 (6.7%)	
Occupational Status of Mother			
Employed	13 (21.7%)	19 (31.7%)	0.286
Unemployed	47 (78.3%)	41 (68.3%)	
Educational Status of Father			
Uneducated	11 (18.3%)	6 (10.0%)	0.152
Primary	9 (15.0%)	8 (13.3%)	
Secondary	26 (43.3%)	27 (45.0%)	
Higher	14 (23.3%)	19 (31.7%)	
Educational Status of Mother			
Uneducated	18 (30.0%)	10 (16.7%)	0.072
Primary	12 (20.0%)	9 (15.0%)	
Secondary	20 (33.3%)	23 (38.3%)	
Higher	10 (16.7%)	18 (30.0%)	
History of Parental/Family Discord			
Yes	28 (46.7%)	13 (21.7%)	0.002*
No	32 (53.3%)	47 (78.3%)	

(Independent t-test and chi-square tests were applied)

Regarding family functioning, ADHD cases had significantly higher scores in affective responsiveness (3.5 ± 0.9 vs. 2.2 ± 0.7 , $p=0.049$) and behavior control (3.6 ± 1.0 vs. 2.3 ± 0.7 , $p=0.03$), indicating poorer family functioning (Table 3).

Table 3: Family Assessment Device (FAD) Scores in ADHD Cases and Controls

FAD Domains	ADHD	Healthy Children	p-value
Problem Solving	2.9 ± 0.8	1.7 ± 0.6	0.31
Communication	3.2 ± 0.7	2.0 ± 0.5	0.7
Roles	3.8 ± 1.0	2.5 ± 0.9	0.14
Affective Responsiveness	3.5 ± 0.9	2.2 ± 0.7	0.049*
Affective Involvement	4.0 ± 1.1	2.6 ± 0.8	0.22
Behavior Control	3.6 ± 1.0	2.3 ± 0.7	0.03*
General Functioning	3.9 ± 0.9	2.4 ± 0.6	0.38

*Statistically Significant (Independent t-test was applied)

Family dysfunction was significantly associated with nuclear family structure (39.2% vs. 88.9%, $p=0.044$), lower socio-economic status (41.2% vs. 11.1%, $p=0.031$), and maternal educational level (33.3% vs. 11.1%, $p=0.038$). Additionally, a history of parental/family discord was significantly more prevalent in families with dysfunction (52.9% vs. 11.1%, $p=0.005$). These findings highlight the crucial role of family environment in the functioning and dynamics of children with ADHD (Table 4).

Table 4: Association of Family Dysfunction and Family Good Function with Family Dynamics

Variables	Family Dysfunction (n=51)	Family Good Function (n=9)	p-value
Family Type			
Nuclear	20 (39.2%)	8 (88.9%)	0.044*
Joint	31 (60.8%)	1 (11.1%)	
Socio-Economic Status			
Lower	21 (41.2%)	1 (11.1%)	0.031*
Middle	25 (49.0%)	5 (55.6%)	
Higher	5 (9.8%)	3 (33.3%)	
Occupational Status of Father			
Employed	42 (82.4%)	8 (88.9%)	0.217
Unemployed	9 (17.6%)	1 (11.1%)	
Occupational Status of Mother			
Employed	9 (17.6%)	4 (44.4%)	0.089
Unemployed	42 (82.4%)	5 (55.6%)	
Educational Status of Father			
Uneducated	9 (17.6%)	2 (22.2%)	0.153
Primary	8 (15.7%)	1 (11.1%)	
Secondary	24 (47.1%)	3 (33.3%)	
Higher	10 (19.6%)	3 (33.3%)	
Educational Status of Mother			
Uneducated	17 (33.3%)	1 (11.1%)	0.038*
Primary	11 (21.6%)	1 (11.1%)	
Secondary	17 (33.3%)	3 (33.3%)	
Higher	6 (11.8%)	4 (44.4%)	
History of Parental/Family Discord			
Yes	27 (52.9%)	1 (11.1%)	0.005*
No	24 (47.1%)	8 (88.9%)	

*Statistically Significant (Chi Square test was applied)

DISCUSSION

The findings of this study revealed that inattention (85.0%), impulsiveness (78.3%), and hyperactivity (76.7%) were the most frequently reported symptoms, consistent with core ADHD features described in global research [16]. A crucial finding in this study was the significantly higher proportion of ADHD children who were not enrolled in school (80.0% vs. 6.7%, $p < 0.05$). This aligns with international studies indicating that ADHD children have lower academic achievement and higher school dropout rates compared to their neurotypical peers [17]. Research from the United States and Europe also highlights the challenges ADHD children face in mainstream education, often necessitating individualized educational plans (IEPs) or special education services [18]. ADHD children in the study were significantly more likely to have a positive psychiatric family history (46.7% vs. 13.3%, $p < 0.05$). This supports previous research indicating a strong genetic component in ADHD, with family history playing a critical role in its etiology. Twin and familial studies have estimated ADHD heritability at approximately 70–80%, highlighting the genetic predisposition to neurodevelopmental disorders

[19]. The Family Assessment Device (FAD) analysis showed that ADHD cases had significantly higher scores in affective responsiveness (3.5 ± 0.9 vs. 2.2 ± 0.7 , $p = 0.049$) and behavior control (3.6 ± 1.0 vs. 2.3 ± 0.7 , $p = 0.03$), indicating poorer family functioning. These findings align with research demonstrating that families of ADHD children often experience higher levels of stress, inconsistent discipline, and emotional dysregulation [20]. In a study conducted in Canada, parents of ADHD children reported lower family cohesion and higher conflict, further reinforcing the association between ADHD and family dysfunction [21]. Parental discord was significantly higher in ADHD families (46.7% vs. 21.7%, $p = 0.002$), suggesting a potential link between familial conflict and ADHD symptom severity. International literature supports this finding, as family stress and disrupted home environments have been associated with increased ADHD symptoms and behavioral issues [22]. Parenting styles also play a crucial role; authoritarian or permissive parenting has been linked to worsened ADHD symptoms, while structured and consistent parenting strategies improve outcomes [23]. The study found that a higher proportion of ADHD cases belonged to lower-income groups (36.7% vs. 16.7%), though the difference was not statistically significant. This is consistent with international findings, where ADHD prevalence is often higher among children from socioeconomically disadvantaged backgrounds [24]. Studies from a systematic review have indicated that lower parental education and financial instability contribute to increased ADHD risk, possibly due to environmental stressors and reduced access to healthcare resources [25]. Parental employment status showed no significant association with ADHD, though fathers of ADHD children were slightly less frequently employed (81.7% vs. 93.3%), and mothers were more often unemployed (78.3% vs. 68.3%). This trend has been observed in multiple studies, where families of ADHD children often experience greater economic strain, partially due to increased caregiving demands [26].

CONCLUSIONS

It was concluded that family dynamics in children with ADHD did not significantly differ from controls in terms of family structure, socioeconomic status, or parental education. However, a history of parental or family discord was significantly more common among ADHD cases, suggesting that family conflict may play a role in the condition.

Authors Contribution

Conceptualization: AHR

Methodology: AHR, SD, FB, SC, MAA

Formal analysis: SA

Writing review and editing: SD, FB, SA

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

Source of Funding

The author received no financial support for the research, authorship and/or publication of this article.

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