



A Study on the Parenting Styles and Parental Stress of Parents of (Attention Deficit Hyperactivity Disorder) ADHD Children

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Abstract

Background: There are several steps involved in deciding if a child has ADHD. No single test is available to diagnose ADHD and many other problems such as depression, anxiety, sleep problems and certain types of learning disabilities can also have similar symptoms. One of the process involves doing a medical examination, including hearing and vision tests, to rule out other problems with symptoms like ADHD. Diagnosis of ADHD includes a checklist for rating ADHD symptoms and taking a history of the child from parents, teachers, and sometimes, the child itself. **Aim & Objectives:** To know the prevalence of psychiatric co-morbidities in ADHD and to assess parental stress and parenting style among parents of children having ADHD. **Material & Methods:** A total of 78 children (6 to 18 years of age) and their parents were selected for the completion this study. The study was carried out in the Department of Psychiatry, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi. Bivariate table and chi-square/Fisher Exact test were used. Correlation test has also been applied to know the association between demographic variables and their responses. **Results: ? Conclusions:** We conclude that specific scales of the CBCL may help to identify specific comorbidities within ADHD cases in the primary care setting.

Keywords:- ADHD, CBCL, Bisphenol A, Daydream.

INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder with major characteristics of hyperactivity, inattention and impulsivity that occur before the age of seven. A great heterogeneity in functioning and symptoms is seen during ADHD.^[1] The range of the symptoms is mostly unclear and it may or may not continue into adulthood. The disorder can be presented as 'childhood ADHD' and 'adult ADHD,' where

childhood ADHD was found to be more common.^[2] Approximately 50% of the time the disorder carries into adulthood,^[3] but the processes of remission still remain unclear.

Prevalence of ADHD in India is 11.32% in primary school children.^[4] The behavioral disturbance of ADHD children significantly ruins their academic, social or professional life. They are at an increased risk of dropping out of school, committing criminal behavior and becoming pregnant as a teenager. Children

with untreated ADHD, are prone to delay in learning, poor social skills, low self-esteem and increased vulnerability to physical injury in childhood.^[5]

Children with ADHD do not simply grow out of these behaviors. These symptoms continue to grow in most of the cases, can become severe and might even cause difficulty at home, school or in social life with friends. Common symptoms in a child with ADHD:

- Daydream a lot
- Forget or lose things a lot
- Wriggle or fidget during anxiety or boredom
- Talkative
- Careless while working or take unnecessary risks
- Have trouble taking turns

The major symptoms of ADHD include general inattention, impulsivity, hyperactivity and lack of self-control. These are seen in the various presentations of the disorder and are divided into previously known as '3 subtypes of the disorder' but currently they are referred to as '3 major presentations'.^[6]

- Predominantly Hyperactive Impulsive (ADHD-HI): Children under this category are talkative and fidget a lot. It is hard for them to sit still for a long time (e.g., for doing homework or having meal). The younger kids may constantly keep running, jumping or climbing from one place to another. They are mostly restless and have trouble with impulsivity. Children with impulsiveness are often prone to more accidents or injury, they might interrupt

others a lot, speak at inappropriate times or grab things from people.

- Predominantly Inattentive (ADHD-IA): Such children find it difficult to pay attention to details, to organize or finish a task or follow instructions. These children get easily distracted and even forget daily routine details.
- Combined (ADHD-C): Children with equal presentations of symptoms of the above two types.

Most importantly, these categories are not necessarily permanent because symptoms are likely to change with time as the disorder progresses: for e.g., if the disorder persists, a child with combined hyperactive and inattentive ADHD may later become less hyperactive and more inattentive with age.^[7]

Etiology of ADHD

ADHD can be determined by genetic, environmental and social factors. It is a result of complex dealings between genetic, environmental and developmental traits.

1. Genetic Factors

Given the high heritability of ADHD, it is difficult to identify individual genes responsible for the etiology of disorder. It is becoming increasingly clear that single deficit models "one gene, one disorder" are unlikely to provide satisfactory explanation for complex traits and disorders. Recent research in the last decade indicates that ADHD is a complex neurobiological disorder and composed likely of a much larger number of susceptibility genes acting in cohort, where each gene contributes only to a small magnitude of the overall risk for that trait.^[8]

2. Environmental Factors

A potentially negative influence on the development of the nervous system is seen on exposure to industrial additives and environmental toxins.

Phthalates

Phthalates are commonly found chemical agent in children toys, medical devices as well as in cosmetics. During animal studies, it was found that exposure to these chemicals induced hormonal disturbances and symptoms of hyperactivity; very similar to what seen in human ADHD.^[9,10]

Bisphenol A

Similar to phthalates, Bisphenol A (BPA) is ubiquitously seen in food packaging and plastic products. Recently, this chemical has gained attention of people and media due to its high correlation with insulin dysfunction and mild estrogenic effects which can influence intrauterine and fetal development. Most recently, the discovery that BPA directly influences the dopaminergic system during early development is especially relevant to ADHD and other disorders marked by impulsivity.^[11]

3. Social Factors

As suggested by many indicators, ADHD is not solely a biological phenomenon; it is also linked in numerous ways to social factors.

Parenting Style

For parents of ADHD children, the combination of stress related to parenting an affected child and one's own personal ADHD

symptoms and associated impairment leads to a chaotic home environment, which may predispose parents to "negative" parenting styles.^[12,13] Parenting styles generally fall along a continuum between the two anchors of being lax and overly punitive, with extremes in either direction defined as negative. Three terms are used to represent the common types of parenting: permissive, authoritarian, and authoritative.^[14,15]

Disruptive Behavior Domain

There are two major models available to describe and measure child disruptive behaviors:

- First, the Diagnostic and Statistical Manual of Mental Disorders(4th ed. [DSM-IV]; American Psychiatric Association, 1994) is based on a categorical taxonomy that identifies discrete syndromes of child psychiatric difficulty. It specifies two dimensions of ADHD behaviors: hyperactivity-impulsivity and inattention-disorganization.^[15]
- Secondly, analysis of list of factors responsible for child behavior problem has led to a factorial model in child psychopathology, which emphasizes problem domains rather than diagnostic categories. It includes several major rating scales, including Achenbach's (1991) Child Behavior Checklist (CBCL).^[16]
- Psychiatric co-morbidities with ADHD

Comorbidity of a psychiatric disorder is important because compared with a child with ADHD alone, an ADHD child with a comorbid condition may have a different clinical presentation, life course and response to

treatment. The major comorbid conditions that present challenges in clinical practice:

1. Oppositional Defiant Disorder (ODD)

The estimated prevalence for ODD is 5-10%. ODD is concomitant with ADHD in 25-75% of patients. In such cases, children are more impaired but effective treatments may reduce the risk of complications such as depression, CD or substance abuse. At a young age, ADHD and ODD behavioral problems may predispose children to bullying environment in early primary schooling. ODD treatment by a special educator usually involves introduction of rules and aims to re-establish generational boundaries. Also, in order to optimize the pharmacotherapy of ADHD, it is recommended to combine medication approach with psychosocial, especially behavioral treatments which are supported empirically.^[17,18,19,20]

2. Conduct disorder (CD)

The incidence of CD ranges between 2-9% and it is even higher in low socioeconomic status groups [20]. CD is frequently comorbid with ADHD (1/3 of the cases), a situation that contributes to the severity of the condition.^[21]

Learning Disorder (LD)

As reported by prior studies, 19-26% of children with ADHD symptoms are also classified as having at least one type of learning disability (LD) in reading or writing.^[22,23]

Mood Disorder or Major Depression (MD)

Major depression in a child may be apparent from a sad or irritable mood or a persistent loss

of interest or pleasure in the child's favorite activities. Other signs and symptoms include physiologic disturbances, such as in changes in appetite and weight, abnormal sleep patterns, psychomotor abnormalities, fatigue, and diminished ability to think, as well as feelings of worthlessness or guilt and suicidal preoccupation. Associated features of depression in children include school difficulties, school refusal, withdrawal, somatic complaints, negativism, aggression, and antisocial behavior. Conduct disorder and substance abuse commonly co-occur with depression in older children and adolescents.^[24,25]

Parental Stress

A popular conceptualization of parenting stress is provided by Abidin (1992, 1995) who proposes that it is the mismatch between the perceived demands of parenting and available resources to meet those demands that create aversive feelings.^[26,27] The attribution of such feelings can also be placed upon the parent (e.g., not feeling competent as a parent) or the child (e.g., "this child is problematic"). Parental stress is positively correlated with child behavioral and developmental maladjustment; more parental stress is associated with more child problems.

Objectives:

The main objectives of the study are as follows: To know the prevalence of psychiatric comorbidities in ADHD (Attention Deficit Hyperactivity Disorder) and to assess parental stress and parenting style among parents of children having ADHD. To assess the

association between parenting styles, parental stress in ADHD children.

MATERIAL AND METHODS

Study design: Cross-sectional observational study.

Study participants: Children and adolescents from 6 to 18 years of age, attending the Child Psychiatry OPD at Safdarjung Hospital, fulfilling the inclusion criteria of the study were included for the purpose of the study.

Study duration: 18 Months.

Sample size:

The study comparing parenting styles of children with ADHD and normal children was done by Mahboobeh Firouzkouhi Moghaddam, Marzeyeh Assareh, Amirhossein Heidaripoor, Raheleh Eslami Rad and Masoud Pishjoo.[28] This study was conducted in Zahedan in 2012 in children aged 7 to 12. They were divided into patient and normal groups. Parenting styles were evaluated with Baumrind's questionnaire.

In this study, SD(Standard Deviation) of different parenting styles ranged from 4.4 to 6.1. Keeping margin of error (l) as 1, confidence interval as 95%, SD as 4.4 and power as 80% ; the sample size was 77.44 and it was rounded off to 78.

Formula used for sample size calculation:

$$N \leq 4(SD)^2 / (l)^2 = 4(4.4)^2 / (1)^2 = 77.44 = 78(\text{approx.})$$

Inclusion Criteria:

- Parents of children and adolescents from 6 to 18 years of age, All children with

diagnosed ADHD by Diagnostic and Statistical Manual of Mental Disorders(DSM)-5.[29]

- Parents of children having ADHD(Attention Deficit Hyperactivity Disorder)

Exclusion Criteria:

- Children with gross neurological abnormalities or epilepsy
- Visual and hearing loss
- Neurodevelopmental disorders
- Single parent/widowed parent

Methodology

The study was conducted in Child Psychiatry OPD which is held once a week on Wednesday in the afternoon (2:00 P.M. to 4:00 P.M.). Method of convenient sampling was followed under which first 2 patients fulfilling the inclusion criteria were recruited for the purpose of the study till the required sample size was achieved.

Study tools / Instruments:

1. Socio-demographic : Personal and socio-demographic data was noted for the family taking part in the study.
2. Child Behaviour Checklist: is a component of the Achenbach System of Empirically Based assessments (ASEBA).[30] The ASEBA is used to detect behavioral and emotional problem in children and adolescents. The CBCL is completed by parents.
3. Conners Parent Questionnaire - developed by C. Keith Conners.[31] The most used way of assessing ADHD is the Conners questionnaire (Sandberg, 1986).[32]

4. Parental Stress Scale: Developed by Berry and Jones (1995) as an alternative to the 101-items parenting stress index.^[33]

Statistical Analysis

The data was analyzed using SPSS-21- version. Univariate and bivariate tables were used to present the data. Chi-square//Fisher's exact test has also been applied to know association between variables and its significance has been checked with P-value. The normality of data was tested by Kolmogorov-Smirnov test. Unpaired t-test/Mann-Whitney Test was applied to compare between the patients with psychiatric co-morbidities and without psychiatric co-morbidities.

RESULTS

In this section, Univariate and bivariate tables were used to present the data. Chi-square//Fisher's exact test has been applied to know the association between variables and its significance has been checked with P-value.

[Table 1] indicates that distribution of parent's demographic variables and their percentages. The highest percentage of frequency was 59% found in the age group of 31-40 years. The least number of parents were included in the 25-30 years of age group. The maximum number of parents were Hindu, accounting 88.5% of the total parents in the study. On the other hand, the percentage of Muslims was 6.4%, and both Christian and Sikh parents was same, that is 1.3% and this was also the minimum percentage in the entire group.

In case of education wise distribution, Maximum number of parents, that is 59%, were highly educated with graduate and post-

graduate degrees. While there were 7.7% parents who were professionals. As per the above data, parents belonging to the middle-class family were maximum and contribute 57.7% of the total subjects included in the study, followed by low-income status parents and high income status parents contributing 26.9% and 15.4%, respectively. Distribution of subjects according to the age of their spouse that 67.9% of subjects have their spouse in the age group of 31-40 years, while 20.5% have their spouse in the age group of > 40 years and 11.5% subjects have their spouse in the age group of 25-30 years.

[Table 2] shows the distribution of children's demographic variables and their percentage. Majority of children (43.6%) were belong to the age group of 8-10 years followed by 33.3% to the age group of 6-7 and minimum percentage, 23.1 % children, in the age group of 11-18 years. There are a greater number of males than females. 92.3% children were male while only 7.7% were females.

On the basis of their educational qualification, 75.6% of children were in the primary grade, while 24.4% children in the secondary grade In case of sibling of Childs, 60.3% of child had 2 siblings, while 21.8% had more than or equal to 3 childs and only 17.9% parents had single sibling.

The [Table 3] shows the associations between various characteristics of the subjects with four Inattention T-scores. It was observed that there was no significant association with various Inattention score for parents age (p 0.193), relationship with child (p 0.414), Socioeconomic status (p 0.898), Ethnicity, Education (p 0.628), spouse age (p 0.126),

child's age (p 0.913), child's gender (p 0.486), child's grade (p 0.595) and total number of children (0.911). However, it was observed that there was a significant correlation between Religion of the patient with Very elevated Inattention score (p 0.019).

[Table 4] shows Hyperactivity/Impulsive T-score calculated for different demographic variables. It was observed that there was no significant association with various Hyperactivity/Impulsivity score for parents age (p 0.29), relationship with child (p 0.15), Socioeconomic status (p 0.769), Religion (p 1.0), Education (p 0.943), spouse age (p 0.448), child's age (p 0.610), child's gender (p 0.876) and child's grade (p 0.327) However, it was observed that there was a significant correlation between total number of children of parents with Very elevated Inattention score (p 0.031).

[Table 5] shows the association between various characteristics of the subjects with CBCL Total T-scores. It was observed that there was no significant correlation with various CBCL Total score for parents age (p 0.703), relationship with child (p 0.474), Socioeconomic status (p 0.690), Religion (p 0.998), Education (p 0.994), spouse age (p 0.787), child's age (p 0.363), child's gender, child's grade (p 1.0) and total number of children (p 0.099).

[Table 6] shows the comparison of the total scores on Parental Stress Scale (PSS) among various characteristics of the parents. It was observed that there was no significant mean difference in total PSS scores for parents age (p 0.943), relationship with child (p 0.434), religion (p=0.519), SES (p 0.242), education (p 0.490), spouse age (p 0.985), child's gender (p 0.992), Child's age (p 0.704) and total no of children (0.311).

Table 1: Distribution of parent's demographic variables and their percentages

Demographic variables	Distribution of variables	Frequency	Percentages
Parent's Age (in years)	25 – 30	13	16.7
	31 - 40	46	59.0
	>40	19	24.4
Relationships with child	Mother	37	47.4
	Father	41	52.6
Religion	Hindu	69	88.5
	Muslim	5	6.4
	Christian	1	1.3
	Sikh	1	1.3
	Others	2	2.6
Socioeconomic Status	Low	21	26.9
	Middle	45	57.7
	High	12	15.4
Education	Illiterate	1	1.3
	Primary	5	6.4



	Middle	4	5.1
	High school	12	15.4
	Intermediate	4	5.1
	Graduate and PG	46	59.0
	Profession	6	7.7
Spouse Age (in years)	25 - 30	9	11.5
	31 - 40	53	67.9
	>40	16	20.5
	Total	78	100

Table 2: Distribution of children’s demographic variables and their percentage.

Demographic variables	Distribution of variables	Frequency	Percentages
Child’s Age (in years)	6 - 7	26	33.3
	8 - 10	34	43.6
	11 - 18	18	23.1
Gender	Male	72	92.3
	Female	6	7.7
Child's Grade	Primary	59	75.6
	Secondary	19	24.4
Siblings	1	14	17.9
	2	47	60.3
	>=3	17	21.8
	Total	78	100.0

Table 3: Distribution of Inattention T-Score across parents’ demographic characteristics

Demographic Characteristics		Inattention T- Score (Percentages)				p-value
		Average	High average	Elevated	Very elevated	
Parent's Age	25 - 30 yrs	1 (7.7%)			12 (92.3%)	0.193
	31 - 40 yrs	4 (8.7%)	2 (4.3%)	10 (21.7%)	30 (65.2%)	
	>40 yrs		1 (5.3%)	1 (5.3%)	17 (89.5%)	
Relationship with child	Mother	4 (10.8%)	1 (2.7%)	6 (16.2%)	26 (70.3%)	0.414
	Father	1 (2.4%)	2 (4.9%)	5 (12.2%)	33 (80.5%)	
Religion:	Hindu	3 (4.3%)	3 (4.3%)	10 (14.5%)	53 (76.8%)	0.019*
	Muslim	1 (20.0%)			4 (80.0%)	
	Christian	1 (100%)				
	Sikh			1 (100%)		
	Others				2 (100%)	
Socioeconomic Status	Low	2 (9.5%)	1 (4.8%)	3 (14.3%)	15 (71.4%)	0.898
	Middle	3 (6.7%)	1 (2.2%)	6 (13.3%)	35 (77.8%)	
	High	0 (0.0%)	1 (8.3%)	2 (16.7%)	9 (75.0%)	



Ethnicity	Asian	5 (6.4%)	3 (3.8%)	11 (14.1%)	59 (75.6%)	-
Education	Illiterate				1 (100%)	0.628
	Primary			1 (20.0%)	4 (80.0%)	
	Middle			1 (25.0%)	3 (75.0%)	
	High school			1 (8.3%)	11 (91.7%)	
	Intermediate			2 (50.0%)	2 (50.0%)	
	Graduate and PG	5 (10.9%)	2 (4.3%)	7 (15.2%)	32 (69.6%)	
	Profession				6 (100%)	
Spouse Age	25 - 30 yrs			2 (22.2%)	7 (77.8%)	0.126
	31 - 40 yrs	2 (3.8%)	3 (5.7%)	5 (9.4%)	43 (81.1%)	
	>40 yrs	3 (18.8%)	0 (0.0%)	4 (25.0%)	9 (56.2%)	
Child's Age	6 - 7 yrs	1 (3.8%)	1 (3.8%)	4 (15.4%)	20 (76.9%)	0.913
	8 - 10 yrs	3 (8.8%)	2 (5.9%)	5 (14.7%)	24 (70.6%)	
	11 - 18 yrs	1 (5.6%)		2 (11.1%)	15 (83.3%)	
Child's Gender	Male	5 (6.9%)	3 (4.2%)	9 (12.5%)	55 (76.4%)	0.486
	Female			2 (33.3%)	4 (66.7%)	
Child's Grade	Primary	3 (5.1%)	3 (5.1%)	9 (15.3%)	44 (74.6%)	0.595
	Secondary	2 (10.5%)		2 (10.5%)	15 (78.9%)	
Total no. of children/Sibling	1	1 (7.1%)	1 (7.1%)	3 (21.4%)	9 (64.3%)	0.911
	2	3 (6.4%)	2 (4.3%)	6 (12.8%)	36 (76.6%)	
	>=3	1 (5.9%)	0 (0.0%)	2 (11.8%)	14 (82.4%)	

Table 4: Distribution of Hyperactivity/Impulsivity T-Score across parents' demographic characteristics.

Demographic characteristics		Hyperactivity/Impulsivity T- Score (Percentages)				p-value
		Average	High average	Elevated	Very elevated	
Parent's Age (years)	25 - 30			1 (7.7%)	12 (92.3%)	0.290
	31 - 40	2 (4.3%)		6 (13.0%)	38 (82.6%)	
	>40		1 (5.3%)		18 (94.7%)	
Relationship with child	Mother	1 (2.7%)		6 (16.2%)	30 (81.1%)	0.150
	Father	1 (2.4%)	1 (2.4%)	1 (2.4%)	38 (92.7%)	
Religion:	Hindu	2 (2.9%)	1 (1.4%)	7 (10.1%)	59 (85.5%)	1.000
	Muslim				5 (100%)	
	Christian				1 (100%)	
	Sikh				1 (100%)	
	Others				2 (100%)	
Socioeconomic Status	Low			2 (9.5%)	19 (90.5%)	0.769
	Middle	2 (4.4%)	1 (2.2%)	3 (6.7%)	39 (86.7%)	
	High			2 (16.7%)	10 (83.3%)	
Ethnicity	Asian	2 (2.6%)	1 (1.3%)	7 (9.0%)	68 (87.2%)	-
Education	Illiterate				1 (100%)	0.943



	Primary				5 (100%)	
	Middle				4 (100%)	
	High school		1 (8.3%)	1 (8.3%)	10 (83.3%)	
	Intermediate			1 (25.0%)	7 (75.0%)	
	Graduate and PG	2 (4.3%)		4 (8.7%)	40 (87.0%)	
	Profession			1 (16.7%)	5 (83.3%)	
Spouse Age	25 - 30 yrs			1 (11.1%)	8 (88.9%)	0.448
	31 - 40 yrs	1 (1.9%)		4 (7.5%)	48 (90.6%)	
	>40 yrs	1 (6.2%)	1 (6.2%)	2 (12.5%)	12 (75.0%)	
Child's Age	6 - 7 yrs	1 (3.8%)		3 (11.5%)	22 (84.6%)	0.610
	8 - 10 yrs	1 (2.9%)	1 (2.9%)	4 (11.8%)	28 (82.4%)	
	11 - 18 yrs				18 (100%)	
Child's Gender	Male	2 (2.8%)	1 (1.4%)	6 (8.3%)	63 (87.5%)	0.876
	Female			1 (16.7%)	5 (83.3%)	
Child's Grade	Primary	1 (1.7%)	1 (1.7%)	7 (11.9%)	50 (84.7%)	0.327
	Secondary	1 (5.3%)			18 (94.7%)	
Total no. of children/siblings	1	2 (14.3%)		2 (14.3%)	10 (71.4%)	0.031*
	2			4 (8.5%)	43 (91.5%)	
	>=3		1 (5.9%)	1 (5.9%)	15 (88.2%)	

Table 5: Distribution of CBCL T-Score across parents' demographic variables like age, religion, socio-economic status and education status.

Demographic characteristics		CBCL Total T-Score (Percentages)		p-value
		BR	CR	
Parent's Age	25 - 30 yrs	0 (0.0%)	13 (100%)	0.703
	31 - 40 yrs	1 (2.2%)	45 (97.8%)	
	>40 yrs	0 (0.0%)	19 (100%)	
Relationship with child	Mother	1 (2.7%)	36 (97.3%)	0.474
	Father	0 (0.0%)	41 (100%)	
Religion:	Hindu	1 (1.4%)	68 (98.6%)	0.998
	Muslim	0 (0.0%)	5 (100%)	
	Christian	0 (0.0%)	1 (100%)	
	Sikh	0 (0.0%)	1 (100%)	
	Others	0 (0.0%)	2 (100%)	
Socioeconomic Status	Low	0 (0.0%)	21 (100%)	0.690
	Middle	1 (2.2%)	44 (97.8%)	
	High	0 (0.0%)	12 (100%)	
Ethnicity	Asian	1 (1.3%)	77 (98.7%)	-
Education	Illiterate	0 (0.0%)	1 (100%)	0.994
	Primary	0 (0.0%)	5 (100%)	
	Middle	0 (0.0%)	4 (100%)	



	High school	0 (0.0%)	12 (100%)	
	Intermediate	0 (0.0%)	4 (100%)	
	Graduate and PG	1 (2.2%)	45 (97.8%)	
	Profession	0 (0.0%)	6 (100%)	
Spouse Age	25 - 30 yrs	0 (0.0%)	9 (100%)	0.787
	31 - 40 yrs	1 (1.9%)	52 (98.1%)	
	>40 yrs	0 (0.0%)	16 (100%)	
Child's Age	6 - 7 yrs	1 (3.8%)	25 (96.2%)	0.363
	8 - 10 yrs	0 (0.0%)	34 (100%)	
	11 - 18 yrs	0 (0.0%)	18 (100%)	
Child's Gender	Male	1 (1.4%)	71 (98.6%)	1.000
	Female	0 (0.0%)	6 (100%)	
Child's Grade	Primary	1 (1.7%)	58 (98.3%)	1.000
	Secondary	0 (0.0%)	19 (100%)	
Total no. of children/Sibling	1	1 (7.1%)	13 (92.9%)	0.099
	2	0 (0.0%)	47 (100%)	
	>=3	0 (0.0%)	17 (100%)	

Table 6: Means of the total scores on Parental Stress Scale (PSS) by parent's age, relationship with child, religion, SES, child's age and gender

	Mean ± SD	Mean ± SD	Mean ± SD	p value
	Parent's age			
	25 - 30 yrs	31 - 40 yrs	>40 yrs	
PSS Total	65.85 ± 4.04	65.72 ± 3.31	65.47 ± 2.37	0.943
	Relationship With Child			
	Mother	Father		
PSS Total	65.38 ± 3.02	65.95 ± 3.38		0.434
	Religion			
	Hindu	Others		
PSS Total	65.59 ± 3.28	66.33 ± 2.06		0.519
	SES			
	Low	Middle	High	
PSS Total	65.95 ± 2.06	65.22 ± 3.12	66.92 ± 4.76	0.242
	Child's age			
	6 - 7 yrs	8 - 10 yrs	11 - 18 yrs	
PSS Total	65.27 ± 2.96	65.79 ± 3.77	66.06 ± 2.36	0.704
	Child's Gender			
	Male	Female		
PSS Total	65.68 ± 3.24	65.67 ± 3.01		0.992
	Spouse Age			
	25 - 30 yrs	31 - 40 yrs	>40 yrs	

PSS Total	65.78 ± 3.99	65.7 ± 3.25	65.56 ± 2.76	0.985
	Total no. of children			
	1	2	>=3	
PSS Total	65.14 ± 3.59	66.13 ± 3.28	64.88 ± 2.55	0.311

Table 7: Correlation between total score of CPQ, PSS, PSDQ & CBCL

Correlations					
		CPQ Total	PSS total	PSDQ total	CBCL total
CPQ total	Pearson Correlation	1.000	0.358	-0.005	0.241
	p value		0.028*	0.962	0.034*
	N	78	78	78	78
PSS total	Pearson Correlation		1.000	0.015	0.245
	p value			0.896	0.036*
	N		78	78	78
PSDQ total	Pearson Correlation			1.000	-0.151
	p value				0.187
	N			78	78
CBCL total	Pearson Correlation				1.000
	p value				
	N				78

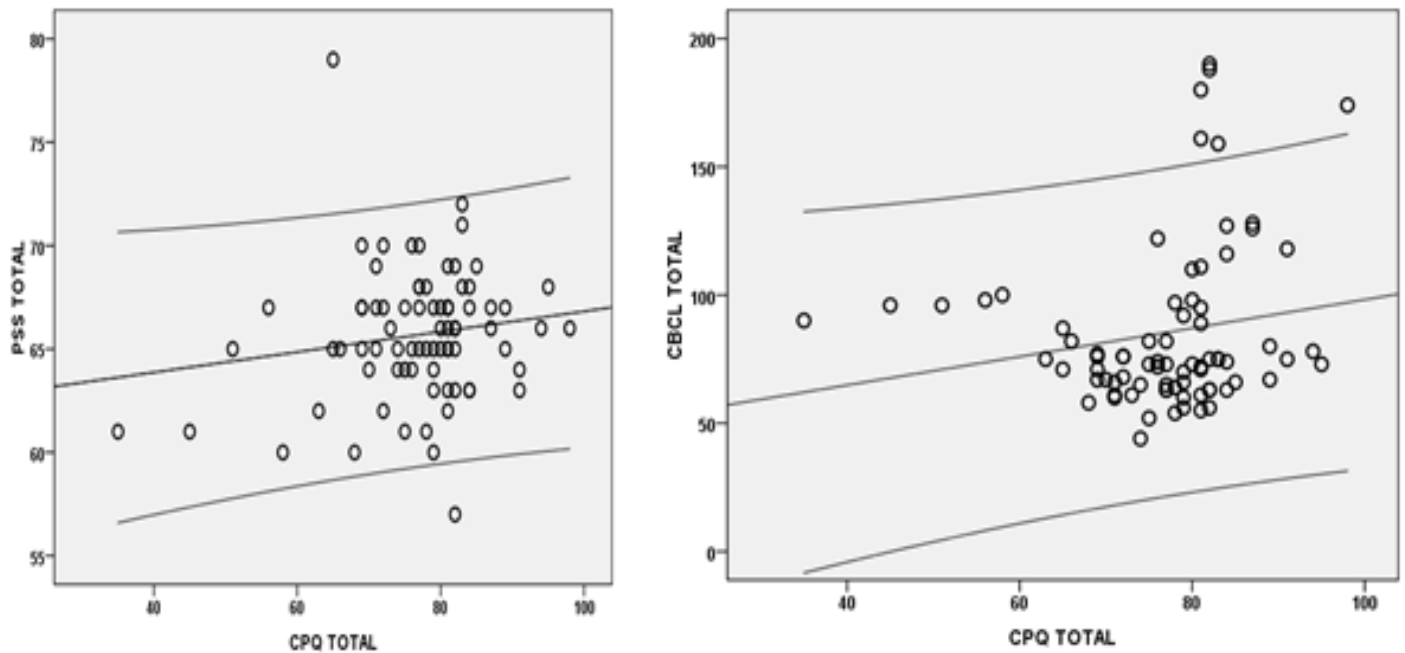


Figure 1: Correlation between total score of PSS & CBCL and total score of CPQ

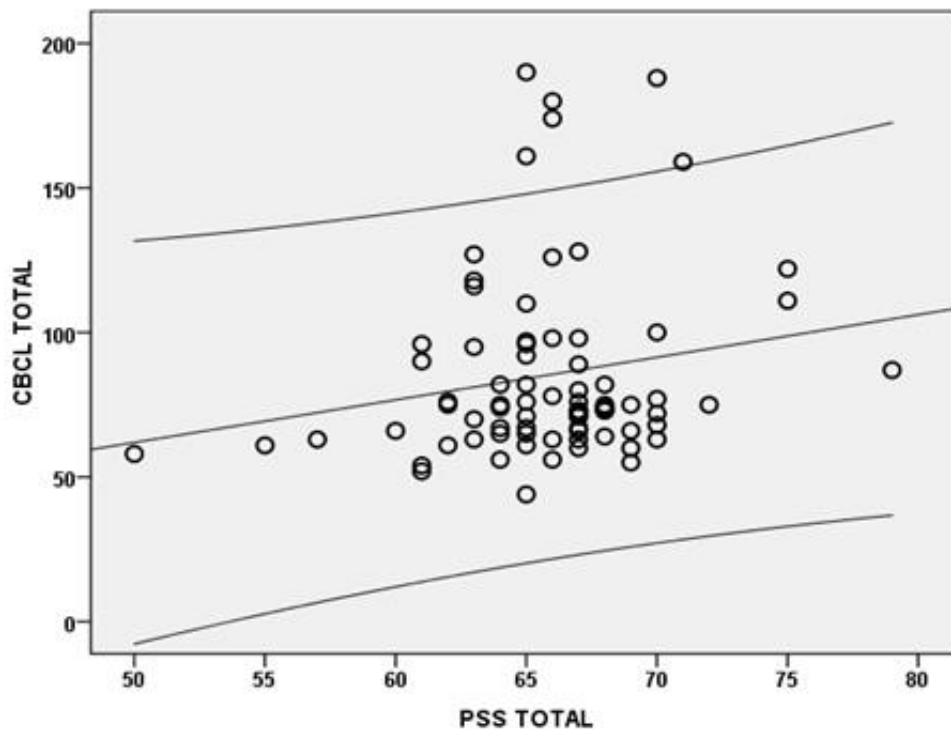


Figure 2: Correlation between total score of CBCL and total score of PSS

[Table 7, Figure 1 and 2] shows the relationship between total scores of CPQ, PSS, PSDQ and CBCL. It was observed that the correlation coefficient between CPQ and PSS was 0.358, CPQ and CBCL was 0.241, PSS and CBCL was 0.245. Further, it was indicated that there was positive correlation between CPQ, PSS and CBCL and was found to be significant for all the three combinations (p value =0.028, 0.034, 0.036 respectively).

DISCUSSION

A total of 78 children and their parents were enrolled in this study. Majority of parents enrolled for the study belonged to 31-40 years age group. We found that the 52.6% of the enrolled children were more related to their father. Parents and children from all religion

and sects were enrolled. Hindus accounted for 88.5%, Muslims were 6.4%, and Christian and Sikh accounted for 1.3% each. We also analyzed the socio-economic status of the enrolled parents for its correlation with ADHD. We found that 57.7% parents belonged to middle income group, 26.9% to low income group and 15.4% belonged to high income group. We also documented the educational qualifications of the enrolled parents. We found that 59% were highly educated with graduate and post-graduate degrees, 7.7% parents were professionals, 1.3% parents were illiterate, 6.4% parents had completed primary schooling, 15.4% of parents completed their high school while only 5.1% completed middle school. Out of 78 parents enrolled for the study, 60.3% of parents had 2 children, while



21.8% had more than or equal to 3 children and only 17.9% parents had single child.

Majority of the children enrolled belonged to the age group of 8-10 years, contributing 43.6% of the total subjects, followed by 33.3% children in the age group of 6-7 years and minimum percentage, 23.1 % children, in the age group of 11-18 years. 92.3% children were male while only 7.7% were females. In addition, 75.6% of children were in the primary grade, while 24.4% children in the secondary grade. Preliminary analyses indicated no significant associations between demographic characteristics (i.e., sex, race, Socio-economic status, parent's education, child age etc) and study's variables. Studies by Graziano et al and Biederman et al also did not find any correlation between the demographic characteristics and study parameters.^[35,36]

Our study results imply that 97.4% subjects had poor peer relations with other children. As per the CBCL Total T-Score, 1.3% of the patients were in Borderline range (T-score of 60 - 63) while 98.7% were in Clinical range (T-score of >63). For Internalizing T-Score, it was observed that 2.6% were in normal range (T-score < 60), 7.7% of the patients were in Borderline range (T-score of 60 - 63) while 89.7% were in Clinical range (T-score of >63). (Internalizing problems consist of three attributes viz. Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints).

For Externalizing T-Score, it was observed that 11.5% of the patients were in Borderline range (T-score of 60 - 63) while 88.5% were in Clinical range (T-score of >63). (Externalizing problems comprise of two attributes viz. Rule

Breaking Behaviour, and Aggressive Behaviour).

We further evaluated the correlation between the inattention T-score, Hyperactivity/Impulsivity T-score, Learning problems T-score, Executive Functioning T-score, Defiance/Aggression T-score, CBCL Total score, Internalizing score, Externalizing score, total PSS scores and total PSDQ scores with various demographic characteristics. We found that there was no significant co-relation between the aforesaid scores with either of the demographic characteristic.

In case of Inattention score, no significant relation was found between the score and parent's age ($p=0.193$), relationship with child ($p=0.414$), socioeconomic status ($p=0.898$), education ($p=0.628$), spouse age ($p=0.126$), child's age ($p=0.913$), child's gender ($p=0.486$), child's grade ($p=0.595$) and total number of children ($p=0.911$). However, it was observed that there was a significant correlation between religion of the patient with Very elevated Inattention score ($p=0.019$). Previous studies have reported that a T score of 60 on CBCL Attention Problems was associated with the optimal level of diagnostic discrimination in paediatric population (Biederman et al. 1993; Chen et al. 1994).^[34,35] Eiraldi et al. also reported that CBCL Attention Problems could be useful for ruling out ADHD at a T score of less than 60 and optimal for ruling in ADHD at a T score of 70.^[37] In our analysis, we did not find any such cut-off for ruling out ADHD.

Biederman et al. (2005) emphasised on the evaluation of total CBCL score to be done for diagnosing ADHD. As per this study, CBCL had high specificity (90%), but generally low

sensitivity to diagnose ADHD.^[38] On the contrary in our results we did not find any significant correlation between the total CBCL score with parents' age ($p=0.703$), relationship with child ($p=0.474$), socioeconomic status ($p=0.690$), religion ($p=0.998$), education ($p=0.994$), spouse age ($p=0.787$), child's age ($p=0.363$) and total number of children ($p=0.099$).

The parenting styles did not show any correlation with the demographic characteristics. It was observed in our study that the correlation coefficient between CPQ and PSS was 0.358, CPQ and CBCL was 0.241, PSS and CBCL was 0.245. This indicates that there was positive correlation between CPQ, PSS and CBCL and was found to be significant for all the three combinations (p value =0.028, 0.034, 0.036 respectively). Study by Moharreri et al recommends the implementation of the Triple P program for parents of children with ADHD.^[39]

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CONCLUSIONS

This study analyzed the parenting styles and parental stress of parents of ADHD children. We also scrutinized the association between parenting styles, parental stress and psychiatric co-morbidities in ADHD children. In addition, we have evaluated the utility of CBCL in diagnosing ADHD in pediatric populations. Results did not find any concrete evidence correlating parenting styles with presentation of ADHD. However, previous studies have shown parenting style to correlate with various characteristics in ADHD children. We however would like to put forward the effectiveness of CBCL as a screening tool to identify cases of ADHD in pediatric population. We conclude that specific scales of the CBCL may help to identify specific comorbidities within ADHD cases in the primary care setting.



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