

## A CROSS-SECTIONAL STUDY ON VARIOUS ASPECTS ASSOCIATED WITH ATTENTION DEFICIT HYPERACTIVITY DISORDERS IN INDORE DISTRICT (MADHYA PRADESH)

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### ABSTRACT

#### BACKGROUND

Attention deficit hyperactivity disorder is the most common neurobehavioral disorder in children estimated to affect 5% - 10% of school-aged children, particularly boys.

Aims and Objectives-

- 1) To study various aspects associated with ADHD,
- 2) To know the variation in disease frequency between sexes.

#### MATERIALS AND METHODS

The present study is a cross-sectional study, conducted in 50 children in 3 public sector tertiary care hospitals of Indore for 4 - 5 months. Written informed consent was to be taken from the parents. The study tool of the study is pre-designed Semi-Structured Questionnaire. Data was entered in excel sheet and analysed using SPSS Software, Chi-square and Fisher exact statistical test was applied wherever necessary.

#### RESULTS

In our study 30% children were 5 yrs. old, 59% children were 6 - 10 yrs. and 11% children were above 10 yrs. old; 88% children were male and 12% were female; 6% children had internet addiction, 24% had videogame addiction, 24% were addicted to TV; 17% children associated with migraine; 35% children associated with childhood head trauma; 6% children associated with complication during pregnancy and 53% children associated with complication during and after delivery; 30% children associated with history of epilepsy and 65% associated with learning disabilities.

#### CONCLUSION

The study shows strong correlation of ADHD and pregnancy and early childhood complications, so parents should be counselled about the possibility of the child developing this disorder and should be advised to contact a psychiatrist if symptoms like attention deficiency and hyperkinesis are observed to promote early treatment.

#### KEYWORDS

ADHD, Children, Psychiatry.

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#### BACKGROUND

Attention deficit hyperactivity disorder is the most common neurobehavioral problem in children, which affects 5 - 10% of school-going children, particularly boys.<sup>1,2</sup> Children are usually diagnosed with ADHD between the ages of seven and nine years, but can sometimes appear as late as age 13 to 15 years.<sup>3</sup> ADHD is characterised by problems like paying attention, excessive activity or difficulty in controlling behaviour, which is not appropriate for a person's age. The symptoms appear before a child is twelve years old and are present for more than six months. The problems must be for at least in two settings like school, home or recreational activities.<sup>4</sup> In children, problems in paying attention may result in decreased school performance.

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Although this causes impairment, particularly in modern society, some children with ADHD have a better attention span for tasks they find interesting. Despite being the most commonly studied and diagnosed mental disorder in children and adolescents, the exact cause of ADHD is unknown in most of the cases. Factors which affect the ADHD are,<sup>5</sup>

- Genes,
- Low birth weight,
- Brain injuries,
- During pregnancy smoking and alcohol use or drug use,
- Exposure of toxins present in environment.

#### Three Sub-Types of ADHD known- Inattentive Type

In this most or all of the following symptoms are present, excluding situations where these symptoms are better explained by another psychiatric or medical condition.<sup>6</sup>

ADHD children are easily distracted, forget things, miss details, frequently switch activities from one to another and have difficulty in maintaining focus on one task. They are easily bored with a task even after a few minutes and have difficulty in focusing attention on organising or completing a task. They have trouble in completing homework,

assignments and they frequently lose things (e.g. pencils, toys, assignments and paper), which are needed to complete tasks or activities.

ADHD children have daydreaming, become easily confused and move slowly. They have difficulty in processing information as quickly and accurately as other children. ADHD children struggle to follow instructions and have difficulty in understanding details and they overlook details.

**Hyperactive Impulsive Type**

In this most or all of the following symptoms are present, excluding situations where these symptoms are better explained by another psychiatric or medical condition<sup>5</sup>:-

ADHD children talk nonstop, keep dashing around, touching or playing with anything they come across. They have trouble in sitting quiet during dinner, in school, doing homework etc. and face difficulty in performing tasks or activities. They are generally impatient and have difficulty waiting for things they want or waiting their turn in games. They blurt out inappropriate words, show their emotions without restraint and act without regard for consequences and often interrupt conversations.

**Combined Hyperactive-Impulsive and Inattentive Type**

These children have 6 or more symptoms of each category. Most children have combined type of ADHD. Diagnosis is primarily clinical using thorough interview of parents and use of behaviour rating scales. During physical examination, primary systemic illnesses should be ruled out. Neuropsychological evaluation using standard tests of general intelligence and educational achievement helps to exclude learning disorders or mental retardation.

Children with ADHD have problems in social interaction due to difficulty in processing verbal and nonverbal language and have trouble in learning social skills. Also, they have problem in forming and maintaining friendships. Most of them experience social rejection by their peers. Although, it causes significant difficulty, many children with ADHD have an attention span equal to or better than that of other children for tasks and subjects they find interesting.

This present study aims to study various aspects associated with ADHD and to know the variation in disease frequency between sexes.

**MATERIALS AND METHODS**

The present study is a cross-sectional study. This study was conducted in 50 children in 3 public sector tertiary care hospitals of Indore for 4 - 5 months. Sampling technique of study was non-randomised selection criteria as per availability of the ADHD children. Appropriate permission was taken from the concerned authority. In our study already diagnosed children with ADHD, children between 0 - 16 yrs. and parents who give consent are included and children aged > 17 yrs. and parents who have not given consent are excluded. Informed consent in written was to be taken from the parents. All the information collected through the questionnaire is kept confidential. The study tool of the study is pre-designed semi-structured questionnaire which assessed the various correlating factors which led to development of ADHD, then Collection and Compilation of data, after that Analysis and Interpretation of data. Data was entered in excel sheet and analysed using SPSS Software, Chi-

square and Fisher exact statistical test was applied wherever necessary.

**RESULTS**

In our study 30% children were 5 yrs. old, 59% children were 6 - 10 yrs. and 11% children were above 10 yrs. old. 88% children were male and 12% were female. 41% children sleep > 8 hrs., 53% 6 - 8 hrs. and 6% children sleep 4 - 6 hrs. 24% children had disturbed sleep pattern and 76% had normal sleep pattern. 6% children had internet addiction, 24% had videogame addiction, 24% were addicted to TV and 46% showed no type of addiction. 17% children were associated with migraine. 35% children were associated with childhood head trauma. 12% children showed role of inheritance. 6% children associated with complication during pregnancy and 53% children associated with complication during and after delivery. 77% children showed delayed speech milestone, 17% showed delayed walking and 6% showed delayed crawling. 30% children associated with history of epilepsy and 65% associated with learning disabilities.

Internet	6%
Videogame/ Mobile game	24%
TV	24
None	46%
<b>Table 1. Percentage of Population showing Internet or Similar Addiction</b>	

Yes	17%
No	83%
<b>Table 2. Percentage of Population associated with Migraine</b>	

Yes	53%
No	47%
<b>Table 3. Percentage of Population associated with Complication during and after Delivery</b>	

Crawling	6%
Speech	77%
Walking	17%
<b>Table 4. Percentage of Population associated with Delayed Achievement of Developmental Milestone</b>	

Yes	35%
No	65%
<b>Table 5. Percentage of Population associated with Childhood Head Trauma</b>	

Yes	65%
No	35%
<b>Table 6. Percentage of Population associated with Learning Disabilities</b>	

	<b>Present</b>	<b>Absent</b>
Male	5	35
Female	4	6
<b>Association of Migraine with ADHD based on Gender Distribution</b>		

Chi-square with Yates correction, p-value is 0.0429 and the test is significant.

	Present	Absent
Male	23	17
Female	7	3
<b>Association of Complication during Delivery with ADHD based on Gender Distribution</b>		

Chi-square with Yates correction, p-value is 0.4704 and the test is not significant.

	Present	Absent
Male	4	36
Female	2	8
<b>Association of Role of Inheritance with ADHD based on Gender Distribution</b>		

Fisher exact test, p-value is 0.3840 and the test is not significant.

	Present	Absent
Male	11	29
Female	4	6
<b>Association of Epilepsy with ADHD based on Gender Distribution</b>		

Chi-square with Yates correction, p-value is 0.4404 and the test is not significant.

	Present	Absent
Male	31	9
Female	7	3
<b>Association of Delayed Speech with ADHD based on Gender Distribution</b>		

Fisher exact test, p-value is 0.6194 and the test is not significant.

The risk factors we found to be strongly correlated are Sleep Disturbance Distraction seeking behaviour, Head Trauma in early childhood, Delivery Complication, Early Childhood Complications and Epilepsy. In presence of these factors, the possibility of developing this disease increase and the outcomes besides the symptoms of ADHD are delay in achievement of developmental milestones and learning disabilities. Although, the presence of sleep disturbance of sleep pattern was noted, whether it is a cause or a result of ADHD is not possible to distinguish from this study. Same is true for addiction to TV, Internet and Video Games.

**DISCUSSION**

ADHD management usually involves combination of counselling, lifestyle changes and medications.<sup>6,7</sup> The study shows strong correlation of ADHD and Pregnancy and Early Childhood Complications. So, parents should be counselled about the possibility of the child developing this disorder and should be advised to contact a psychiatrist if symptoms like attention deficiency and hyperkinesis are observed to promote early treatment. The cases that we studied showed severe symptoms and association with mental retardation

indicating that mild-to-moderate cases of mental retardation remains undiagnosed. Therefore, awareness about this disease (mental retardation) should also be increased, so that mild-to-moderate cases of ADHD will also get diagnosed. In our study the most comorbidity was found to be this followed by anxiety and reading disorder. The other comorbidity determined were conduct disorder, major depression disorder,<sup>8</sup> borderline intellectual functioning, seizure, enuresis, disorders of written expression and mathematics disorder. As ADHD is a major public health problem, therefore further interview-based studies assessing the prevalence and burden of ADHD should be done in our country.

**CONCLUSION**

As the knowledge of ADHD is less in teachers, parents and in our society, ADHD screening should be done on regular basis and routine health check-ups should be done annually in all government and private schools. Counsellors should be present in every government and private school to help students to overcome these types of problems.<sup>9</sup>

As a child with ADHD and comorbidities suffers from multiple handicaps, it is essential to study the comorbidities in detail both cross-sectionally and longitudinally to understand and treat the illness better.<sup>10</sup>

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