



# Prevalence of Attention Deficit Hyperactivity Disorder (ADHD) among School Children of Prayagraj District, Uttar Pradesh

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## Abstract

In India, few studies that are available report prevalence rates of ADHD ranging from 10 to 20%, which is quite alarming. While the Western world is attending to ADHD issue seriously, in India this has not yet received much attention. Children with ADHD are characterized as having poor behavioral inhibition (Barkley, 1997). In India there is very little systematic research in ADHD in children, especially in Prayagraj District. Hence, the present study aimed to find out the prevalence of Attention Deficit Hyperactivity Disorder among School Children of Prayagraj District, Uttar Pradesh. Purposive sample method was used for the sample selection. The sample comprised of children identified by the teachers with ADHD from standard 2<sup>nd</sup> to 8<sup>th</sup> studying in different 15 schools of Prayagraj District of Uttar Pradesh, with an average IQ. 114 children identified with ADHD by the teachers having average IQ were taken for the study. Each child identified by the teacher was individually assessed by using formal tests such as Coloured / Standard Progressive Matrices (Raven 1998, 2000) and ADHD Checklist & Rating Scale (Tripathi & Hasan, 2015). Results suggest that most of the children with ADHD (71.9%) were 12-14 years of age, studying in classes 6<sup>th</sup> to 8<sup>th</sup> (57.9%) and were from nuclear family (64.9%). Out of 2831 children identified by the teachers, only 4.02% (114) children were identified having ADHD. The findings further depicts that the maximum number of children with ADHD (were Males (56.1%). The finding of the research is an indicator that school children need proper attention. It may be useful for the teachers, psychiatrist, counselors and parents for creating awareness in the society and suggesting management strategies to handle such sensitive issues.

**Key words:** Attention Deficit Hyperactivity Disorder,

## Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is a childhood psychiatric condition characterized by symptoms of inattention, hyperactivity, and impulsivity (American Psychiatric Association [APA], 2000). However, children with ADHD apparently react differently to reward and punishment than normally developing children (Luman, Oosterlaan, & Sergeant, 2005). The study of ADHD in children in India is unavoidably necessary since India has the largest child population in the world. In India there is very little systematic research in ADHD in children (Singhi P, Malhi P, 1998).

In India there is very little systematic research in ADHD in children. The few studies that are available report prevalence rates ranging from 10 to 20%. While the Western world is attending to ADHD issue seriously, in India this has not yet received much attention. Children with ADHD are characterized as having poor behavioral inhibition (Barkley, 1997). Their symptoms include poor planning and anticipation, reduced sensitivity to errors, poor organization, impaired verbal problem-solving and self-directed speech, poor rule-governed behavior, poor self-regulation of emotions, and problems developing, using and monitoring organizational strategies. The dominant view on ADHD is an executive dysfunction disorder (i.e., Barkley, 1997), because children with ADHD encounter difficulties with tasks regarding inhibition, working memory, and task-switching (e.g., Geurts, Verte, Oosterlaan, Roeyers, & Sergeant, 2004)

One of the first references to a child with hyperactivity or ADHD (“Fidgety Phil”) was in the poetry of the German physician Heinrich Hoffman in 1865, who penned poems about many of the childhood maladies he saw in his medical practice (Stewart, 1970). ADHD affects an estimated 3% of school-age children. Boys are about three times more likely than girls to be diagnosed with it, though it's not yet understood why. Children mature at different rates and have different personalities, temperaments, and energy levels. Most children get distracted, act impulsively, and struggle to concentrate at one time or another. Sometimes, these normal factors may be mistaken for ADHD. Therefore it is important to realize that symptoms of inattention and hyperactivity –impulsivity must be consistent with the child’s developmental level. The difference with ADHD is that symptoms are present over a longer period of time and occur in multiple contexts. They impair a child's ability to function socially, academically, and at home. A child cannot be diagnosed with ADHD if he only shows symptoms with parents but never with teachers and adults outside the home. Furthermore, the symptoms of ADHD are easy to confuse with other problems—including learning disabilities and emotional issues—that require totally different treatments. The diagnosis of ADHD is a difficult task because there is no single test to determine the disorder.

The purpose of the study was to create awareness amongst parents and teachers and the society as a whole regarding ADHD and the problems that such children have to face due to ignorance on the part of the teachers and parents. The study targeted ADHD children with special emphasis on the need to change the attitude of their stakeholders towards them because such children face punitive measures at the hand of their caretakers. They need to understand the reason behind problem behaviour and to realize that the cure is not in reprimanding them but in understanding the real cause of their behaviour. India's socio-economic status and human development indicators are a pointer to the way children are looked after in this country. In a country where primary needs, such as malnutrition, prenatal mortality and illiteracy are still a grave cause of concern, the mental health of children obviously becomes secondary.

Hence the present study aimed that to identify such problems in children with ADHD to help them persist in the pursuit of future goals.

## Research Methodology

### Sampling Type:

Purposive sample method was used for the sample selection. The sample comprised of children identified by the teachers with ADHD from standard 2<sup>nd</sup> to 8<sup>th</sup> studying in different 15 schools of Allahabad district of Utta Pradesh, India with an average IQ.

### Sample size:

114 children identified with ADHD by the teachers having average IQ were taken for the study.

### Sampling Procedure

Each child identified by the teacher was individually assessed by using formal tests such as Coloured / Standard Progressive Matrices (Raven 1998, 2000) and ADHD Checklist & Rating Scale (Tripathi & Hasan, 2015)

### Tools Used

The following tests were administered on each child identified by teachers :

#### 1. Demographic Information:

The following demographic information was taken by the teachers: aspects Name of the School, Types of School, Medium of School, Socioeconomic status of school, Age, Qualification & Gender of the respondent, Class taught, Strength of class.

**Rationale:** To prepare demographic profile of children with ADHD and their counterpart normal children.

## 2. Standard Progressive Matrices/ Coloured progressive matrices (Raven, 2000)

SPM/CPM was administered to study the intelligence quotient of children with ADHD because only those children who were ADHD as well as intellectually average were selected for cognitive assessment. This was done to keep the homogeneity of the sample.

**Rationale:** To assess the intellectual functions of children with ADHD and without ADHD to maintain the homogeneity of the sample

### Description of the Test

Standard Progressive Matrices was published in 1938 by J.C.Raven. In order to assess the IQ of children identified as having ADHD Standard Progressive Matrices (Raven, 2000) was administered. Standard Progressive Matrices was administered on children of 11 years and above.

## 3. ADHD Checklist & Rating Scale ( Hasan & Tripathi, 2015)

**Rationale:** ADHD Checklist & Rating Scale was used to identify children with ADHD,

### Description of the Test

ADHD Checklist & Rating Scale comprised of 44 items out of which 27 items were those that assessed ADHD symptoms. It was divided into 3 dimensions/areas (1) Inattentive (2) Hyperactive/Impulsive and (3) Combined. Inattentive had 13 items and Hyperactive/Impulsivity had 14 items. The other 17 items which inclined more towards conduct disorder and anxiety disorder was not scraped from the list. These items would indicate co morbidity in children having ADHD disorder. Each item had dichotomous response 'yes or no', the teachers were asked to go through each item carefully before responding on them. If the response was yes then the particular item was to be rated on three point rating scale. The authenticity of the identification on the scale increased since only those items were included that were rated as two or three. Children were labeled as having ADHD only when more than 50% of the items were rated as two or three on three point rating scale.

### Scoring Procedure

For scoring only those checklists were considered which had more than 50% of yes responses. Behaviors were counted if they are scored 2 (often) or 3 (very often).

- **Inattention**

Requires six or more counted behaviors from questions 1–13 for indication of the predominantly inattentive subtype

- **Hyperactivity/ impulsivity**

Requires six or more counted behaviors from questions 14–27 for indication of the predominantly hyperactive/impulsive subtype

- **Combined**

Requires six or more counted behaviors each, on both the inattention and hyperactivity/impulsivity dimensions.

- **Other related disorders** represented from questions 28-44

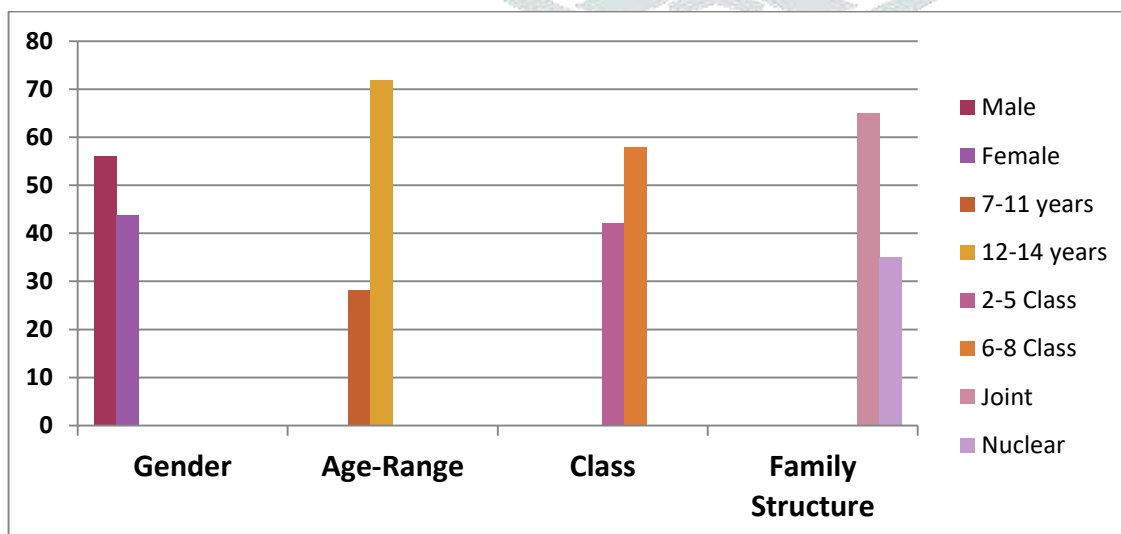
### Administration Procedure of ‘ADHD Checklist & Rating Scale’

After establishing rapport with the teachers the ‘ADHD Checklist & Rating Scale’ was given to the teachers. They were briefed about the purpose and were told that their confidentiality will be maintained. They were further told that their responses will be used for research work only. After convincing them the following instructions were given “Here is a set of questions intended to know about classroom behaviours of problematic children. Each item consists of ‘Yes’ or ‘No’. If you agree with the response, mark yes, and then rate the child on the basis of rating scale. If the behavior occurs sometimes then mark 1, if it occurs often then mark 2 and if it occurs always then mark 3.

## Results & Discussion

**Table No.1: Demographic Profile of Children with ADHD**

Demographic Variables		Frequency	Percentage
Gender	Male	64	56.1
	Female	50	43.9
Age Range	7-11	32	28.1
	12-14	82	71.9
Class	2-5	48	42.1
	6-8	66	57.9
Type of Family	Nuclear	74	64.9
	Joint	40	35.1



**Figure 1: Demographic Profile of Children with ADHD**



Table No. 1 and Figure No. 1 shows the demographic profile of children with ADHD. The findings of the above table depict that that 56.1% of male children have ADHD and 43.9% female children had ADHD. According to the above table it can be inferred that 71.9% children with ADHD were 12-14 years of age and 28.1% children with ADHD were between 7-11years of age. In terms of class, 57.9% children with ADHD were found in classes 6<sup>th</sup> to 8<sup>th</sup> and 42.1% from classes 2<sup>nd</sup> to 5<sup>th</sup>. Most of the children with ADHD (64.9%) belonged to the nuclear family and only 35.1%. children were from joint family.

The present result is in accordance with other studies conducted in India. Behavioral problems have been reported to be high in Indian children belonging to nuclear families by Verghese and his colleagues (1973). Similarly, in a study Venkatesh (2012) et al. found ADHD to be more common in children belonging to nuclear families. In a nuclear family, a child can be affected by anxiety and tension between parents which can result in increased behavioral problems in them.

**Table No. 2: Prevalence Rate of Children with ADHD**

Total Population	Children with ADHD	Percentage
2831	114	4.02

Table No. 2 shows the prevalence rate of children with ADHD. The findings of the table suggest that out of 2831 children, 114 children were identified having ADHD, i.e 4.02%. This finding is consistent with the researchers which clearly report that prevalence estimates was based on a behavioral definition which assesses symptoms shown at a single point of time is found in 10-20% of general population in India and the west. (Bhatia, et al 1999).

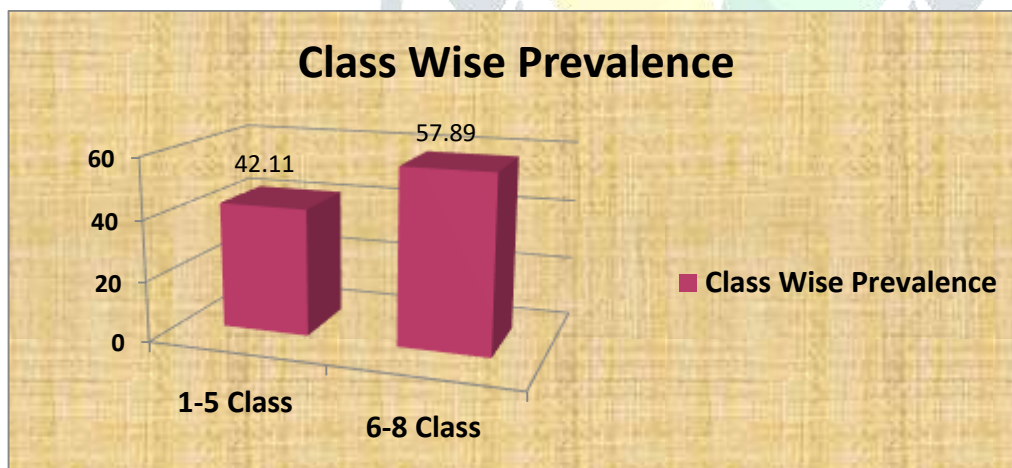
Although ADHD is one of the most common childhood disorders, in the present study the prevalence rate was 4.02% which is showing the trend of previous researches. One of the prominent reasons is that the data of the study is based only on only 15 schools of Pyaragraj District. Another reason may be since ADHD is more prevalent in lower socio economic status as could be inferred from study by Malhi & Singhi (2000) and Palfrey JS, Levine MD, Walker DK, Sullivan M (1985) who stated that ADHD was significantly more common in children belonging to a lower social class. The sample consisted of children belonging to medium level school representing maximum children from medium socio economic status. Children from lower economic status were very few in number. This could be explained by the fact that the children belonging to a lower social class are at an increased risk of having various psychiatric problems, because factors such as complicated pregnancy and parturition, mal- nutrition and exposure to environmental toxins and a greater likelihood of CNS damage are commonly associated with poor socio- economic status. The unhappy family atmosphere, including the parent's marital conflicts and negative or inconsistent parenting increase the risk of hyperactivity accompanied by conduct disorder. Lack of education and poor living standard may be the cause

of the presence of ADHD problems in children. There is a need to cover maximum number of schools for awareness regarding ADHD and for identifying children with ADHD.

It is one of the most prevalent psychiatric disorders in childhood that is estimated to occur in 2–19% of children in the world (Skounti et al. 2007). There is a variation in prevalence of ADHD depending on different informants. Because the reports of informants are the basic tools for diagnosis of ADHD, so clinician must rely on parents' or teachers' subjective opinion. According to Associated Chambers of Commerce and Industry (2011) of India, ADHD prevalence rate in India has increased among boys to 11 per cent from six per cent while among girls it rose to 5.5 per cent from two per cent over the past six years among children. As far as the prevalence of ADHD in children in Allahabad is concerned there are hardly one or two studies. In India in general the sample for the study of ADHD in children has been drawn from those referral cases brought to the clinics.

**Table No. 2: Class-Wise Prevalence of Children with ADHD**

S.No	Class	Frequency N=114	Percentage
1	2-5	48	42.11
2	6-8	66	57.89



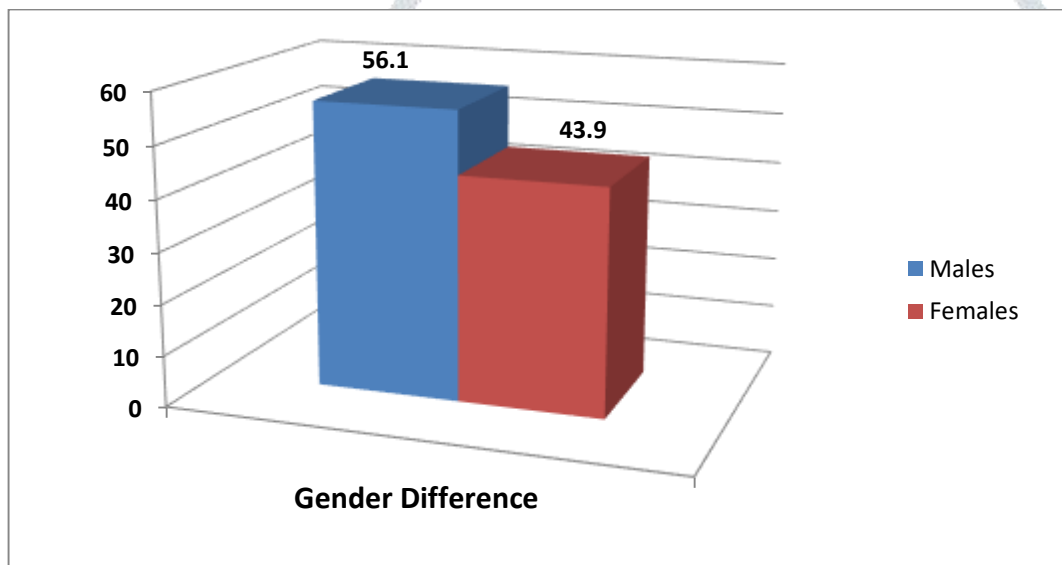
**Figure No. 2: Class Wise Prevalence of Children Identified as Having ADHD**

Table No. 2 and graphical presentation of Figure No.2 shows the frequency and percentage of children in classes 2<sup>nd</sup> to 8<sup>th</sup> which was divided in two groups i.e. 2-5 and 6-8. The findings of the table depicts that the maximum number of children were from classes 6-8 comprises of 66 children with ADHD (57.89%) of the total number of children. The age at which children enter classes 6<sup>th</sup> and above experience biological and psychological changes due to the onset of puberty Malhi & Singhi (2000) stated that the prevalence of ADHD among children aged 3-12 years attending Psychology Outpatient services in the Department of Pediatrics was

8.1%. It is the stage of storm and stress. The behaviours are more prominent and visible which are the causes of ADHD in children. Number of ADHD cases was least in class 2<sup>nd</sup> which is the age of the onset of ADHD in children but still the intensity and frequency of the symptoms may be hidden and not observable or the teacher's perception may be different for such small children and may accept their symptoms as the developmental aspect of children.

**Table No. 3: Gender differences of Children with ADHD N=114**

Gender	Frequency	Percentage
Male	64	56.1
Female	50	43.9



**Figure No.4. Gender Differences in Children Identified as Having ADHD**

The findings of the Table No. 4. and Figure No.4 show that there were more males having ADHD which was 56.1% while females were 43.9% with ADHD. Studies conducted on a large number of Indian children with ADHD by Venkatesh (2013), Mukhopadhyay et al. (2003), Malhi, Singhi (2003) have concluded that ADHD in boys is considerably higher than girls. These studies reflect the real picture of ADHD prevalence in India. In another study conducted by Lesley Jamison inferred that ADHD was much more common among males than females. It is estimated that boys are two to three times more likely to have ADHD than girls. They are up to nine times more likely than girls to be referred for evaluation and treatment. The difference in referral rates between ADHD boys and girls is likely due to ADHD boys having more behavior problems than ADHD girls. Attention-deficit hyperactivity disorder (ADHD) is recognized to exist in males and females (Rucklidge 2010) although the literature supports a higher prevalence in males. Bauermeister, Shrout et al. (2007) found that ADHD was 2.3 times more common in boys than in girls. The



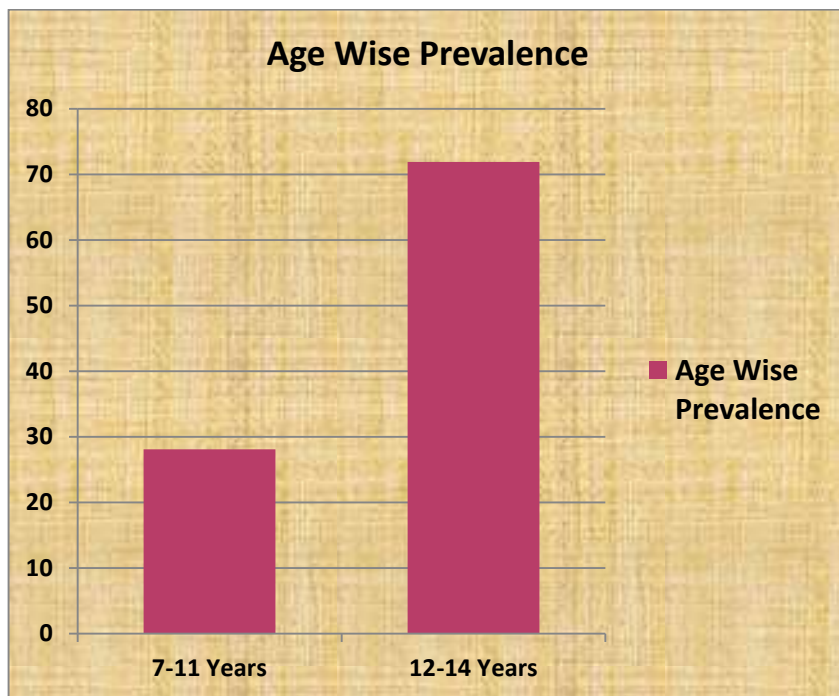
gender differences strengthen the evidence for a biologically based, often genetically transmitted, etiology of hyper-kinetic disorder. Several studies have documented greater incidence of the disorder among boys than in girls both in the western countries and in India as reported by Bhatia, Nigam, Bohra & Malik (1991).

The findings of the mean difference on the basis of the gender of children with ADHD depict significant gender difference between males and female children having ADHD (t-value-15.5, significant at .001 level), which suggests that male children are more prone to ADHD than their counterparts female children. The present result has been supported by the previous studies conducted in the area of ADHD in India and western countries as well. Bhatia, Choudhary & Sidana (1999).

While the epidemiological profile of ADHD has been suggested to be closely linked to maturational development (Nigg, 2006), differences in prevalence rates have also been noted between males and females. Boys diagnosed with ADHD outnumber girls by approximately three to one (Barkley, 2006). This lends the question of whether boys are more often identified as having ADHD than girls because they cause greater behavioral disruptions in the classroom. A study by Shabana Siddiqui (2010) and others in Delhi found that 18% of boys had ADHD whereas only 4% of girls had ADHD.

**Table No. 5: Age Wise Prevalence of Children with ADHD**

Age Range	Frequency N=57	Percentage
7-11 years	32	28.1
12-14 years	82	71.9



**Figure No. 5: Age Wise Prevalence of Children with ADHD**

Table No.5 and Figure No.5 shows the frequency and percentage children with ADHD in two age groups of 7 to 11 years and 12 to 14 years. The table shows that 82 (79.1%) children with ADHD were in the age of 12 to 14 years and 32 (28.9%) were in the age of 7 to 11 years. The findings of the mean difference on the basis of the age of children with ADHD depict significant age difference between children of ages 7-11 and 12-14 years having ADHD (t-value-18.25, significant at .001 level), which also suggests children within age group of 12-14 have more ADHD than children within the age group of 7-11. The prevalence of ADHD was found to increase with age in India (Bhatia, Choudhary & Sidana, 1999) therefore the result was in accordance with the already existing literature. Another example was a study by Malhi P & Singhi P (2000) where the results revealed that the male: female ratio of all children attending the psychology outpatient services was 2.6: 1, whereas the M: F ratio in children with ADHD was 5: 1. The mean age of the children with ADHD was 6 years and 8 months and the Mean IQ was 85 with a range of 72 to 109. The results of the study conducted by Gupta & Kar (2009) indicated that the deficits in control processes accumulate with age in ADHD children.

The problems associated with ADHD appear in different ways at different ages, as the individual matures and as the environmental requirements for sustained self-control increase (Taylor & Sonuga-Barke, 2008). Hyperactivity in a pre-school child may involve incessant and demanding extremes of activity; during the school years an affected child may make excess movements during situations where calm is expected rather than on every occasion; during adolescence hyperactivity may present as excessive fidgetiness rather than whole body movement; in adult life it may be a sustained inner sense of restlessness. Inattention too may

diminish in absolute terms, and attention span will usually increase with age; but it tends still to lag behind that of unaffected people, and behind the level that is expected and needed for everyday attainments.

The reason for more children with ADHD at 12 years and plus may be due to the lack of awareness among teachers and parents. They are unable to understand the seriousness of problems that these children may face but as they grow their problem still persists with increasing severity, the need for attention to their problems. In the presence of proper attention towards these children their problems may be reduced to minimum and help them to deal better with day to day problems. Together these results indicated that the deficits in control processes accumulate with age in ADHD children. Present study favors the conceptual view of ADHD as a stable deficit in cognitive control functions, which are implicated in the pathology of ADHD. These results have theoretical implication for the theories of executive control and ADHD. The finding of the research is an indicator that school children need proper attention. It may be useful for the teachers, psychiatrist, counselors and parents for creating awareness in the society and suggesting management strategies to handle such sensitive issues.

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