Prevalence of attention deficit disorder among preschool age children

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ABSTRACT

Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood onset psychiatric disorders. Although the onset of ADHD is prior to the age of seven years, there is a paucity of data on the prevalence of the disorder in preschool age children. This study was performed to determine the prevalence rate of ADHD in preschool age children in kindergartens of south west, Mumbai. One thousand two hundred fifty (599 males and 651 females) children aged between 4-6 years, were selected from 40 kindergartens in 6 localities in south west Mumbai. The Conner's index questionnaire was completed for each child by teachers and parents. Parents of children whose scores were positive for ADHD (>15) were interviewed by a psychiatrist and the ADHD was diagnosed based on DSM-IV criteria Schedule for affective disorders. One hundred fifty two (12.2%) children were diagnosed to have ADHD. The prevalence of ADHD in preschool age school in south west of Mumbai is consistent with previous studies in other countries. This study recommends the need for diagnosis and treatment of ADHD in preschool age children.

Keywords: Attention deficit hyperactivity disorder, preschool age, prevalence.

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood onset psychiatric disorders[1] that affects 2.0-14.0% of school age children.[1,2] Attention deficit hyperactivity disorder is characterized by an age inappropriate level of inattention with or without motor over activity and impulsivity in social, academic and occupational spheres.[3] Boys are more commonly affected by ADHD than girls and the male: female ratio is approximately 3:1 to 4:1.[4,5] The onset is usually by three years of age but the diagnosis is not made until the child is in elementary school.[6] Based on DSM-IV criteria, it has been estimated that one-third of children referred to psychiatric clinic are diagnosed as having ADHD. Although the onset of ADHD is usually prior to the age seven years, there is a paucity of data on the prevalence of disorder in preschool children.[7-10] To meet the diagnostic criteria, the symptoms must appear in atleast two contexts, be present for six or more months, occur before 7 years of age and there should be significant social or functional impairment.[6] According to previous studies, the prevalence rate in preschool children is between 2.0% and 18.2%.[10-12] Recent reports highlight behavioural, social, familial and academic difficulties in preschool age children with ADHD as compared to other children [13]. An Indian study found 40.0% of children with ADHD to have comorbid disorder.[14] Comorbid conditions include Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), and affective, anxiety and learning disorders.[15] Evaluation of the prevalence of ADHD in preschool age children can help clinicians to consider the diagnosis of ADHD and related disorders. The purpose of this study was to determine the prevalence of ADHD in the preschool population in south west Mumbai.

PATIENTS AND METHODS

Forty kindergartens were selected from five areas of south west Mumbai after the consent of parents and teachers. The study was conducted from January 2007 to January 2008. One thousand two hundred and fifty (599 males and 651 females) children aged between 4 and 6 years were selected. Teachers and Parents of these children were asked to complete a Conner's index questionnaire for each of these children. Score of 15 was assumed as the cut-off point and those with scores >15 were considered positive.

Parents of children with positive screening tests were invited to participate in the next step during which parents and their children were interviewed directly in a semi-structured interview according to Schedule for

Table-1: Prevalence rate of ADHD by gender

	ADHD		NON-ADHD		P value
	n	%	n	%	
Male	114	19.03	485	80.9	P<0.001
Female	38	5.8	613	94.2	

The chi square test statistic is 50.846 and p value<0.001

CONNERS TEACHERS RATING SCALE

Child's Name:_____ Age_____(yrs)

Teacher:_____ Gender_____

Please rate the child twice daily - once at the end of the morning and again at the end of the school day - for 5 consecutive days (not necessarily in the same week). Please base your ratings on current observations, not past impressions, etc. After the initial ratings, the form may be used again to monitor progress on a weekly or monthly basis. Thank you for your cooperation.

Please enter a cross (X) in the square that best describes the degree of activity of the child's behaviour. Please ensure that you respond 39 behaviors.

Table-2: Conners teachers rating scale

		Observation	Not at all	Just a little	Pretty much	Very much
Classroom	1.	Constantly fidgeting				
	2.	Hums and makes other odd noises				
	3.	Demands must be met immediatly, easily frustrated				
	4.	Coordination poor				
	5.	Restless or overactive				
	6.	Excitable, impulsive				
	7.	Inattentive, easily distracted				
	8.	Fails to finish things he starts, short attention span				
	9.	Overly sensitive to criticism				
	10.	Overly serious or sad				
	11.	Daydreams				
Groups	12.	Sullen or sulky				
	13.	Cries often and easily				
	14.	Disturbs other children				
	15.	Quarrelsome				
	16.	Mood chamges quickly and drastically				
Attitude towards authority	17.	Acts "smart"				
	18.	Destructive				
	19.	Steals				
	20.	Lies				
	21.	Temper outbursts, explosive, unpredictable behaviour				
	22.	Isolates himself/herself from other children				
	23.	Appears to be unaccepted by group				
	24.	Appears to be easily let				
	25.	No sense of fair play				
	26.	Appears to lack leadership				
	27.	Does not get along with opposite sex				
	28.	Does not get along with the same sex				
	29.	Teases other children or interferes with their activities				
	30.	Submissive				
	31.	Defiant				
	32.	Impudent				
	33.	Shy				
	34.	Fearful				
	35.	Excessive demands for teacher's attention				
	36.	Stubborn				
	37.	Overly anxious to please				
	38.	Uncooperative				
	39	Attendance problem				

Affective Disorders. The diagnosis for ADHD was also made by direct interview based on DSM-IV diagnostic criteria. Interview was also conducted by a psychiatrist. To compare the prevalence of ADHD in boys and girls, Chi square test was used. A statistical significance was $P < 0.001$.

RESULTS

We found 152 children with ADHD, with a prevalence rate of 12.2%. The prevalence was 19.03% (n=114) in boys and 5.8% (n=38) in girls ($P < 0.001$) (Table-1)

Table-2 Conners Teachers Rating Scale

Table-3 Conners Parent rating Scale

DISCUSSION

This study examined the prevalence of ADHD in a community sample of 1250 preschool children in south west, Mumbai. Although a prevalence of 12.2% is consistent with some previous studies on community samples of preschool age children in some countries, it is different with others.[12,14,16] In Germany; researchers reported a prevalence of 9.6% at the age of five years.[14] Shealy estimated prevalence between 3.0% and 20.0%, depending on the age, the criteria and the instruments used for evaluation of ADHD.[16]

The diagnosis of ADHD in young children is a real challenge as the core symptoms are common daily behaviours of most preschoolers. The diagnosis is essentially clinical and DSM IV criteria emphasize that the behavioural symptoms must be pervasive, chronic and cause significant impairment. It is important to differentiate preschoolers with ADHD from preschoolers with annoying behaviour problems. Caution must be exercised by the clinician, as there are problems both with over-diagnosis and under-diagnosis.[17] ADHD may be culture dependent; what is considered abnormal in one culture may be acceptable in another. For instance "to talk excessively;" intuitively, parents decide what "excessively" means according to their own culture.[18,19] Many of these children have associated difficulties including sleep problems, toilet-training difficulties and speech delay which further reduce the parent's ability to cope in raising a child.[20] Many of the young ADHD children lag behind in basic academic skills such as pre-reading abilities and simple mathematical concepts making early school years difficult. Thus there is no reason to assume that treatment of preschool age children with ADHD should be any less aggressive than school age children.[21] ADHD children require a multiple modality management approach including counselling, behaviour management and medication to manage the core symptoms and associated problems. Counselling involves educating parents about the disorder and its treatment. Since little is known about the age specific response to treatment and the long term safety effects, clinicians should consider all options until further research results are available.

Our results also propose the need for national schedules for screening, early diagnosis and treatment of ADHD in preschool age children. One must consider certain limitations in our study. In this study, we got to interview only one parent (either mother or father) which might have led to a bias. A temperamental constellation consisting of high activity level, short attention span, and poor listening skills, though in the normal range of expectation for a child's age should be considered. The cardinal symptoms of ADHD in preschool age children are difficult manly because of the overlapping features of a normally immature nervous system. So, some of these children probably wont later fulfil all the criteria for ADHD. Despite limitations, our results showed that the prevalence of ADHD in preschool age children is as high as in school age and clinicians should consider it so that further damage can be minimised.

Table-3: Conners parent rating scale

Name: Date:	Not at all (0)	Just a little (1)	Pretty much (2)	Very much (3)
Restless and overactive				
Excitable, impulsive				
Disturbs other children				
Fails to finish things.				
Short attention span				
Constantly fidgeting				
Inattentive, easily distracted				
Demands must be met immediately				
Easily frustrated				
Cries often and easily				
Mood changes quickly and drastically				
Temper outbursts, explosive and unpredictable behavior				

Teacher rating scales provide necessary information about the child in the school setting. The teacher also becomes a secondary informant who can judge the behaviour of the child in the context of his peers.[22] Teacher rating scales on average are more reliable than parent rating scales and tend to be more sensitive to hyperactive behaviours.[23] All ratings scales have some problem with reliability and validity; however, when combining multiple aspects of evaluation, ratings scales are proven to be a useful tool in establishing the presence of symptoms, their onset and duration, pervasiveness, and their statistical deviance compared to a normal child of the same age.

Rating scales are a valuable tool in the assessment of ADHD; however, there are many factors that can affect the reliability and quality of a rating scale.[24]

Attention deficit hyperactivity disorder is a commonly diagnosed behavioral disorder of childhood that represents a costly major public health problem. Children with ADHD have pronounced impairments and can experience long-term adverse effects on academic performance, vocational success, and social-emotional development which have a profound impact on individuals, families, schools, and society. Despite progress in the assessment, diagnosis, and treatment of ADHD, this disorder and its treatment have remained controversial, especially the use of psycho stimulants for both short- and long-term treatment. A more consistent set of diagnostic procedures and practice guidelines is of utmost importance. The lack of integration with educational services is substantial barriers and represents considerable long-term costs for society. The mainstay of evaluation of ADHD continues to be a meticulous history.

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