

Study of the Prevalence Rate of Attention Deficit/Hyperactivity Disorder Among Primary Schoolchildren in Karbala.

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Abstract: Attention Deficit Hyperactivity Disorder (ADHD) is one of the most prevalent neurobehavioral disorders in children and adolescents. It involves a consistent pattern of inattention, overactivity, and impulsivity that is severe, persistent (for at least 6 months), pervasive (impacts more than one area of functioning), and debilitating, and requires long-term treatment. The purpose of this study was to measure the prevalence of ADHD among 1st-class primary school children in Karbala, compare the findings of this study with other studies conducted in other parts of the world, and to correlate ADHD with sociodemographic variables (sex, rural/urban, and parent education). The survey was conducted in eighteen primary schools; 1550 children aged 6-10 in Karbala was involved in the survey, and an 82-day survey was carried out from November 2, 2025, to January 22, 2026, in two stages. The first stage (screening stage) involved screening the total sample of children (1550 children) using a "teacher's questionnaire" to identify possible cases of ADHD among the children, and a second (assessment) stage was done using a "semi-structured parent's questionnaire" based on the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria for diagnosis of ADHD. The findings revealed that the prevalence of ADHD was 5.1% among primary school children, which was higher in males than females, in the last-born, and among children of uneducated parents, and in the suburbs compared to rural areas. This rate was compared to that of other regions of Iraq and other parts of the world, and reasons explaining the differences were discussed. This study suggests the prevalence rate of ADHD among school children in our country is comparable to that of other neighbouring countries and countries elsewhere in the world and that there are certain factors such as sex, lack of education on both sides, and last-born children that have an additional risk of developing ADHD and should be highlighted as a need for treatment.

Keywords: Attention Deficit Hyperactivity Disorder (ADHD), Inattention, and Hyperactivity

Introduction

Preschoolers, children, adolescents, and adults across the globe experience Attention Deficit Hyperactivity Disorder (ADHD), in which there is a consistent pattern of shorter-than-usual attention span and increased impulsivity or hyperactivity [1]. There is strong evidence for a biological basis of ADHD, based on family history, genetic testing (genotyping), and studies of brain imaging [2].

It's a legitimate diagnosis, and it's the most prevalent Behavioural problem affecting children. Symptoms are generally context-dependent within a particular context. The person may have very few symptoms when the disorder is associated with frequent behavior rewards, close supervision, a new environment, particularly interesting events, external stimulation (depending on, e.g., electronic devices), or with one-to-one interaction (e.g., the clinician's office [3]

ADHD is a comorbid condition with many psychiatric disorders, externalizing (e.g., oppositional defiant disorder, conduct disorder) and internalizing (e.g., depression, anxiety), as well as with bipolar disorder, and has a familial tendency. In some cultures [4, 5], ADHD is underdiagnosed, and a large proportion of children with impairments related to ADHD are not getting the best care. Children with ADHD tend to have worse performance in school and are more likely to have learning disorders than other children. This can lead to tutoring and/or special classroom placement. They are also required to repeat a grade at times. They struggle with executive functioning, evidenced by poor planning, working memory, verbal fluency, and motor sequencing. Cognitive weaknesses in children with ADHD are in areas that require logical thinking, reasoning, and common sense [6].

Symptoms of ADHD tend to surface by age 3 years, but most often it is diagnosed when the child is at school, typically in preschool or kindergarten, where the teacher has information about how well the child focuses compared to other children of the same age, and how impulsively. [7] ADHD accounts for 30%–50% of referrals for mental health services for children, and estimates of the prevalence of ADHD vary according to the criteria for diagnosis, where DSM-IV-TR estimates rates of ADHD to be between 3% and 7% in school-age children, although it has been reported to range from 1.9% to 14.4%.

The rates are, however, lower in ICD-10 diagnosis (1-2%), and true differences exist across rating scales. Furthermore, prevalence rates differ from country to country and region to region and age to age for ADHD [8]. The prevalence rate among primary school children in Saudi Arabia in 2010, based on teachers and parents, was 2.7% for ADHD as defined by the DSM-IV. In Turkey [9], the prevalence rate of school children with ADHD based on the DSM-IV is 8.1% according to a study. The prevalence in Tunisia [10] was 9.94% and mainly of mixed type; children from 1st to 5th year of basic education were assessed using the Conners scale both by teachers and parents, then diagnosed using the criteria of the DSM-IV-TR. The combined type was diagnosed more in intermediate elementary school-age children, and the inattentive type was more frequent in middle and high school. The prevalence of ADHD is higher in boys than girls, with a ratio of about 2:1 in children and 1.6:1 in adults. Clinic samples are typically skewed towards boys (usually 9:1), a possible reflection of the fact that the combined type of ADHD is more likely to be disruptive in boys and hence referred for treatment [11, 12].

Methods

An epidemiological survey of two stages was conducted in Karbala, randomly selected 18 primary schools distributed almost across all areas of the city from November 2, 2025 to January 22, 2026. The study directorates of education in Karbala gave permission to carry out this study. One of their parents or a close relative was called to be seen with their children. Children in the first grade of primary schools and their parents have given permission for first class children to attend school in Karbala. The exclusion criteria, intellectual disability or any brain damage,

severe hearing or visual impairment, epilepsy, severe physical disability, the ADHD criteria which only occur during the course of schizophrenia or another psychotic disorder, and these which are better explained by another mental disorder.

Forty teachers working in these schools were trained on the use of the teacher questionnaire, which is easy to apply and has been used in previous research. The questionnaire is in the form of direct questions to the class teacher on evidence of hyperactivity, attention deficit, or both. The teachers in these eighteen schools were able to identify 130 suspected cases (have several criteria i.e., 3 criteria and more) out of a total sample of 1550 (i.e., 8.3%) to have the disorder. One hundred thirty children were assessed, and one of their parents or a close relative was asked to come and be seen with the children; with suspected children who have ADHD recorded on the 1st stage those children were involved in the 2nd stage of the assessment.

To avoid the complications associated with the above-mentioned problems, the research did a physical and neurological examination and a basic assessment of intelligence to rule out intellectual disability and determine ADHD in a relatively normal child population. A semi-structured parent questionnaire (based on the DSM-5, American Psychiatric Association 2013) for the diagnosis of ADHD was used, in addition to recording sociodemographic data.

For analyzing the data, the computer facility of the available software package SPSS (Statistical Package for Social Sciences) version 22, IBM, US was used. Data was presented as frequency and percentages, while these differences were analysed for significance using the Pearson Chi-square test at ≤ 0.05 level of significance.

Results

Table 1. Breakdown of total sample by sex and age (children involved in the study).

	Male	Female	F: M	Teacher recorded (Evidence of ADHD)	Male	Female	M: F
Number:	769	781	1.01:1	130*	79	51	1.55:1
Percentage:	49.61	50.39		8.38	60.77	39.23	

Table 2. First-stage (screening stage).

Age Sex	6 years		7 years		8 years		9 years		10 years		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male	614	39.61	132	8.51	17	1.59	6	0.38	0	0	769	49.61
Female	585	37.74	126	8.12	46	2.96	19	1.22	5	0.32	781	50.39
Total	1199	77.35	258	16.64	63	4.06	25	1.61	5	0.32	1550	100.00

Table 3. Children (No.130) involved in the assessment stage.

Age (year)	Suspected by teachers				Non suspected by teachers			
	Sex		Total					
	Male		Female					
	No.	%	No.	%	No.	%	No.	%
6	39	30	26	20	65	50	1134	79.85
7	29	22.30	13	10	42	32.30	216	15.21
8	7	5.38	9	6.92	16	12.30	47	3.30
9	4	3.07	2	1.53	6	4.61	19	1.33
10	0	00	1	0.76	1	0.76	4	0.28
Total	79	60.76	51	39.23	130	100.00	1420	100.00

Table 4. Presentation of ADHD according to DSM-5 sex distribution (No. 80).

<i>ADHD presentation</i>	<i>No .of cases</i>			<i>% in ADHD children (No 80)</i>	<i>% in total population (No. 1550)</i>
	<i>Male</i>	<i>Female</i>	<i>Total</i>		
<i>Inattention</i>	12	7	19	23.75	1.22
<i>Hyperactivity</i>	15	6	21	26.25	1.35
<i>Combined type</i>	27	13	40	50	2.58
<i>Total</i>	54	26			
<i>(%)</i>	(67.5)	(32.5)	80	100.00	5.16

Table 5. Presentation of ADHD by age, sex, and distribution (No. 80).

Age	inattention		Hyperactive		combined		Total	
	Male	Female	Male	female	Male	Female	No.	%
6 Years	3	3	6	4	15	5	36	45
7 Years	6	3	7	2	9	3	30	37.5
8 Years	2	1	1	0	2	3	9	11.25
9 Years	1	0	1	0	1	2	5	6.25
TOTAL	12	7	15	6	27	13	80	100%

Table 6. Define the variability within all families.

variability		No.	%	total
Birth rank	First born	16	20	80
	Middle born	26	32.5	
	Last born	38	47.5	
living	urban	22	27.5	80
	Suburban	35	43.75	
	rural	23	28.75	
Martial state	Still married	73	91.25	80
	Divorced	4	5	
	Death of one parent	3	3.75	
Level of education	educated	31	38.75	80
	uneducated or illiterate	49	61.25	

Discussion

The study showed that the prevalence rate of ADHD among primary school children of Karbala is 5.16%. The findings of this study is parallel to the studies conducted in Iran, which reported prevalence rates of 5.9%, 5.3%, and 6%, respectively, and is significantly lower than the prevalence reported in Turkish studies [13], [14], [15]. As per a Pakistani study, the prevalence rates were 8.1%, 8.7%, 7.6%, and 8.1%, which are much lower than the Indian studies, where the prevalence rates were reported as 9.7%, 9.94%, and 13.68%. This is, however, higher than the rates reported by the Suadi study, which reported prevalence rates of 2.7% [16], with the exception of the differences in the prevalence rates of ADHD in this study compared to other studies [17, 18] in other parts of the world, which seem to be due largely to variations in diagnostic and methodological approaches.

Indeed, one of the study's considerations may provide other explanations for this difference, which is the use of the criteria of diagnosis in the DSM-5, making the requirement to have several symptoms in each setting more stringent, which clearly impacts the number of children

participating in screening at the first stage, with a rate of 8.3% in this study, and 10.5% in another study in Iraq [19]. This decrease in the number of children involved in the screening stage led to a decreased number of children involved in the assessment stage and, lastly, may have affected the prevalence rate in this study. In this study, there is a difference in the rating of the prevalence of ADHD between parent and teacher, which is likely due to the different environments in which they observe the child.

The study included a boy-to-girl ratio of 2:1, with previous studies showing a similar ratio in the general population, in which ADHD occurs more commonly in males than in females, with a ratio of 2:1 in children and 1.6:1 in adults. This study shows that 2.58% (40 of 1550) of children with ADHD presented with both combined and inattention-hyperactive types of ADHD, and 1.35% (21 of 1550) of children with ADHD presented with hyperactive type only and 1.22% (19 of 1550) presented with inattention type only (5.1% total) [20]. A few studies [21 – 24] showed that the combined sub-phenotype is the most prevalent in both genders. In this study, most of the ADHD children were the last born in birth order (47.5%). Technical practice (in the study) is also likely to differ, as the 2nd child in the 2-child family may be regarded as the last child in the family, and the 3rd child in the 3-child family may be regarded as the last child in the family.

35 children with ADHD (43.75%) lived in the suburbs in this study. The high percentage might be due to the poor socioeconomic condition of these families in these areas (some studies) [25, 26]. In this study, most of the ADHD children were living with two-parent families (73, 91.25%). This percent was similar to that of the other studies (94.5%).

The findings of this study also indicate that ADHD was more prevalent among children whose parents were uneducated or illiterate, which may be attributed to a deficiency in the skill of the parent to deal with ADHD children [27], and therefore, the need to educate their children in survival skills instead of emphasizing encouraging quiet behaviours, but this finding is compatible with those found in other studies.

Conclusion

ADHD is a syndrome of the childhood neuropsychiatric disorder and has been studied extensively in various world countries, and is present in our country, and its prevalence rate among school children of Karbala is comparable with neighbouring countries and other countries of the world, and it is more prevalent among boys than girls. The most common presentation of ADHD was the combined presentation, followed by the hyperactive presentation and the inattentive presentation. In this study, most of the ADHD children were living in suburban areas and with two-parent families, and ADHD was more common among children with an uneducated or illiterate mother or father and in last born children in the family.

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