

Prevalence of Attention Deficit Hyperactivity Disorder among Primary School Children in Tikrit City, Iraq

Rafi Khaleel Al-Ani,^{1,*} Mahmood M. Al-Sumiadai,¹ Abdalkadir I Abdulla,² and Ashoor R. Sarhat³

¹Department of Pediatrics, Al-Ramadi Maternity and Children Teaching Hospital, Anbar Health Directorate, Anbar, Iraq.

²Department of Pediatrics, Tikrit Maternity and Children Teaching Hospital, Salahaldeen health directorate, Tikrit, Iraq.

³Department of Pediatrics, Collage of Medicine, Tikrit University, Tikrit, Iraq.

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ABSTRACT

Background: Attention-deficit/hyperactivity disorder (ADHD) is the most widely recognized neurobehavioral problem of children, which can interfere with the social and academic level.

Objectives: To detect the prevalence of ADHD among primary school students in Tikrit city, Iraq, and to find the effect of the disease on school performance.

Materials and methods: A cross-sectional study was done among students in 6 primary schools for boys and girls during the studying year 2012-2013. The criteria of diagnosis were done according to the American Psychiatric Association. Students who fulfill the criteria were included and the following parameters were studied including age, gender, family history, mother education, socioeconomic status of the family, and school performance.

Results: The prevalence rate of ADHD in this study was 8.67%. Boys were mostly affected (65%). Most of them were under 9 years old (49%). Inattention subtype was mostly found in this study (38%) followed by combined (34%) and then hyperactive (28%). Positive family history was found in (43%) of cases. The education level of their mothers was intermediate or secondary school level (37%). The majority of the cases were from the middle socioeconomic status (53%). Poor school performance was seen in 69% of the cases.

Conclusion: ADHD is a big problem among students of primary schools in Tikrit city with a significant effect on the academic state.

Keywords: Primary school children; Attention deficit hyperactive disorder; Prevalence.

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INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a disorder described by hyperactivity, inattention, and impulsivity symptoms, influencing children's overall economic, ethnic, and territorial groupings [1, 2]. ADHD is a common neurodevelopmental disorder occurring in children around the world with a prevalence that ranges from 2.2-17.8% [3]. Evidence suggests that there is no single factor that determines the expression of ADHD [4].

Children with ADHD typically exhibit a behavior that is classified into three types predominantly inattentive,

hyperactive-impulsive type, and combined type according to the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders) criteria [5]. An affected child must exhibit several characteristics to be clinically diagnosed as having ADHD. The DSM-5 criteria express that the behaviors should be developmentally inappropriate (substantially not the same as that of other offspring of a similar age); must start before 12 years old, must be available for 6 months in minimum, must occur in 2 or more settings and reported as such by independent observers, and lastly, the problem is not caused by other diseases [5].

The condition should be differentiated from other problems as migraine and tension headaches, absence epilepsy, sleep disorders, adjustment disorders, hypothyroidism, hearing problem as well as vision problem, which can impair childhood attention and academic state [6, 7]. The first objective was

* Corresponding author: E-mail: drrafi2015@gmail.com
Phone number: +9647817670388

to detect the prevalence of ADHD among primary school students in Tikrit city, Iraq. The second one was to find the effect of the disease on school performance.

MATERIALS AND METHODS

A cross-sectional study was conducted during the studying year 2012-2013, to evaluate the prevalence of ADHD in primary school students in Tikrit city after taking permission from the general director of the education in Tikrit city, Iraq.

The study was done after visiting different primary schools for boys and girls. Each involved student was assessed by a prepared questionnaire that contained the criteria for the diagnosis of ADHD, according to the American Psychiatric Association [5]. The ADHD criteria have 18 items including 9 for inattention type, 9 for hyperactive, and that all of these items are used for combined type. Children who collect scores of ≥ 6 on the "inattention" were regarded to have an inattentive subtype of ADHD. Children who collect scores of ≥ 6 on the "hyperactivity-impulsivity" were regarded to have the hyperactive subtype, whereas children who collect scores of ≥ 6 on both inattention and hyperactive items were considered to have a combined subtype. Patients with chronic illnesses like epilepsy, vision problems, hearing problems, and a history of abnormal sleep patterns were excluded from the study.

All students who fulfill the criteria a list of questions and information were taken from the direct teacher about the needed information as age which was divided into three groups: 6– < 9, 9– < 11, and ≥ 11 years, gender, and school performance depending on teacher assessment and student marks.

Another information was indirectly or directly taken from the family. It was indirectly sent a paper with their child and received it the next day. The direct way was by taking the mobile number and speaking with the family about the education level of the mother (illiterate, primary, intermediate, secondary school or college), the economic status of the family (poor, intermediate or rich) depending on the income of the family, family number, if the family lives in their own house or not, family history of the same condition, and inquiry about the presence of clinical conditions that might mimic ADHD symptoms or include in the differential diagnosis of ADHD which include sleep pattern, seizure activity, hearing and vision problems, migraine or tension headache or any chronic disease which can interfere with academic progress. The study was approved by the Iraqi Board of Medical Specialization.

The gathered data were checked for exactness and fulfillment and the Statistical Package for Social Sciences (SPSS) version 17 was used for statistical analysis. A chi-squared test was used to compare the categorical variables and a p-value level of < 0.05 was regarded as a statistically significant difference.

RESULTS

Six primary schools were involved in the present study, three of them for boys and three for girls. The total number of students in these schools was 1026, the number of students who fulfilled the criteria for the diagnosis of ADHD was 89 (8.67%) as shown in Figure 1.

Most of the cases of ADHD were boys 58 (65%), girl's number was 31 (35%) and the male to female ratio was 1.87:1. Inattention ADHD subtype was the most common type 34 (38%), followed by hyperactive 30 (34%), and combined type 25 (28%) as shown in Table 1.

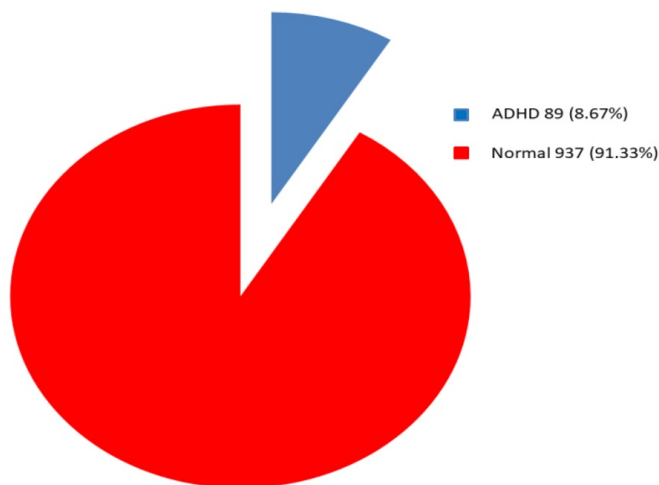


Figure 1. Distribution of 1026 primary school students.

Regarding age distribution of cases, 44 cases (49%) fall in the age group 6– < 9 years, 24 (27%) in the age group 9– < 11 years, and 21 (24%) in the age group ≥ 11 years. Positive family history was reported in 38 (43%) of cases, as explained in Table 1.

Regarding the effect of maternal education on the prevalence of ADHD, most cases with 33 (37%), were reported in intermediate/secondary school level, followed by the university level with 31 (35%) and only 25 (28%) were in the illiterate/ primary level. As shown in Table 1.

Concerning the economic status of families, 47 cases (53%) belonged to the middle socioeconomic level, 29 cases (32%) belonged to high economic status and only 13 cases (15%) belonged to the poor economic status, as shown in Table 1.

Most of the studied cases had school problems and underachievement 61 cases (69%) as shown in Figure 2.

DISCUSSION

ADHD is one of the most common mental issues among kids and teenagers which may prompt pessimistic results, such as educational dysfunction and individual and social disconnections if not treated. As the psychiatric co-morbidities are also

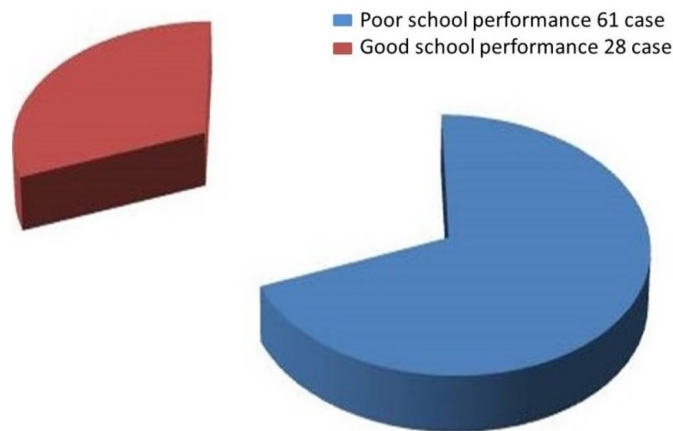


Figure 2. School performance among ADHD students.

Table 1. Distribution of ADHD types of intervals by gender, age group, family history, maternal education level, and socio-economic status of the family.

Variables	Type of ADHD			Total N (%)	P-value
	Inattention N (%)	Hyperactive N (%)	Combined N (%)		
Gender					
Boys	13 (22.41)	26 (44.82)	19 (32.77)	58 (65)	0.013
Girls	21 (67.74)	4 (12.9)	6 (19.36)	31 (35)	
Total	34 (38)	30 (34)	25 (28)	89 (100)	
Age group					
6– < 9 years	18(41)	14(32)	12(27)	44(49)	0.0127
9– < 11 years	8(33)	10(42)	6(25)	24(27)	
≥ 11 years	8(38)	6(29)	7(33)	21(24)	
Total	34(38)	30(34)	25(28)	89(100)	
Family history					
Positive	15(39.5)	12(31.5)	11(29)	38(43)	0.168
Negative	19(37.5)	18(35)	14(27.5)	51(57)	
Total	34(38)	30(34)	25(28)	89(100)	
Maternal education level					
Illiterate/primary	14(56)	7(28)	4(16)	25 (28)	0.557
Intermediate/secondary	12(36.5)	13(39.5)	8(24)	33(37)	
College	8(26)	10(32)	13(42)	31(35)	
Total	34(38)	30(34)	25(28)	89(100)	
Economic state					
Poor	5(38.5)	3(23)	5(38.5)	13(15)	0.0006
Intermediate	19(40)	17(36)	11(24)	47(53)	
Rich	10(34.5)	10(34.5)	9(31)	29(32)	
Total	34(38)	30(34)	25(28)	89(100)	

more common among ADHD patients, the significance turns out to be substantially more recognizable [8]. Our results were showed that 69% of the students had educational problems.

The prevalence of ADHD among primary school in this study was 8.67 %, this percentage was lower than what was reported in Iran with (9.8%) [9], and Saudi Arabia with (11.6%) [10]. In contrast, the percentage in our study was higher than what is reported in the United Arab Emirates (4.1%) with [11]. However, the prevalence of ADHD in the general population was 2.2-17.8% [3]. The differences between the prevalence in the previously mentioned studies may be attributed to the difference in their sample size, use of different criteria for the diagnosis, and may also due to the difference in the behavior of society among countries.

The inattention subtype of ADHD was the most frequent one reported in the present study. This result was similar to the study by Zorlu et al. from Turkey [12]. However, a study from Jordan [13] has reported that the combined subtype was more frequent than others. The hyperactive subtype has been reported as the highest in a study from Egypt [14]. These differences may due to the varying assessments of the predominance of ADHD around the world, method of study, diagnostic criteria, size of the sample, and social observations.

The result of the study was revealed that the prevalence rate of ADHD was higher in boys than in girls, this result was similar to many other studies that have been conducted in Qatar [15] and Germany [16]. It is reported that this distinction between boys and girls may reflect either a difference in child genetic susceptibility or that girls with ADHD are less likely to be diagnosed than boys. However, the basic mechanism that causes ADHD is as yet not completely comprehended till now and it was understudying [17]. Most

of the cases were from a younger age group, a similar result has been obtained in Egypt [18]. This may be attributed to the fact that hyperactivity manifestations decline with age given formative patterns toward poise. However, inattentive symptoms don't seem to have a comparable developmental advantage and in general, it will stay constant into adulthood [19]. A family history of the same condition in this study was found in 43% of cases. Other studies [20, 21] also proved that ADHD tends to run in families. Researchers also showed that around 32% of siblings of affected children are likewise liable to carry the same problem [22].

Most mothers educational levels for students with ADHD were in the intermediate and secondary school educational state. This finding is in contrast with the study in Sweden [23], which has shown that most reported cases were in low educated mothers. This study and other studies in the same field have been explained the correlation between the mother level of education and the parenting style and skills, in which low educated mothers had less successful child-rearing styles and may give a less organized condition, leading to worsening of ADHD manifestations [24]. The difference from our study may reflect the situation of the community, in which most of the mothers' educational level lays in the intermediate one.

Most of the reported cases in this study were from intermediate economic status. Studies in Bahrain [25], and Germany [26] have been shown that children belong to families with low economic status were more likely to have ADHD symptoms than those belonging to rich families. Researchers have been suggested that students derived from disadvantaged economic families are at more risk of negative outcomes during their life than their friends. The exact mechanisms in which economic state relates to different health outcomes in chil-

dren is still unclear [27]. In this study, the high results of the middle economic state may reflect the situational state of the community as most of the population may from the middle economic state.

Poor school performances were reported to be more frequent among children with ADHD in the present study. The same results have been obtained around the world [28, 29]. This might be clarified because of the absence of a spotlight on homework due to the different evident manifestations of the confusion among the respondents. Studies have proposed that primary school-age students with ADHD commonly have significant difficulties with academic achievement and peer relationships. They get fundamentally lower scores on accomplishment tests than do their friends without ADHD and are at higher-than-average risk for grade maintenance and arrangement in special education [30]. The limitation of the study was the small sample size, as it was only from the center of Tikrit city.

In conclusion, the prevalence of ADHD in a primary school

in this study was 8.67%, boys were most affected than girls with predominantly in the younger age group. Inattention ADHD subtype was the most common type in this study. High positive family history was reported among affected children and most cases had low school performance. We recommended for preparing social programs for teachers to facilitate dealing with children with ADHD for mitigating their negative implications. Besides, we organizing training and educational workshops for the families of children who suffering ADHD on the way of treating them and solving their problems.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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