Screening for Attention Deficit Hyperactivity Disorder at Elementary Schools in Baghdad City

التقص عن إضطراب قلة الإهتمام وفرط الحركة في المدارس الإبتدائية في مدينة بغداد

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المستخلص

الهدف: التحري عن مدى انتشار اضطراب فرط الحركة ونقص الانتباه بين تلاميذ المدارس الابتدائية ؛ تحديد العلاقة بين مستوى اضطراب فرط الحركة ونقص الانتباه لدى التلميذ والعمر و إلى ذلك ، واستقصاء الفروق بين التلاميذ اضطراب فرط الحركة ونقص الانتباه على أساس الجنس والصف الدراسي.

المنهجية: دراسة وصفية اجريت على تلاميذ المدارس الابتدائية. بدأت الدراسة من 16 أيلول 2019 حتى 1 تشرين الاول 2020. اختيرت عينة عنقودية من 800 تلميذ. الاستبانه بنيت وطورت وتألفت من جزئين: الجزء الأول يتضمن معلومات عامة عن التلميذ والجزء الثاني يتضمن مقياس انتشار اضطراب فرط الحركة ونقص الانتباه.

النتائج: أظهرت نتائج الدراسة الحالية أن (4.75٪) من تلاميذ المدارس الابتدائية ربما يعانون من اضطراب فرط الحركة ونقص الانتباه. هناك علاقة ذات دلالة إحصائية عالية بين اضطراب فرط الحركة ونقص الانتباه ومستوى تعليم الوالدين والأبوة والأمومة ودخل الأسرة. هناك فرق ذو دلالة إحصائية عالية في اضطراب فرط الحركة ونقص الانتباه لدى التلاميذ بين جنسهم والصف.

التوصيات: أوصت الدراسة بزيادة التقص لاضطراب قلة الاهتمام وفرط الحركة بين الأطفال في سن المدرسة والبدء في عملية التدخل في أقرب وقت ممكن من أجل مساعدة الأطفال المصابين باضطراب قلة الاهتمام وفرط الحركة ، وخاصة في الصف الاول. أيضًا ، هناك حاجة لتثقيف المعلمين بشكل مكثف حول اضطراب قلة الاهتمام وفرط الحركة وكيف يمكنهم إدارة هؤلاء التلاميذ.

الكلمات المفتاحية: التحري ، إضطراب قلة الإهتمام وفرط الحركة.

Abstract

Objective(s): To determine the prevalence of ADHD among elementary school pupils; identify the association between pupil's level of ADHD and age, etc., and investigate the differences in pupils ADHD based on gender, and grade.

Methodology: A descriptive study was conducted on elementary school pupils. The study started from the period of 16th of September 2019 to the 1st of October 2020. A cluster sample of 800 pupils was selected. The questionnaire was constructed and developed and include two parts: the first part includes the pupil's general information and the second part includes scale of ADHD prevalence.

Results: The results of the present study indicated that 38(4.75%) of elementary school pupils probable had ADHD. There is a statistically high significant association between ADHD and parents' education level, parenting, and family income. There is a statistically high significant difference in pupils' ADHD among their gender, and grade.

Recommendations: The study recommended increase the screening of ADHD among school-age children and start the process of intervention as early as possible in order to help children with ADHD, especially in the first grade. Also, there is the need to intensively educate teachers on ADHD and how they can manage these pupils.

Keywords: Screening, Attention Deficit Hyperactivity Disorder.

Introduction

Attention Deficit and Hyperactivity Disorder (ADHD) is a neuro-behavioral disorder characterizes by a chronic level of hyperactivity, impulsivity, and attention, it is a neuropsychiatric condition affecting children and adolescents, and even adults around the world [(1)]. It is one of the most common childhood behavioral disorders affecting 3 to 7% of school-age pupils [(2)].

Children with ADHD are at risk for complications such as poor academic performance, academic failure, repetition of class, delayed learning, low self-esteem, poor social skills, and increased potential for physical injury in childhood [(3) (4) (5)].

The pupils with ADHD have many troubles in paying attention, sometimes acting without thinking about what the result will be, and in some cases, they are overly active, consequently, these children face many difficulties in school. They show behavioral and academic problems due to the conflict between the academic requirements of the school and the specific characteristics of this disorder. ADHD may affect all aspects of a pupil`s life, as the impact may not only be on the child and his/her parents but also on teachers and peers, thereby causing disturbances in the school environments. Some pupils may display that are inquisitive, explorative, playful, impulsive, restless, and overactive traits [(2)].

The screening for a disorder is generally the first step in the diagnostic process. It initiates timely and appropriate diagnostic and treatment interventions preventing further suffering and impairments in major life activities for patients and reducing treatment costs, a screening is a pre-diagnostic method to estimate the occurrence and severity of symptoms; however, it is not a substitute for clinical diagnosis [(6)]. The age-specific information about the magnitude of ADHD is very important in low-income countries to frame appropriate treatment guidelines; even though there are many studies conducted on the prevalence and risk factors of childhood ADHD in developed countries [(5)]. There is a lack of studies on the prevalence of ADHD among elementary school children in the world [(4)].

Materials and Methods

Study Design: A descriptive cross-sectional study design was carried out from the period of 16th of September 2019 to the 1st of October 2020 on teachers working in governmental elementary schools in Baghdad city.

Study Sample: A sample of 800 participants (pupils) was randomly selected from 20 elementary schools from 1st to 6th grade, for the study based on the information given by their teachers. The random sampling of the lottery method was adapted to select the schools from the clusters. The study was carried out in 20 government elementary schools from two education directorates. This number selected throughout the use of probability sampling, cluster sampling. Ten elementary schools were randomly selected from each first Al-Karkh Education Directorate, and first Al-Rusafa Education Directorate, and one classroom was selected randomly from each school.

The Study Instruments: For the purpose of the study, a questionnaire format was developed by the investigator depending on investigate extensive review of the related available literature and the scientific opinions of specialized experts, and The Conners' Teacher Rating Scale-Revised: Short Form (CTRS-R: S) to measure the prevalence of ADHD among elementary school pupils.

The study instrument consists of two parts

Part I: Pupil's General Characteristics: this part includes (7) items concerning the pupils' general characteristics like: pupil's age, gender, grade, father educational levels,

mother educational levels, child live with, and family monthly income.

Part II: Scale of ADHD prevalence: the second part of the questionnaire format was a scale to identify children with probable ADHD; this part is composed of (28) items. The questionnaire used a paper-and-pencil format. The scale of the four levels was rated on the 4 points (Likert respondent scale), it was scored as a scoring about by assigning a score of (3) for "very often", (2) for "often", score of (1) for "little" and score of (0) for "never". A four-point likert scale verbatim from the (CTRS-R:S) rating scale was used to identify the positive ADHD symptoms. The total score ranged between (0-84), the lowest score indicated a negative ADHD while the highest score reflects the positive (maximum score for ADHD) [(7)]. The tool used by this study is a screening one and not diagnostic, therefore children found positive by this study are considered as probably having ADHD.

Data collection: The self-administered method was used by asking the teachers to complete the format of the questionnaire and fulfill the questions. The questionnaire was submitted to each teacher after taking the initial consent of each one in the study. The data collected by the researcher after explaining the purpose of the study to the teachers.

Data Analysis: The data of the present study were analyzed by using the statistical package of social sciences (SPSS) version 26. It performed through the computation frequencies, percentages, mean of the score (MS), and using the graphical presentation

The assessment depend on total the scores from each area of the test for each child. The scores are then converted to standardized scores, known as T-scores. The school age child is usually considered normal when T-scores are less than 60, while scores above 60 are signs of probable ADHD. There are several different classes as well: A T-score of $\geq$ 60 can indicate that the child may have an issue such as ADHD. A T-score greater than 60 but fewer than 70 may indicate moderately severe issues of ADHD. A T-score $\geq$70 may be a sign are very atypical or more severe ADHD.

The significance of association of different percentages were tested using Pearson Chi-square test (χ^2-test). The significance of difference of different means were tested using pupils-t-test for difference between two independent means or ANOVA test for difference among more than two independent means, and statistical significant was at p value $\leq$ 0.05.

Ethical Considerations: The Institutional Review Board (IRB) at the University of Baghdad, College of Nursing approved the study to be conducted. The study protocol meets both the global & the Committee on Publication Ethics (COPE) standards of respecting humans subjects' rights.

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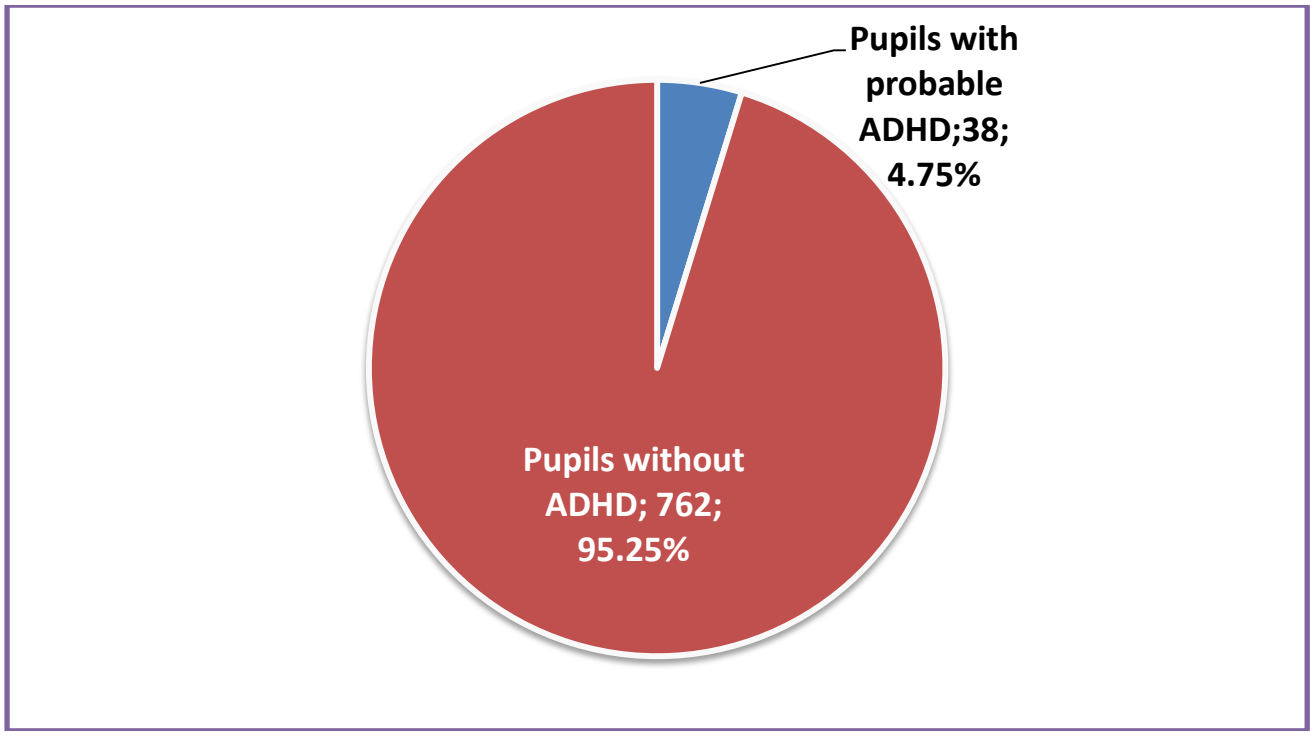
Results

Table (1): Distribution of the Study Sample by their General Characteristics

Variables	Groups	F	%
Age (years)	6	103	12.9
	7	108	13.5
	8	123	15.4
	9	**208**	**26.0**
	10	95	11.9
	11	110	13.8
	12	53	6.6
	Total	800	100.0
	Mean ± SD	8.8±1.8 (6-12)	
Gender	**Male**	**450**	**56.3**
	Female	350	43.7
	Total	800	100.0
Grade	**First**	**212**	**26.5**
	Second	124	15.5
	Third	**211**	**26.3**
	Fourth	91	11.4
	Fifth	106	13.3
	Sixth	56	7.0
	Total	800	100.0
Father educational level	Illiterate	16	2.0
	Read & write	11	1.4
	Primary graduate	56	7.0
	Middle school graduate	47	5.9
	Secondary graduate	144	18.0
	Institute/ 2 year diploma degree	233	29.1
	College / 4 year university degree	**252**	**31.5**
	Higher education	41	5.1
	Total	800	100.0
Mother educational level	Illiterate	18	2.2
	Read & write	31	3.9
	Primary graduate	141	17.6
	Middle school graduate	104	13.0
	Secondary graduate	167	20.9
	Institute/ 2 year diploma degree	145	18.1
	College/4 year university degree	**179**	**22.4**
	Higher education	15	1.9
	Total	800	100.0
Child live with	Single parent	51	6.4
	Both parents	**749**	**93.6**
	Total	800	100.0
Family monthly income	Not enough	32	4.0
	Enough to some extent	292	36.5
	Enough	**476**	**59.5**
	Total	800	100.0

F= frequency, %= percentage

Table (1) shows that highest percentage of the study sample at age nine years which represented (26%), (56.3%) were males. Class 1 was the most represented with (26.5%), followed by class 3 with (26.3%), while class 6 was the least represented with (7%). The highest percent of father and mother of pupils' were graduates from college and accounted (31.5%, 22.4%) respectively, 749(93.6%) of pupils live with both parents, and (59.5%) were had enough family monthly income.



Assessment by T-scores: Child without ADHD (T-scores <60); Child with probable ADHD (T score ≥60)

Figure (1):Distribution of the Pupils' about ADHD According to Assessment Levels

The results in figure (1) illustrate that 762(95.25%) of the study sample represent negative experience with ADHD, while 38(4.75%) of pupils may have ADHD.

Table (2): Association between ADHD Pupils and Their Socio-demographical Characteristics Variables

Variables		Child without ADHD (T-score <60)		Child with probable ADHD (T-score ≥60)		P value
		F	%	F	%	
Age (years)	6	97	94.2	6	5.8	0.120
	7	106	98.1	2	1.9	
	8	119	96.7	4	3.3	
	9	200	96.2	8	3.8	
	10	91	95.8	4	4.2	

	11	99	90.0	**11**	**10.0**	
	12	50	94.3	3	5.7	
Father educational level	**Illiterate**	3	18.8	**13**	**81.3**	**0.0001***
	Read & Write	11	100.0	-	-	
	Primary	47	83.9	9	16.1	
	Intermediate	41	87.2	6	12.8	
	Secondary	138	95.8	6	4.2	
	Institute	229	98.3	4	1.7	
	College	252	100.0	-	-	
	Higher education	41	100.0	-	-	
Mother educational level	Illiterate	15	83.3	3	16.7	**0.0001***
	Read & Write	31	100.0	-	-	
	Primary	121	85.8	**20**	**14.2**	
	Intermediate	94	90.4	10	9.6	
	Secondary	163	97.6	4	2.4	
	Institute	144	99.3	1	.7	
	College	179	100.0	-	-	
	Higher education	15	100.0	-	-	
Child live with	Single parent	36	70.6	15	29.4	**0.0001***
	Both parents	726	96.9	23	3.1	
Family income	**Not enough**	20	62.5	**12**	**37.5**	**0.0001***
	Enough to some extent	271	92.8	21	7.2	
	Enough/ Saving	471	98.9	5	1.1	
***Significant difference between proportions using Pearson Chi-square test at 0.05 level.**						

F: frequency, %: percentage

This table shows high significant association between general characteristics and ADHD pupils, except child age which no-significant association with ADHD pupils at P value (0.120).

Table (3): Analysis of the Difference in ADHD among Pupils'

Variables		Total score for ADHD	P value
Gender	**Male**	**25.81±19.53 (0-71)**	**0.0001***
	Female	18.45±14.66 (0-70)	
Grade	**First**	**28.24±17.98 (0-70)**	**0.0001***
	Second	20.35±17.69 (1-67)	
	Third	18.85±16.63 (0-71)	
	Fourth	20.49±16.91 (0-69)	
	Fifth	24.66±18.54 (0-70)	
	Sixth	19.73±18.40 (0-71)	
***Significant difference between two independent means using Students-t-test at 0.05 level.**			
***Significant difference among more than two independent means using ANOVA-test at 0.05 level.**			

There is a statistically highly significant difference in pupils, ADHD based on their gender, and grade at (p-value < 0.001).

Discussion

In **figure (1)**, the result of the current study revealed that the total prevalence of ADHD among pupils in elementary schools in Baghdad city to be 4.75%, it is slightly lower than study conducted in south Jordan by that reported among 4374 school age children 6-12 years which was 6.2% [8]. This finding supported our finding.

This is accordance with several studies that showed a wide range of prevalence rates between 2% and 17% [9]. In Arab countries the reported rate was between (1.3% - 34.5%), the worldwide prevalence rate of ADHD was 5.3% [4]. This consisted with the present study finding.

The reported rate in this study is a little lower than that reported by studies conducted in Egypt they reported that prevalence of ADHD 6.5% among 4223 school age children[10], other study conducted in El-Minia city found that prevalence of ADHD were 6.9% among 1362 elementary school students [11], and other study in (2014) found that 87(9.4%) students had a potential ADHD diagnosis among 925 student [12], EL-Gendy et al. conducted study in Al-Qalyubia Governorate in Egypt by they found that prevalence of ADHD was 21.8% based on the teacher's rating scale and 16.2% based on the parent's rating scale [13], and study conducted in Sohag Governorate in Egypt by Ahmed in 2018 who found that prevalence rate of ADHD were 9.6% [4].

Also, the reported rate in this study is a little lower than that reported by studies, conducted in Tabriz-Iran reported that prevalence of ADHD among elementary pupils aged 6-12 years was 9.7% [14], conducted in India that reported the overall prevalence of ADHD was 286(8.8%) among school-age children [15]. Also a study conducted in Ethiopia found that prevalence rate of ADHD among children was 7.3% [5], it is lower than rate in the present study.

In the context of the study area, on the other hand, the reported rate in this study is higher than that reported by study conducted in Saudi Arabia by Alqahtani in (2010)[16] used teachers and parents' questionnaire and reported a prevalence of ADHD = 2.7%, a similar study also came out with a similar prevalence of 3.1% in Jeddah City, Saudi Arabia [17].

The result of present study supported by Alhraiwil et al., in (2015) [18] in their review about ADHD in Arab countries, this included a total of 22 articles, twenty studies were cross-sectional and found that studies which used Conner rating scale for parents or teachers showed prevalence range of ADHD between 3.4% and 9.9%, also they found the prevalence of ADHD ranged between 1.3-16%. Similarly, it was found that the prevalence of ADHD in Italian students aged 5-15 years was 3% using the screening rating scale for teachers followed by a specific clinical-diagnostic assessment [19].

Liu et al., in (2018) [20] conduct a systematic review of ADHD prevalence in Mainland China, Hong Kong, and Taiwan, they found a total of 67 studies covering 642,266 Chinese children and adolescents were included. The prevalence estimates of ADHD in Mainland China, Hong Kong, and Taiwan were 6.5%, 6.4%, and 4.2%, respectively, with a pooled estimate of 6.3%. This finding supported our study.

From the researcher point of view, this shows that the prevalence of ADHD shows high variability even within the same country. The difference in the prevalence rate reported by this study and other studies may be due to differences in the age of the children under study and differences in the sample size and tool and methodology of the study, furthermore to differences in the socio-demographic and cultural characteristics of the study population. In addition, the prevalence depends on the person evaluating

the symptoms, such as the parent, teacher or child.

Recommendations:

The study recommended:

Increase the screening of ADHD among younger children and start the process of intervention as early as possible in order to help children with ADHD, especially in the first grade. This requires attention from elementary teachers who may not know about this specific disorder and thus they may not use the adequate teaching strategies for ADHD children. Consequently, adequate educational training to identify this disorder by elementary teachers and parents can be beneficial in the intervention process.

Imperative to integrate the screening of pupils for ADHD into the school health services in order to enable early detection and management of the disorder.

Also, there is the need to intensively educate teachers on ADHD and how they can manage these pupils.

Parent-Teacher Association meetings could be organized to educate parents on the prevalence and impact of ADHD on their children and also for the purpose of early detection, diagnosis, and intervention by clinical psychologists and medical institutions.

There should be vigorous teacher advocacy and awareness creation by the Ministry of Education on mass media to highlight on the nature of ADHD.

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