Study the Attention deficit Hyperactivity Symptoms in a Sample of primary School children

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Abstract

Background: Attention Deficit Hyperactivity Disorder is the most commonly seen and studied neurodevelopmental disorder, with significant impacts on the child's social, psychological, and scholastic functioning.

Aim: To identify the prevalence of ADHD symptoms among a sample of primary school children and to recognize the psychiatric morbidity among the studied group

Patient and Methods: A cross sectional descriptive study was conducted on 566 students, aging 6 to12 years old, both sex, from 6 primary schools, 3 governmental and 3 private schools, from Giza area, through the academic year 2013/ 2014, sample was selected by systematic random sampling, all students were subjected to: Full history taking, Conner's teacher rating scales, Wechsler intelligence scale for children, The Mini International Neuropsychiatric Interview for children for Screening for the psychiatric morbidity

Results: The prevalence of ADHD was 9.2%, with a higher% of ADHD- HI (5.5%), followed by ADHD- C (2.1%) then ADHD- I (1.6%) . Regarding sex, male represented a higher% of ADHD than female (6.5%, 2.6% respectively). Mean age of ADHD students was 9.15± 1.55, there was a higher% of ADHD in governmental (6.4%) than private (2.8%) School, students who had some problem (hyperactivity, Behavioural problem, Emotional overindulgent, Anxious- passive, A social and Attention problem) score (56- 65) were (6.7%, 4.4%, 6.2%, 8.5%, 4.4% and 3% respectively), 44.2%, 40.3% 19.2% 17.3%, 28.8%, 9.6% and 7.7% of cases with ADHD had LD, ODD, CD, depression, anxiety, OCD, and PDD respectively.

Conclusion: High prevalence of ADHD symptoms and psychiatric comorbidities, CTRS is a commonly used measure of behavioral problems associated with ADHD.

Keywords: Attention Deficit Hyperactivity Disorder, Conner's teacher rating scales, Wechsler intelligence scale for children, ADHD hyperactive/ impulsive, ADHD inattentive, ADHD combined

دراسة أعراض قصور الانتباه وفرط الحركة فى عينة من طلبه المدارس الابتدائية

الخلفية: اضطراب قصور الانتباه وفرط الحركه يعد من اشهر الاضطرابات التنمويه، مع تاثيره الكبير على وظائف الطفل النفسيه والاجتماعيه والدراسيه. وانه من اشهر الاضطرابات العصبيه السلوكيه فى الاطفال فى سن المدارس.

الهدف: تقييم معدل انتشار اعراض قصور الانتباه/ فرط النشاط فى بعض المدارس الابتدائيه الكشف عن وجود الاضطرابات النفسيه المصاحبة لهؤلاء التلاميذ.

طرق البحث: أجريت الدراسة على ٥٦٦ تلميذا في المرحلة الابتدائية في٣ مدارس حكومية و٣ مدارس خاصة خلال العام الدراسى ٢٠١٣/ ٢٠١٤ من سن (٦– ١٢) سنة، من الجنسين، وقد تم أخذ تاريخ تفصيلى، وتطبيق مقياس كونرز للتقدير، مقياس وكسلر لذكاء الأطفال، المقياس العالمى المصغر النفسى العصبى للأطفال.

النتائج: معدل انتشار اضطراب قصور الانتباه وفرط الحركه يساوى ٩,٢% فى المدارس الابتدائية، وكان نمط فرط النشاط– المندفع أكثر شيوعا (٥,٥%) عن النمط المختلط (٢,١%)، نمط غير منتبه (١,٦%) ، واعلى فى الذكور ٣٧ حالة (٦,٥%)، عن الإناث ١٥ حالة (٢,٦%)، متوسط عمر التلاميذ ٩,١٥ سنة، اعلى فى المدارس الحكومية (٦,٤%) عن المدارس الخاصة (٢,٨%)، ان نسبة الحالات المتوسطة (الدرجة الثانية= ٥٦– ٦٥) من فرط النشاط، المشكلات السلوكية، الافراط الانفعالى، القلق– السلبية، مشكلة الانتباه كانت على التوالى (٦,٧%، ٤,٤%، ٦,٢%، ٨,٥%، ٤,٤%، ٣%)، زيادة نسبة الامراض النفسية المصاحبة مثل صعوبة تعلم، اضطراب العناد الشارد، القلق، الاكتئاب، اضطراب الجناح، اضطراب الوساس القهرى والتوحد، وكانت على التوالى (٤٤,٢%، ٤٠,٣%، ٢٨,٨%، ١٩,٢%، ١٧,٣%، ٩,٦%، ٧,٧%).

الخلاصة: ارتفاع نسبة اعراض قصور الانتباه وفرط الحركه وزيادة نسبة حدوث الامراض النفسية المصاحبة بين تلاميذ المرحلة الابتدائية، مقياس كونرز للتقدير من المقاييس الشائع استخدامها لقياس المشكلات المصاحبة لاضطراب قصور الانتباه وفرط الحركه.

الكلمات المفتاحية: اضطراب قصور الانتباه وفرط الحركه، مقياس كونرز للتقدير، مقياس وكسلر لذكاء الأطفال، نمط مفرط النشاط– المندفع، نمط غير منتبه، النمط المختلط

Introduction:

Attention Deficit Hyperactivity Disorder (ADHD) is the most commonly seen developmental disorder, with significant impacts on the child's social, psychological, and scholastic functioning (Davies., 2014).

ADHD is a childhood- onset disorder that has a relatively high prevalence worldwide, ranging from 2.2% to 17.8% (Gold et.al., 2014). Extension of the age- of- onset criterion from 7 to 12 years led to an increase in the prevalence rate of ADHD from 7.38% (DSM- IV) to 10.84% (DSM- 5) (Vande Voort et.al., 2014).

ADHD is a multifactorial disorder, The disorder might have its origins in genes, but the course of the disorder is probably influenced by the way these genetic factors interact with and affect an individual's response to the environment (van Mil et.al., 2014).

ADHD is characterized by a persistent pattern of inattention and/or hyperactivity- impulsivity, which is maladaptive and inconsistent with a comparable level of developmental age (American Psychiatric Association 2000). The Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision (DSM- IV- TR) criteria state that the behavior must be developmentally inappropriate, must begin before 7 years, must be present for at least 6 months, must be present in 2 or more settings, evidence of clinically significant functional impairment in social, academic, or occupational functioning and must not be secondary to another disorder, DSM- IV classify the disorder into three general subtypes:

1. Predominantly hyperactive- impulsive:
2. Predominantly inattentive: a child who is easily distracted, forgetful.
3. Combined Type.

Although ADHD is believed to result from primary impairment of attention, impulse control, and motor activity, there is a high prevalence of comorbidity with other psychiatric disorders, (15- 25)% have learning disabilities, (30- 35)% have language disorder, (15- 20)% have coexisting anxiety disorders. Children can also have co- occurring diagnoses of sleep disorders, memory impairment, and decreased motor skills (Xiao et.al., 2013).

Early recognition and management of children with ADHD can redirect their educational and psychosocial development (Ambuabunos et.al., 2011). Psychosocial treatment, behaviorally oriented treatment, and psychostimulant medication with careful monitoring of medication (Sharma and Couture, 2014). Benefits of non- stimulant medication and alternative treatment modalities, which include diet, herbal medications, iron supplementation, and neurofeedback. With the goals of improving treatment of patients with ADHD (Gold et.al., 2014).

Aim Of The Study:

1. Identify the prevalence of Attention Deficit Hyperactivity symptoms among a sample of Egyptian primary school children
2. Recognize the psychiatric comorbidity among the studied group.

Patients And Methods:

This cross sectional descriptive study was conducted on 566 students, this sample size was calculated by Epi Info., 2012, sample was selected by systematic random sampling every 5th student in the lists of names, from 6 primary schools, 3 governmental and 3 private schools, from Giza area, through the academic year 2013/ 2014.

1. Inclusion Criteria:
   a. Age between 6 and 12 years.
   b. Both Boys And Girls.
2. Exclusion Criteria:
   a. Students Refusing To Participate.
   b. Students With Chronic Diseases.
   c. Other Psychiatric Disorder.
3. Ethical Consent: Written informed consent was obtained from the education authorities, parents after explaining details of the study and the aims of the study to them.

Methods And Procedures:

⌖ First visit to the school: After ethical approval was obtained from education authorities from Bulaq Educational Administration to conduct the study with the permission of parents, evaluate the number of classes, number of students in each class, talk with teachers about their help in obtaining adequate information, interview with students explaining details of the study to them.

⌖ In the 2nd visit apply Systematically every 5th student in the lists of names. The recruited pupils were subjected to the following:

1. Full history taking: Including items related to demographic information as age, sex, school grade, residence, parent education
2. Full clinical child psychiatric sheet for the diagnosis of ADHD according to the revised version of the Diagnostic and Statistical Manual of Mental disorders, 4th Edition (DSM- IV- TR).
3. Conner's rating scales (Conner., 1990): Conner's teacher rating scales (CTRS): CTRS- 39: 39 behavior, zero= never, 1= mild, 2= moderate, 3= sever

   Subdivided scales: Hyperactivity, conduct problems, emotional overindulgent, anxious- passive, asocial, daydream- attention problem, hyperactivity index

   T- scores: T- score< 60= Normal, T- score 61- 65= mild symptoms, T- score till 70= moderate, T- score> 70= sever.

   Arabic version was used Elbehery and Aglan. (2009)
4. Intelligent quotation (IQ) assessment: Using Wechsler intelligence scale for children (WISC) (Wechsler., 1949). Was done by me after training by psychologist for cases with attention deficit hyperactivity symptoms to exclude mental subnormal. The test consist of: Verbal and performance scales Arabic version was used Esmaile and Melika (1999).
5. Screening for the psychiatric morbidity: The Mini International Neuropsychiatric Interview for children and adolescents M.I.N.I. KID (Sheehan et.al., 1998) was used to identify psychiatric morbidities, The Arabic version was used Ghanem et.al. (2000).

Statistical Analysis:

The data were coded, entered and processed on computer using Statistical Package for Social Science (SPSS version 22., 2013). The level P≤ 0.05 was considered the cut- off value for significance.

1. Chi- Square test X^2 was used to test the association variables for categorical data.
2. Fisher exact test was performed in table containing value less than 5
3. Student's t- test was used to assess the statistical significance of the difference Between two population means in a study involving independent samples.
4. Multivariate Logistic regression analysis is useful for situations in which

you want to be able to predict the presence or absence of a characteristic or outcome based on values of a set of predictor variables

5. The correlation coefficient method was used to relate different parameter

6. Probability P value, P value was used as determinant as significance: If P>0.05 (Insignificant), If P≤ 0.05 (significant), If P<0.01(highly significant)

7. Graphic presentation of the results was also done

Results:

This study was conducted on 566 students, 283 students from governmental school and 283 students from private school, the percentage of cases with ADHD was 9.2% (52 cases), there was a higher percentage of hyperactivity- Impulsivity subtype (ADHD- HI) (5.5%) than combined subtype(ADHD- C) (2.1%), followed by inattentive subtype (ADHD- I) (1.6%).
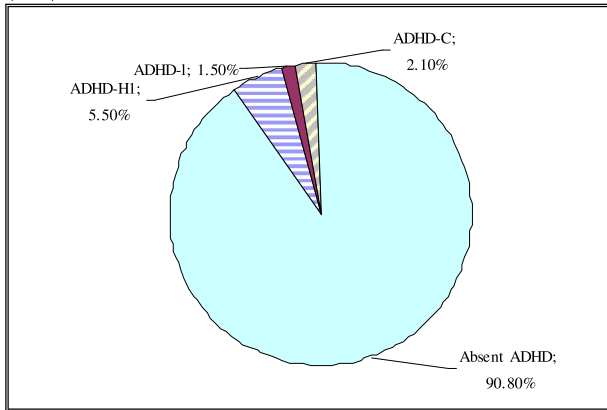
Figure (1): Frequency distribution of different types of ADHD

Table (1) shows no statistical significant difference between both groups regarding age yet those with ADHD were found older, highly significant difference was found between prevalence of ADHD regarding sex, school type and social class, with higher percentage of male (6.5%) than female (2.6%), 6.4% of ADHD was from governmental school while 2.8% from private school, there was a higher percentage of ADHD (48.1%) from middle social class followed by low social class (34.6%) while low social class was only 17.3%.

Table (1) Sociodemographic data of studied students

		Adhd (52)		Absent ADHD (514)		t	P
		Mean	±Sd	Mean	±Sd		
Students Age (Yrs) (Range=6 - 12)		9.15	1.55	8.80	1.69	1.440	0.150
	Total		Adhd (52)		Absent ADHD (514)	X^2	P
	N	%	N	%	N	%	
Male	293	51.8	37	6.5	256	45.3	8.620	0.003**
Female	273	48.2	15	2.6	258	45.6		
Governmental	283	50	36	6.4	247	43.6	8.471	0.004**
Private	283	50	16	2.8	267	47.2		
Social Class:								
High	96	17	9	17.3	87	16.9	4.432	0.031*
Middle	304	53.7	25	48.1	279	54.3		
Low	166	29.3	18	34.6	148	28.8		

Table (2) shows a statistical significant difference (p= 0.034) between governmental and private school regarding the subtypes of ADHD with a higher percentage ADHD- HI, ADHD- I and ADHD- C subtypes in governmental school (3.7%, 1.1%, 1.6% respectively) than in private school (1.8%, 0.5%, 0.5% respectively).

Table (2) Prevalence of ADHD subtypes in school

	Governmental (36)	Private (16)	X^2	P
(Adhd- Hi)	21(3.7%)	10(1.8%)		
(Adhd- I)	6(1.1%)	3(0.5%)	8.681	0.034*
(Adhd- C)	9(1.6%)	3(0.5%)		

Table (3) shows a higher percentage of students with no problem (score≤ 55) than students with some problem (score between 56 to 65), while the significant problem (score> 66) represent a lower percentage in all items of CTRS- 39 items

Table (3) Result of the CTRS- 39 items form in the studied sample

	No Problem (Score≤ 55)		Some problem (Score 56- 65)		Significant Problem (Score> 66)	
	N	%	N	%	N	%
Hyperactivity	523	92.4%	38	6.7%	5	0.9%
Conduct Problem	536	94.7%	25	4.4%	5	0.9%
Emotional Overindulgent	527	93.1%	35	6.2%	4	0.7%
Anxious- Passive	513	90.6%	48	8.5%	5	0.9%
Asocial	536	94.7%	25	4.4%	5	0.9%
Attention Problem	545	96.3%	17	3%	4	0.7%

Table (4) shows a significant statistical difference between students with ADHD and without ADHD regarding LD, ODD, CD, anxiety and depression, while there was no statistical significant difference regarding OCD and PDD. With a higher percentage of all psychiatric disorders in students with ADHD than without ADHD

Table (4) Different psychiatric disorders versus ADHD

	Adhd (52)	Absent Adhd (514)	X^2	P
LD	23(44.2%)	60(11.7%)	40.00	<0.001**
ODD	21(40.3%)	59(11.5%)	32.511	<0.001**
CD	10(19.2%)	20(3.9%)	25.384	<0.001**
Anxiety	15(28.8%)	38(7.4%)	25.608	<0.001**
Depression	9(17.3%)	30(5.8%)	9.685	0.002**
OCD	5(9.6%)	23(4.5%)	4.654	0.063
PDD	4(7.7%)	16(3.1%)	3.905	0.088

Table (5) shows a significant statistical difference between subtypes regarding LD, ODD, CD, anxiety and depression while there was no statistical significant difference regarding OCD and PDD. With a higher percentage of all psychiatric disorders in ADHD- HI than ADHD- C and ADHD- I

Table (5) Different psychiatric disorders versus ADHD subtypes

	ADHD- HI (31)	Adhd- I (9)	Adhd- C (12)	X^2	P
Ld(23)	11(47.8%)	5(21.8%)	7(30.4%)	67.785	<0.001**
Odd(21)	11(52.4%)	4(19.1%)	6(28.5%)	54.282	<0.001**
Cd(10)	6(60%)	1(10%)	3(30%)	44.483	<0.001**
Anxiety(15)	10(66.7%)	1(6.7%)	4(26.6%)	38.854	<0.001**
Depression (9)	6(66.7%)	1(11.1%)	2(22.2%)	13.042	0.005**
Ocd(5)	3(60%)	0(0.0%)	2(40%)	2.154	0.099
Pdd(4)	2(50%)	1(25%)	1(25%)	1.205	0.198

There was a significant statistical difference between students with ADHD and without ADHD regarding the number of co morbidity, where one co-morbidity present in 30.8%. 21.2% in two co- morbidity however the three co-morbidity present in 7.6% in cases with ADHD in comparison to students without ADHD.
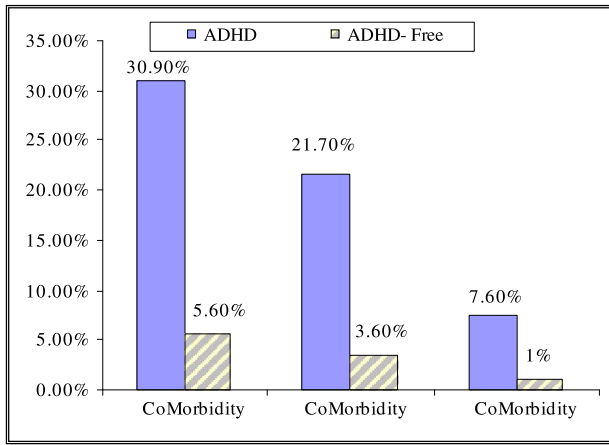
Figure (2) Psychiatric co morbidity among studied sample

Table (6) shows a significant statistical difference (P< 0.05) in psychiatric disorders LD, ODD, CD and PDD had higher percentage of male than female while anxiety showed higher percentage of female than male, there was no statistical significant difference regarding depression and OCD

Table (6) Relation between different psychiatric disorders versus sex

	Total	Male	Female	X^2	P
LD	83	51(61.4%)	32(38.6%)	7.385	0.006**
ODD	80	59(73.7%)	21(26.3%)	31.511	<0.001**
CD	30	26(86.7%)	4(13.3%)	40.123	<0.001**
Anxiety	53	12(22.6%)	41(77.4%)	35.421	<0.001**
Depression	39	18(46.2%)	21(53.8%)	2.154	0.103
OCD	28	13(46.4%)	15(53.6%)	2.110	0.101
PDD	20	14(70%)	6(30%)	28.210	<0.001**

Table (7) shows a statistical significant difference between both groups (p< 0.05), with a higher percentage of average than sub and above average in Performance WISC in the ADHD group (69.2%, 23.1% and 7.7% respectively), in comparison to absent ADHD group (79%, 9.9% and 11.1% respectively) and higher percentage of average than sub and above average in verbal WISC in the ADHD group (65.4%, 26.9% and 7.7% respectively), in comparison to absent ADHD group (77.4%, 11.1% and 11.5% respectively)

Table (7) Relation between Performance and verbal subscale of WISC versus ADHD

	Average	Sub Average	Above Average	X^2	P
Performance Absent ADHD (514)	406(79%)	51(9.9%)	57(11.1%)	8.423	0.015*
Adhd (52)	36(69.2%)	12(23.1%)	4(7.7%)		
Verbal, Absent ADHD(514)	398(77.4%)	57(11.1%)	59(11.5%)	10.944	0.004**
Adhd(52)	34(65.4%)	14(26.9%)	4(7.7%)		

Table (8) shows a statistical significant negative correlation (p< 0.05) between Performance subscale of WISC and different results of the CTRS- 39 test.

Table (8) Correlation between Performance subscale of WISC and result of the CTRS- 39 test

Performance	r	p
Hyperactivity	0.361	0.009**
Conduct Problem	0.308	0.026*
Emotional Overindulgent	0.296	0.033*
Anxious- Passive	0.216	0.043*
Asocial	0.308	0.026*
Attention Problem	0.412	0.002**

Table (9) shows a statistical significant negative correlation (p< 0.05) between verbal subscale of WISC and different results of the CTRS- 39 test

Table (9) Correlation between verbal subscale of WISC and result of the CTRS- 39 test

Verbal	r	p
Hyperactivity	0.346	0.012*
Conduct Problem	0.295	0.034*
Emotional Overindulgent	0.285	0.041*
Anxious- Passive	0.280	0.048*
Asocial	0.295	0.034*
Attention Problem	0.394	0.004**

Table (10) shows a statistical significant difference (p< 0.05) with a higher prevalence of ADHD in male, governmental school and working mother (6.5%, 6.4%, 6% respectively) than female, private school and not working mother (2.6%, 2.8% 3.1% respectively). There was a higher percentage of middle class (48.1%) in ADHD than low class (34.6%) while high class was 17.3%. Regarding to the paternal and the maternal education, the highly educated group represent a higher percentage (52.0%) than middle (36.5%), while the low education represent only11.5%.

Table (10) Relation between ADHD versus different variables by logistic regression analysis

Different Variables	ADHD	ADHD free	P Value	OR	95% Ci Lower- Upper
Male	37(6.5%)	256(45.2%)	0.004**	0.402	0.215- 0.751
Female	15(2.6%)	258(45.6%)			
Governmental	36(6.4%)	247(43.6%)	0.005**	0.411	0.223- 0.760
Private	16(2.8%)	267(47.2%)			
Paternal Education					
High	35(67.3%)	274(53.3%)	0.064	2.296	0.938- 5.621
Middle	12(23.1%)	129(25.1%)			
Low	5(9.6%)	111(21.6%)			
Maternal Education					
High	27(52.0%)	270(52.5%)	0.186	1.850	0.376- 1.305
Middle	19(36.5%)	134(26.1%)			
Low	6(11.5%)	110(21.4%)			
Maternal Employment					
Yes	34(6%)	256(45.2%)	0.03*	0.525	0.289- 0.954
No	18(3.1%)	258(45.6%)			
Social Class					
High	9(17.3%)	87(16.9%)	0.725	1.159	0.519- 2.567
Middle	25(48.1%)	279(54.3%)			
Low	18(34.6%)	148(28.8%)			

OR= Odd ratio CI= Confidence interval

Discussion:

The prevalence of ADHD in the community based sample was found to be 9.2%. This finding was agreement with the result of Amiri et.al., 2010 who was reported that the prevalence rate of clinical ADHD in the elementary students of Tabriz was 9.7%. (Alosco et.al., 2014) share the same result and found that ADHD was prevalent (10.1%)

In this study it was found that the prevalence of ADHD- HI was higher (5.5%) than the other two types where (2.1%, 1.6%) ADHD- C and ADHD- I respectively, these results was agreement with the results of Sánchez et.al., 2011 who found that the prevalence of ADHD was 7.4%, with an estimate of 3.1% for the ADHD- HI, 1.8% for the ADHD- I and 2.6% for ADHD- C. Jin et.al., 2013 found that the prevalence rate of ADHD among the children was 4.6%, of which 2.4%, 0.4%, and 1.8% had ADHD- HI, ADHD- I and ADHD- C types, respectively.I n contrast Ambuabunos et.al., 2011found that the ADHD- I was the most prevalent (47.3%) followed by ADHD- C (31.3%), while the least prevalent was ADHD- HI (21.4%). Bianchini et.al., 2013 found that the combined type (56.8%), inattentive (25.2%) and hyperactive/ impulsive (17.3%). The differences in the prevalence of ADHD subtypes

between the current study and other studies may be explained by the differences in the cultures of the students, and other factors as social factors, educational level and employment of both parents, the overcrowding in governmental school causing the higher prevalence of ADHD- HI than ADHD- I or ADHD- C

As regards the percentage of males to females, it was found that 51.8% of total studied students were males while 48.2% were females. The percentage of male who had ADHD were 6.5% (37 students), while 2.6% (15 students) were female had ADHD (male to female equal to 2.47: 1). There was a significant differences between male and female cases, with a higher percentage of ADHD- HI, ADHD- I and ADHD- C types in male (4.1%, 0.9%, 1.6% respectively) than female (1.4%, 0.7%, 0.5% respectively) . This finding was agreement with the results of Jin et.al., 2013 who was found that the prevalence rates of ADHD in boys and

girls were 6.6% and 2.7% (ratio, 2.41: 1), respectively. Bianchini et.al., 2013 was found that the male: female ratio was (6:1). In consistence Soendergaard et.al., 2014 reported that there was no significant differences were found in gender and age across subtypes. The factors that may be responsible for the difference between male and female ADHD prevalence in the current study and other studies were the differences in the cultures, school type, class capacity and the educational level of parents

In the present study the mean of age of ADHD students was 9.15± 1.55 years. There was a higher percentage of ADHD at 9 years (3%)and at 10 years (1.8%) then at 8 years(1.2%), the lowest percentage (0.5%) was at 6 years. This result was agreement with the result of Ambuabunos et.al., 2011 who was found that the mean age of the population was 9.3± 2.0 years. Share the same result (Venkata and Panicker., 2013; Kim and Yoo., 2013; Yüce et.al., 2013; Hautmann et.al., 2013) .

As regard the prevalence of ADHD in relation to the type of school, in the present study there was a significant difference (p< 0.05) between both groups with a higher percentage of ADHD in governmental (6.4%) than private (2.8%) School with a higher percentage hyperactivity Impulsivity, attention deficit and combined subtypes in governmental school (3.7%, 1.1%, 1.6% respectively) than in private school (1.8%, 0.5%, 0.5% respectively) . This finding was agreement with the results of Pondé and Freire., 2007 who was reported that out of 10.5% of ADHD 7.2% belonged to the public school system and 3.2% to the private education system. Similarly Al Hamed et.al., 2008 was found that the majority of the boys with ADHD were from government schools (83.0%),

The result of the Conner's teacher rating scales- 39 (CTRS- 39) test showed that there was a higher percentage (92.4%, 94.7%, 93.1%, 90.6%, 94.7% and 96.3%) of sample had (hyperactivity, Conduct problem, Emotional overindulgent, Anxious- passive, Asocial and Attention problem respectively) with no problem (score≤ 55), however students who had some problem (score 56- 65) were (6.7%, 4.4%, 6.2%, 8.5%, 4.4% and 3% respectively), while only0.7% of emotional and attention problems and0.9% of other problems of sample had Significant problem (score> 66). In contrast Scholtens et.al., 2014 reported that 27% between 6 and 10 years old, with high levels of ADHD symptoms. Petresco et.al., 2014 was found that anxiety disorders were the most prevalent of all disorders (8.8%), oppositional defiant disorder/conduct disorder (2.6%), and depression (1.3%) were also diagnosed.

In the current study there was a significant statistical difference between students with ADHD and without ADHD regarding LD, ODD, CD and anxiety, in which students with ADHD had a higher percentage of LD, ODD, anxiety, CD, and depression (44.2%, 40.3%, 28.8%, 19.2% and 17.3% respectively), while, OCD and PDD were of lower percentage (9.6% and 7.7% respectively), in comparison to students without ADHD where the percentage of LD, ODD, anxiety and depression were (11.7%, 11.5%, and 7.4% and 5.8% respectively), while OCD, CD and PDD were (4.5%, 3.9%and 3.1% respectively). This results was agreement with the results of Larson et.al., 2011 in which they found that the percentage of psychiatric disorders in cases with ADHD in comparison to students without ADHD were 46% vs 5% in learning disorders, in conduct was disorder 27% vs. 2%, anxiety (18% vs 2%), depression (14% vs 1%), Autism spectrum Disorder (6% vs0.6%). Similarly Chen et.al., 2013 was found that the ADHD, CD, and ODD are frequently comorbid.

About learning disorders in this study it was found that 44.2% of cases with ADHD had LD. These findings agree with the results of Czamara et.al., 2013 who was found that (20- 60)% of individuals affected with ADHD also present with learning disorders.

Regarding to oppositional defiant disorder (ODD) and conduct disorder (CD), in the current study it was found that 40.3% and 19.2% of cases with ADHD had ODD and CD respectively.T hese findings agree with the results of Yüce et.al., 2013 who was observed that ODD the most frequent comorbidity in ADHD with a rate of 69.4%. The rate of conduct disorder was found to be low at 5.6%.

About mood disorder, in this study it was found that 17.3% of cases with ADHD had depression. These results was agreement with the results of Sivakumar et.al., 2013 was found that 13.5% of ADHD subjects had comorbid BPD and 25% of BPD subjects had comorbid ADHD. Regarding to anxiety, in this study it was found that 28.8% of cases with ADHD had anxiety. This finding agree with the results Tannock., 2011 reported that the overlap of anxiety disorders with ADHD has been found to be 10% to 40% in clinic-referred children, averaging to about 25%.

About obsessive- compulsive disorder (OCD), in the current study it was found that 9.6% of cases with ADHD had OCD. This finding agree with Ghanizadeh., 2009 who was found the rates of OCD to be 7.6% with ADHD.

In the current study about Pervasive developmental disorders (PDD) it was found that 7.7% of cases with ADHD had PDD.T his finding agree with the results of Spencer and Thomas., 2006 who found that 6% of cases with ADHD had ASD. In contrast Russell et.al., 2014 was found that0.3% had both ASD and ADHD.

There was a significant statistical difference between students with ADHD and without ADHD regarding the number of co morbidity, where one co-morbidity present in 30.8%. 21.2% in two co- morbidity however the three co-morbidity present in 7.6% in cases with ADHD in comparison to students without ADHD. This results was agreement with the results of Czamara et.al., 2013 reported that more than 60% of individuals suffering from ADHD present with one or more comorbid disorders. Yüce et.al., 2013 stated that of the ADHD cases, 33.37% had one comorbidity, 41.7% had two, 10.2% had three comorbidity. However

Regarding the relation between different psychiatric disorders versus ADHD subtypes there was a significant statistical difference (P< 0.05) in psychiatric disorders LD, ODD, CD, anxiety and depression, in which there

was a higher percentage of all psychiatric disorders in ADHD- HI (47.8%, 52.4%, 60%, 66.7% and 66.7% respectively) than ADHD- C (30.4%, 28.5%, 30%, 26.6%, and 22.2% respectively) and ADHD- I (21.8%, 19.1%, 10%, 6.7% and 11.1% respectively). This result was agreement with the results of. Garner et.al., 2013 was found that hyperactivity/impulsivity symptoms were the strongest predictor of classroom disruption even after accounting for the presence of learning disorders and oppositional symptoms. In contrast Xiao et.al., 2013 reported that the ADHD- C subgroup had a significantly higher overall incidence of functional impairments than the ADHD- I and ADHD- HI subgroups (P< 0.05).

In the current study it was found that in the ADHD- I subtype, the LD was the most frequent (21.8%) than other psychiatric comorbidity. This finding agree with the results of Garner et.al., 2013 was found that Symptoms of inattention were the strongest predictors of ratings of academic (math, writing, and so on) functioning. In contrast Yüce et.al., 2013 was found that the anxiety disorders were encountered more frequently in ADHD- I type (73%).

It was found that in the ADHD- C subtype, the most frequent psychiatric comorbidity were LD and ODD (30.4% and 28.5% respectively), while depression was 22.2%. This finding agree with the results of Yüce et.al., 2013 who was stated that ODD was significantly more common in ADHD- C type. In the current study the frequency of ODD and CD were higher in ADHD- C (28.5% and 30% respectively) in comparison to ADHD- I (19.1% and 10% respectively). This results was agreement with the results of Xiao et.al., 2013 who was reported that the incidence of ODD and CD in the ADHD- C subgroup was significantly higher than in the ADHD- I subgroup (P< 0.05). In contrast Udal et.al., 2014 was stated that the reported rates of comorbidity between early onset bipolar disorder (BD) and ADHD- C have a wide range

As regard the relation between different psychiatric disorders versus sex there was a significant statistical difference (P< 0.05) in psychiatric disorders LD, ODD, CD and PDD had higher percentage of male(61.4%, 73.7, 86.7% and 70% respectively) than female (38.6%, 26.3%, 13.3% and 30%). However in anxiety, depression and OCD the percentage was higher in female (77.4%, 53.8% and 53.6% respectively) than male (22.6%, 46.2% and 46.4% respectively) .T his results was agreement with the results of Yüce et.al., 2013 who found that there was a higher percentage of ODD and CD in male (72.3% and 6% respectively) than female (60% and 4% respectively), however in anxiety, depression the percentage was higher in female (68% and 20% respectively)than male (43.4% and 6% respectively). Similarly Roy et.al., 2014 was reported that anxiety is more prevalent in girls.

In the current study the subscales of Wechsler intelligence scale for children (WISC) regarding the performance and verbal subtest there was a higher percentage of average (78.1%, 76.3% respectively) than sub average (11.1%, 12.5% respectively), while the above average was the lowest (10.8%, 11.1% respectively). There was a statistical significant difference between both groups in Performance and verbal WISC (p< 0.05). there was a higher percentage of average than sub and above average in WISC Performance in the ADHD group (69.2%, 23.1% and 7.7% respectively) in comparison to normal group (79%, 9.9% and 11.1% respectively) and a higher percentage of average than sub and above average in verbal WISC in the ADHD group (65.4%, 26.9% and 7.7% respectively), in comparison to normal group (77.4%, 11.1% and 11.5% respectively), This results was agreement with the results of Tsai et.al., 2013 who was stated that children with ADHD had lower Verbal

IQ and Full IQ. Rommelse et.al., 2008 showed that children with ADHD had the lowest and controls the highest IQ scores.I n consistence with de Zeeuw et.al., 2012 who stated that in the analyses of the below and above median IQ subgroups, it was found that there was no differences from controls. Pires Tde et.al., 2013 reported that children with low IQ scores and boys more likely to display the ADHD. Whitaker et.al., 2013 found that ADHD is associated with strategic verbal memory deficits. And intellectually gifted youth with ADHD achieving higher T scores than youth of average intellectual abilities with ADHD.

There was a statistical significant difference (P< 0.001) of Performance subscales of WISC versus ADHD sub types, with a higher percentage of average than sub average and above average, where in ADHD- HI were (46.1%, 7.7% and5.8% respectively), in ADHD- I were (15.4%, 1.9% and0.00% respectively), while in ADHD- C were (7.7%, 13.5% and1.9% respectively) . There was a statistical significant difference (P= 0.002) of verbal subscales of WISC versus ADHD sub types, with a higher percentage of average than sub average and above average, where in ADHD- HI were (46.1%, 11.5% and1.9% respectively), in ADHD- I were (9.6%, 3.9% and3.9% respectively), while in ADHD- C were (9.6%, 11.5% and1.9% respectively), These findings agree with the results of Zambrano- Sánchez et.al., 2010 who was reported that children with ADHD- C and ADHD- I showed significant lower V- IQ, P- IQ, and T- IQ scores when compared with control children.S imilarly Yang et.al., 2013 reported that the cognitive profile analysis of ADHD subtypes revealed children with inattentive subtypes to have a greater weakness in processing speed performance. In contrast Di Trani et.al., 2011 stated that no differences between children with different subtypes of ADHD on measures of EF

As regard the correlation between WISC and result of the CTRS- 39 test, it was found that there was a statistical significant negative correlation (p< 0.05) between Performance and verbal subscale of WISC and different results of the CTRS- 39 test (hyperactivity, Conduct problem, Emotional overindulgent, Anxious- passive, Asocial and Attention problem) where the r value were (- 0.361, 0.308, 0.296, 0.216, 0.308 and 0.412 respectively) with performance, and were (- 0.346, 0.295, 0.285, 0.280, 0.295 and 0.394 respectively) with verbal WISC. These findings agree with the results of Amiri et.al., 2013 who was stated that there was a significant negative associations between degree of ADHD and performance and verbal intelligence (r= -0.25, -0.35 respectively) . Similarly Mazzone et.al., 2011 reported that the IQ and ADHD scores were negatively correlated (r= - 0.68; p< 0.01)

In the current study there was a higher% of ADHD in male, governmental school and working mother (6.5%, 6.4%, 6% respectively) than female and private school and not working mother (2.6%, 2.8% 3.1% respectively), with odd ratio (0.402, 0.411 and0.525 respectively) and 95% CI (0.215- 0.751.0.223- 0.760 and 0.289- 0.954 respectively). This result was agreement with the results of Malek et.al., 2012 who reported that among the associated factors with ADHD were gender and maternal employment. Boys (OR0.54; 95% confidence interval: 0.34- 0.86) and those children with working mothers (OR0.16: 95% confidence interval: 0.06- 0.86) suffered more from ADHD. The birth season, family size, birth order, and parental kinship were not among risk factors for ADHD. Hautmann et.al., 2013 reported that younger age and male sex, were predictive of the high- severity class.

As regard the social class it was found that there was a higher percentage

of middle class (48.1%) in ADHD than low class (34.6%) while high class was 17.3%. These findings agree with the results of Kim and Yoo., 2013 who was found that the percentage of high socioeconomic state (SES), middle and low SES were (27.9%, 54.2% and 17.9% respectively). In contrast Venkata and Panicker., 2013 were reported that the prevalence among lower socio-economic group was found to be 16.33% and that among middle socio-economic group was 6.84%. Larson et.al., 2013 found that results indicated that low family income in early childhood was associated with increased likelihood of ADHD.

Regarding to the paternal and the maternal education, the highly educated group represent a higher percentage than middle, while the low education represent a smaller percentage. Where the percentage of highly educated father of cases with ADHD was 67.3%, the middle education was 23.1% while the low paternal education represents 9.6%. The percentage of highly educated mother of cases with ADHD were 52.0%, the middle education was 36.5%, while the low paternal education represent 11.5%. These findings agree with the results of Kim and Yoo., 2013 who was found that the percentage of Paternal education of middle school or less, high school, college or more of cases with ADHD were (3.5%, 17.5% and 79.3% respectively) however maternal education of middle school or less, high school, college or more were (9.1%, 26.8 and 64.1% respectively). In contrast Pires Tde et.al., 2013 found that the ADHD in a child whose mother failed to complete fundamental schooling is 2.6 times more than in a child whose mother completed fundamental or higher education.

Conclusion:

High prevalence of ADH symptoms and psychiatric comorbidities, CTRS is a commonly used measure of behavioral problems associated with ADHD, negative correlation between subscale of WISC and different results of the CTRS- 39 test

Recommendations:

Early detection of under diagnosed attention deficit hyperactivity symptoms in school children, referral to psychiatric departments for early management and good prognosis, so preventing the several negative impacts on their academic achievement, family relations, psychosocial development and over all their social integration.

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