The Actual State of Children with Hyperactivity Disorder in Ho Chi Minh City

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This research focuses on the reality of hyperactivity disorder (HD) on the age groups of primary school children in Ho Chi Minh City. According to the investigation using Conners' scale, the rate of children who belong to the above average score level is 5.1%, and the high score level is 6.1%. The number of HD children aged 8-12 decreases over the ages. The male HD rate is higher than female. There are significant differences in the HD average point according to the birth methods such as forceps delivery. Based on the findings, special knowledge of the relativity between ADHD and other factors, as well as the co-morbidity of HD and other developmental disorders can be explored.

Key Words: hyperactivity disorder (HD), impulsivity, Conners' scale, primary school children

Ⅰ. Rationale

In 1845, Heinrich Hoffman, a German neurologist, first wrote about the hyperactivity symptoms. Today, the term Attention Deficit Hyperactivity Disorder or ADHD is commonly used in the International Classification of Disabilities 10 (ICD-10) and Diagnostic and Statistic Manual of Mental Disorders IV (DSM-IV). According to DSM-IV, ADHD is widely used with three types of expression: Attention Deficit Disorder - ADD, Hyperactivity Disorder - HD, and Attention Deficit hyperactivity Disorder - ADHD.

In this article, we will focus on the hyperactivity and impulsivity disorder (HD). Students with HD express the excessive condition of attention deficit, hyperactivity and impulsivity which affect their learning, emotional development and social skills. They often react instinctively, act without thinking and cannot stay still. When asked, they usually talk too much and too loud, answer all questions even when not listening through or do not wait for turn to reply. During all activities, they find it difficult to follow the game rules, to wait for turn, and they are impulsive, violent, and aggressive uncontrollably. Thus, the symptoms of HD increase the risk of behavior problems in the classroom and impair the learning outcomes. In addition, children with HD also have some other disorders such as conduct disorder, oppositional defiant disorder, mood disorder, and anxiety disorder. There is co-morbidity between HD and disruptive behavior, oppositional defiant disorder, conduct disorder (Whalen & Henker, 1985) [9, pp.384-387].

Ⅱ. The actual state of children with HD in Ho Chi Minh City

We use Conners' Scale (adapted by Nguyen Cong Khanh into Vietnamese in 2002) and the short version for teachers (T) and parents (P) to measure the child's HD. Levels of evaluation are as follows:

- ***Average:*** Below 60 points (i.e. young children with normal behavior)
- ***Above average:*** 60-64 points (kids have a little more behavior problems than normal)
- ***High:*** 65-69 points (children have more behavior problems than normal)
- ***Very high:*** Over 70 points (children have a lot more behavior problems than normal)

According to the calculation of the Conners' scale, the T-score of 65 is considered a landmark to determine whether to continue to diagnose HD children or not. If we reduce to the landmark 5 points down and the T-score is 60, we will have more children that need observation than in practice. We chose those with the T-score of 60

points and up, this method of research serves the screening orientation.

According to ICD-10 and DSM-IV, children with HD have an early onset (before 7 years old) in the developmental process, particularly show evidence when reaching the elementary school age. Therefore, we selected 821 elementary school students (aged 8-11) in grade 2 to grade 5 at 20 city elementary schools in Ho Chi Minh City, and involved 821 parents and 21 head teachers of these children (on the basis of random sampling).

Ⅱ-1 Percentage of children with HD (8-11 years) in HCMC, Vietnam

Fig. 1 shows:

(1) The normal distribution of the young HD assessed by teachers and parents tend to go up significantly. In which, 22 teachers and parents assessed young HD at the Above Average level, 12 cases at High level and 28 cases at Very High level. However, there are some unusual circumstances in which existed the evaluation gap between teachers and parents. For example, there are 5 cases where parents had Very High assessment but teachers assessed Average. Or 8 cases where teachers got Very High, but parents assessed Above Average. The remaining cases are where parents/ teachers assessed High /Very High but teachers/ parents evaluated Above Average /High.

(2) Inspection of the Pearson correlation shows the correlation, between the two assessment scores by teachers and parents for children with HD (Pearson = 0.547, Sig = 0.000 <0.005). Accordingly, those who received Above Average/ High/ Very High scores by teachers/ parents are also evaluated by parents/ teachers at the corresponding level.

Table 1 and **Fig. 2** show:

(1) 88.79% of children with normal development: The children do not manifest HD.

(2) 5.12% of children with Above Average score: Some children have some more problems of HD

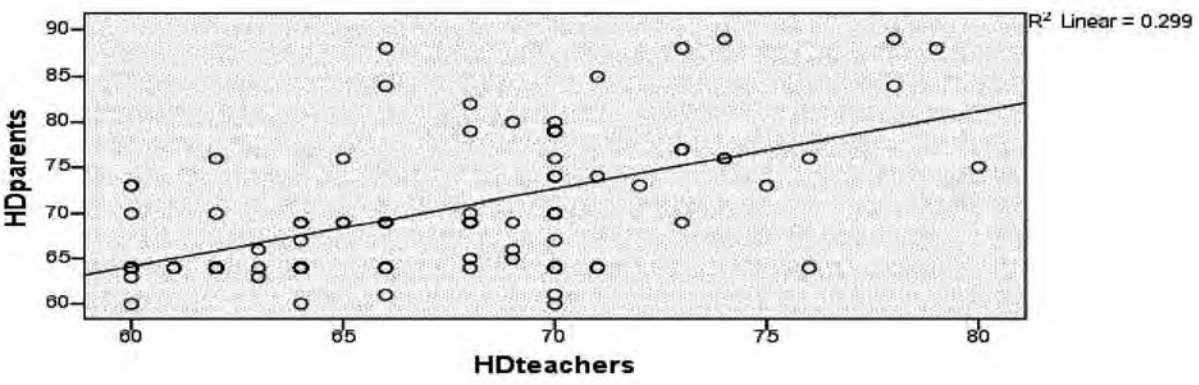


Fig. 1 Distribution of HD children

Table 1 Percentage of children with HD in HCMC (%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Average	729	88.8	88.8	88.8
	Above average	42	5.1	5.1	93.9
	High	50	6.1	6.1	100.0
	Total	821	100.0	100.0	100.0

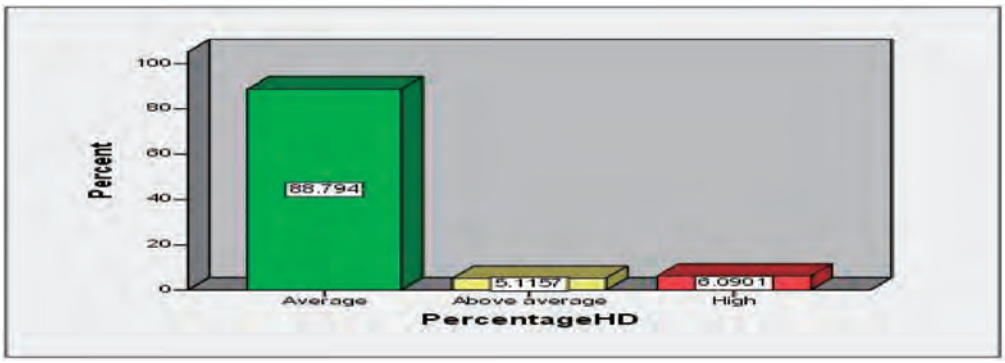


Fig. 2　Percentage and levels of HD

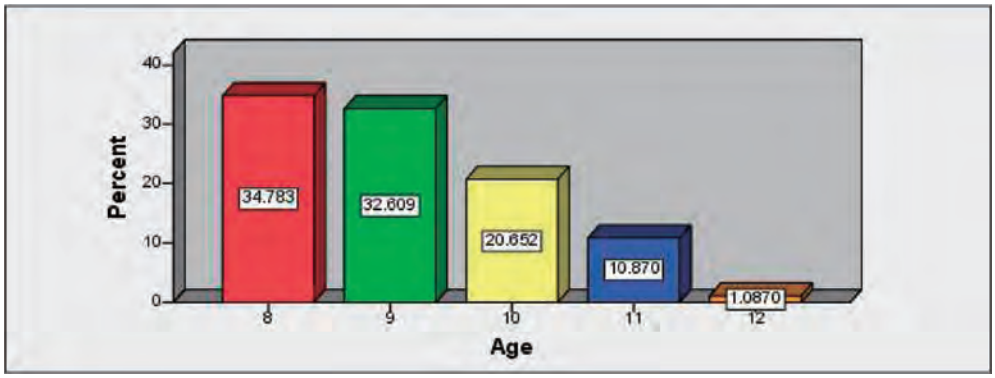


Fig. 3　Percentage of children with HD by age

than typical children, and need monitoring and screening.

(3) 6.09% express HD, those children have more problems than normal, and should be referred to a diagnosis or clinical examination immediately.

To screen for 8-11 year-old children at risk of HD in HCM City, we use data and analysis on children at risk of HD from the above average level to high level and very high level.

Ⅱ-2　The percentage of children with HD by age

Fig. 3 shows: The number of children with HD decreases over the ages from 8 to 12, which focuses more on children at 8 years of age (34.78%), 9 years (32.61%) and 10 years (20.65%), the lowest number of children at 11 years old (10.87%), only 1 child at 12 years old (1.087%).

Table 2 shows that both teachers and parents assessed the HD average points for all children in each age group at High and Very High. Test ANOVA revealed no significant difference between the average HD points. Parents (F = 0.99, Sig =

Table 2　The average age HD

Age		HD parents	HD teachers
8	Mean	68.72	66.91
	N	32	32
	Std. Deviation	6.873	5.139
9	Mean	72.17	68.37
	N	30	30
	Std. Deviation	7.755	3.479
10	Mean	69.95	68.00
	N	19	19
	Std. Deviation	8.195	6.046
11	Mean	72.30	66.60
	N	10	10
	Std. Deviation	8.274	5.254
12	Mean	73.00	60.00
	N	1	1
	Std. Deviation	–	–
Total	Mean	70.53	67.50
	N	92	92
	Std. Deviation	7.605	4.893

0.417), teachers (F = 1.078, Sig = 0.372).

Table 3 shows teachers and parents' evaluation by age as follows:

(1) Children aged 8: parents and teachers assessed 76.9% of children with above average HD, 77.8% with high and 80% with very high

(2) Children aged 9: parents and teachers assessed 80% with above average, 25% with high, and 70.6% with very high levels

(3) Children aged 10: parents and teachers assessed 100% with above average, 50% with high and 71.4% with very high

(4) Children aged 11: parents and teachers assessed 50% with high and 75% with very high

(5) Both teachers and parents assessed more children with very high HD than with other levels in all aged.

Inspection shows certain correlation and statistical significance between the evaluation of teachers and parents in children at 8, 9 and 10 years old, the correlation coefficient: Age 8 (Cramer's V = 0.689, Sig = 0.000), age 9 (Cramer's V = 0417, Sig = 0.034), age 10 (Cramer's V = 0.685, Sig = 0.001). This means if parents assess the 8,9, and 10 year-old children with HD at a certain level, the teachers also rated at the corresponding level and vice versa.

Ⅱ-3 The percentage of children with HD by gender (Fig. 4)

Table 4 shows the average score for girls were rated lower by both parents and teachers than for boys. The average score for both girls and boys were rated higher by parents than by teachers. The standard deviation was lower in the teachers' evaluation, therefore teachers' evaluation was more concentrated.

Test ANOVA shows a significant difference between the average HD score of both boys and girls rated by parents and teachers. Accordingly, the HD average point of boys is higher than of girls. Coefficient: parents (F = 4,089, Sig = 0.046), teachers (F = 4,428, Sig = 0.038)

Fig. 5 shows teachers assessed that HD male concentrated in a very high level (70 points) and HD female in above average.

Fig. 6 shows parents' assessment for both girls and boys concentrated in the above average level. In addition, more boys are at high and very high levels than girls.

Table 5 shows the teachers and parents' reviews on gender as followed:

(1) In girls: both teachers and parents assessed 87.5% of children with HD signs at the above average level, 75.5% of children with HD signs at the high level, and 77.8% of children with HD signs at the very high level.

(2) In boys: both teachers and parents assessed 53.3% of children with HD signs at the above average level, 40% of children at the high level and 72.4% of children at the very high level.

Inspection shows high correlation and statistical significance in the teachers' and parents' evaluation of HD in girls (Cramer's V=0.718, Sig= 0.000). There is low correlation with statistical significance in the teachers and parents' evaluation of HD in boys (Cramer's V=0.351, Sig=0.006). Accordingly, if the teachers assessed that girls/boys have HD at above average/high/very high levels, then the parents assessed them have HD at respective levels and vice versa.

Ⅱ-4 Other risk factors related to the Hyperactivity Disorder

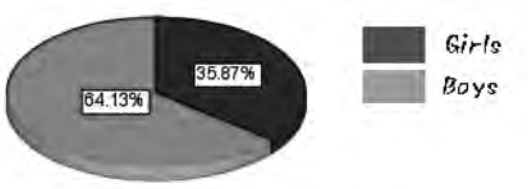
The research investigated the developmental process of children from birth to present through interview with parents: Method of birth delivery (natural delivery, forceps delivery, and surgical delivery), premature and mature birth, weight at birth, with or without breast-feeding, the birth order, children's care giver, parents' marital status, milestones in movement and language development (flip, crawl, sit, walk, talk), etc. in order to find out about the influential factors on the HD in children. We have found the method of birth delivery relevant to the HD.

Table 3　Teachers' and Parents' evaluation by age

Gender and Age				Levels HD teachers			Total
				Above average	High	Very high	
8	Levels HD parents	Above average	Count	10	1	1	12
			% within Levels HD teachers	76.9%	11.1%	10.0%	37.5%
		High	Count	3	7	1	11
			% within Levels HD teachers	23.1%	77.8%	10.0%	34.4%
		Very high	Count	0	1	8	9
			% within Levels HD teachers	0.0%	11.1%	80.0%	28.1%
	Total		Count	13	9	10	32
			% within Levels HD teachers	100.0%	100.0%	100.0%	100.0%
9	Levels HD parents	Above average	Count	4	2	5	11
			% within Levels HD teachers	80.0%	25.0%	29.4%	36.7%
		High	Count	0	2	0	2
			% within Levels HD teachers	0.0%	25.0%	0.0%	6.7%
		Very high	Count	1	4	12	17
			% within Levels HD teachers	20.0%	50.0%	70.6%	56.7%
	Total		Count	5	8	17	30
			% within Levels HD teachers	100.0%	100.0%	100.0%	100.0%
10	Levels HD parents	Above average	Count	8	0	1	9
			% within Levels HD teachers	100.0%	0.0%	14.3%	47.4%
		High	Count	0	2	1	3
			% within Levels HD teachers	0.0%	50.0%	14.3%	15.8%
		Very high	Count	0	2	5	7
			% within Levels HD teachers	0.0%	50.0%	71.4%	36.8%
	Total		Count	8	4	7	19
			% within Levels HD teachers	100.0%	100.0%	100.0%	100.0%
11	Levels HD parents	Above average	Count	0	1	1	2
			% within Levels HD teachers	0.0%	50.0%	25.0%	20.0%
		High	Count	1	1	0	2
			% within Levels HD teachers	25.0%	50.0%	0.0%	20.0%
		Very high	Count	3	0	3	6
			% within Levels HD teachers	75.0%	0.0%	75.0%	60.0%
	Total		Count	4	2	4	10
			% within Levels HD teachers	100.0%	100.0%	100.0%	100.0%
12	Levels HD parents	Very high	Count	1	-	-	1
			% within Levels HD teachers	100.0%	-	-	100.0%
	Total		Count	1	-	-	1
			% within Levels HD teachers	100.0%	-	-	100.0%

Table 4 HD children by gender

Gender		HD parents	HD teachers
Girls	Mean	68.42	66.09
	N	33	33
	Std. Deviation	8.163	4.482
Boys	Mean	71.71	68.29
	N	59	59
	Std. Deviation	7.074	4.973
Total	Mean	70.53	67.50
	N	92	92
	Std. Deviation	7.605	4.893



More boys (64.13%) with HD than girls (35.87%)

Fig. 4 Percentage of children with HD by gender

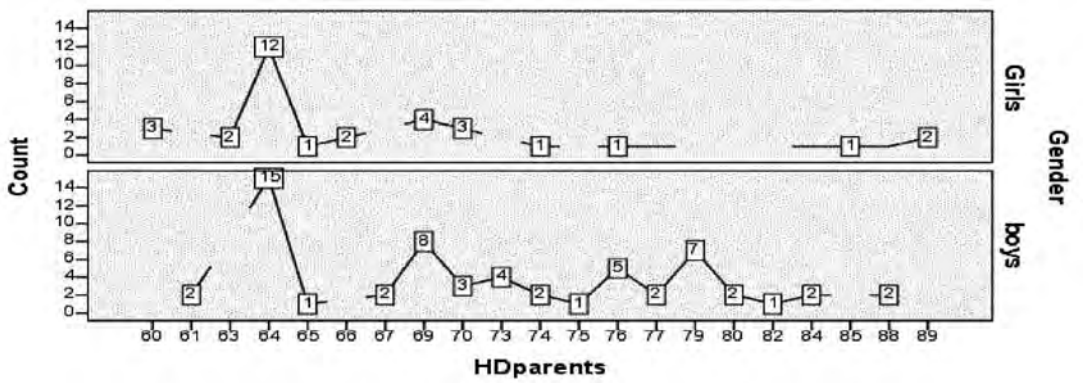


Fig. 5 The HD children by gender (Teacher)

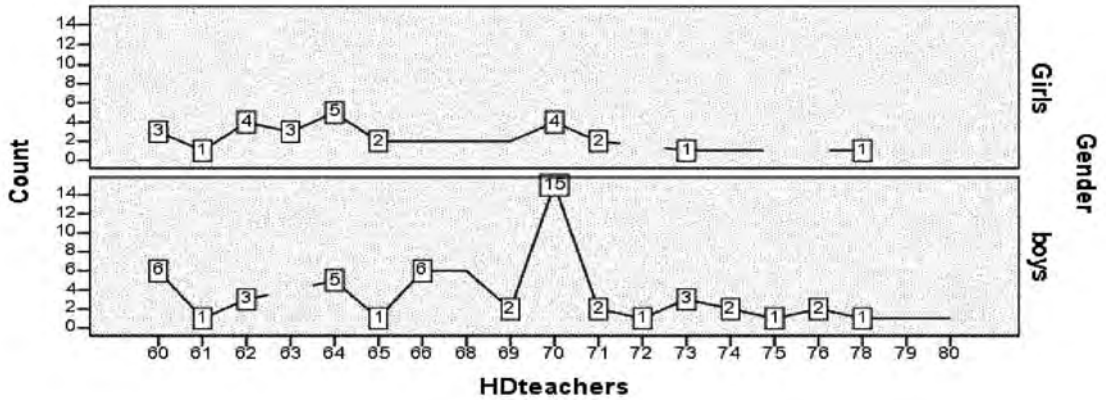


Fig. 6 The HD children by gender (Parents)

Table 5　Teachers' and parents' evaluation by gender

Gender				Levels HD teachers			Total
				Above average	High	Very high	
Girls	Levels HD parents	Above average	Count	14	1	2	17
			% within Levels HD teachers	87.5%	12.5%	22.2%	51.5%
		High	Count	1	6	0	7
			% within Levels HD teachers	6.2%	75.0%	0.0%	21.2%
		Very high	Count	1	1	7	9
			% within Levels HD teachers	6.2%	12.5%	77.8%	27.3%
	Total		Count	16	8	9	33
			% within Levels HD teachers	100.0%	100.0%	100.0%	100.0%
Boys	Levels HD parents	Above average	Count	8	3	6	17
			% within Levels HD teachers	53.3%	20.0%	20.7%	28.8%
		High	Count	3	6	2	11
			% within Levels HD teachers	20.0%	40.0%	6.9%	18.6%
		Very high	Count	4	6	21	31
			% within Levels HD teachers	26.7%	40.0%	72.4%	52.5%
	Total		Count	15	15	29	59
			% within Levels HD teachers	100.0%	100.0%	100.0%	100.0%

Table 6 and **Fig. 7** show that the HD average point of children with forceps births is very high and the highest (78.6), followed by those with surgical births (73.8) and the lowest of children with normal birth is still very high (69.7). Test ANOVA shows a significant difference between the average score according to the birth methods ($F = 4.195$, $Sig = 0.018 < 0.05$). Accordingly, the forceps births and surgery tend to have higher average points.

Ⅱ-5　HD and the co-morbidity with other disorders

We understand, through parents' and teachers' evaluation, that HD in children is co-morbid with attention deficit disorder (ADD) and oppositional defiant disorder (ODD).

The correlation between HD and ADD evaluated by parents tend to go up significantly and there are also some cases scattered around this trend. Testing showed a positive correlation and high statistical significance between HD and ADD in parents' evaluation. Accordingly, many young HD have the average point in the above average/high/very high, and have respective point in ADD. (HSTQ Pearson = 0.686, Sig = 0.000)

Table 7 and **Fig. 8** shows the parents' reviews:

(1) HD children at above average: 85.3% of children with no signs of ADD, 2.9% of children with above average ADD, 8.8% with high ADD and 2.9% with very high ADD

(2) HD children at high: 61.1% of children with no signs of ADD, 16.7% of children with above average ADD, 16.7% with high ADD and 5.6% with very high ADD

(3) HD children at very high: 15% of children with no signs of ADD, 25% of children with above average ADD, 35% with high ADD and 25% with very high ADD

(4) Inspection shows certain correlation and statistical significance in the parents' evaluation of HD and ADD in children. Accordingly, many young HD have points at above average / high / very high, and have ADD points at respective levels. (Cramer's $V = 0.457$, $Sig = 0.000 < 0.005$)

Table 6 The HD average point and the method of birth delivery

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Normal birth	80	69.74	6.737	.753	68.24	71.24	60	88
Forcep births	5	78.60	9.127	4.082	67.27	89.93	70	89
Surgical births	7	73.86	12.185	4.606	62.59	85.13	60	89
Total	92	70.53	7.605	.793	68.96	72.11	60	89

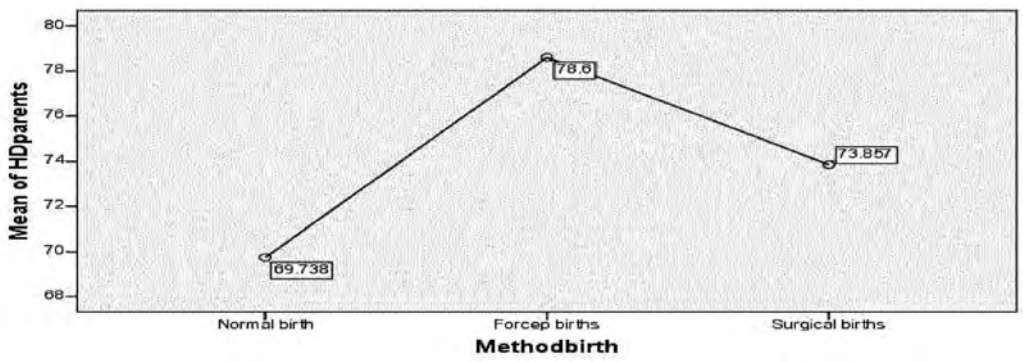


Fig. 7 The HD average point and the method of birth

Table 7 Cross Tabulation (HD and ADD levels by parents)

			Levels ADD parents				Total
			Average	Above average	High	Very high	
Levels HD parents	Above average	Count	29	1	3	1	34
		% within Levels HD parents	85.3%	2.9%	8.8%	2.9%	100.0%
	High	Count	11	3	3	1	18
		% within Levels HD parents	61.1%	16.7%	16.7%	5.6%	100.0%
	Very high	Count	6	10	14	10	40
		% within Levels HD parents	15.0%	25.0%	35.0%	25.0%	100.0%
Total		Count	46	14	20	12	92
		% within Levels HD parents	50.0%	15.2%	21.7%	13.0%	100.0%

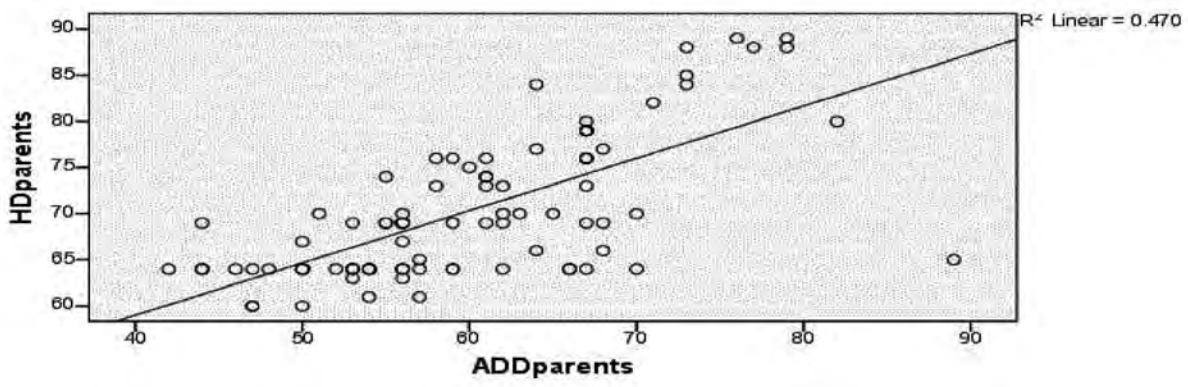


Fig. 8 Distribution of HD and ADD (Parents)

Fig. 9 shows the correlation between HD and ADD in teachers' assessment tend to go up but is not clear. However, there are many cases scattered around this trend. Testing showed a positive correlation, low and no statistically significance between HD and ADD. Accordingly, very few children with HD at limit / high /very high levels have ADD respectively. (Pearson = 0.321, Sig = 0.001＞ 0.000)

Table 8 shows teachers' evaluation as followed:
(1) HD children at above average: 83.9% of children with no signs of ADD, 9.7% of children with above average ADD, and 6.5% with high ADD
(2) HD children at high: 56.5% of children with no signs of ADD, 30.4% of children with above average ADD, 8.7% with high ADD and 4.3% with very high ADD
(3) HD children at very high: 50% of children with no signs of ADD, 26.3% of children with above average ADD, 18.4% with high ADD and 5.3% with very high ADD
(4) Inspection shows no correlation in the teachers' evaluation of HD and ADD in children. Accordingly, many young HD have points at above average / high / very high, but do not have ADD points at respective levels. (Cramer's V = 0.238, Sig = 0.108＞ 0.05)

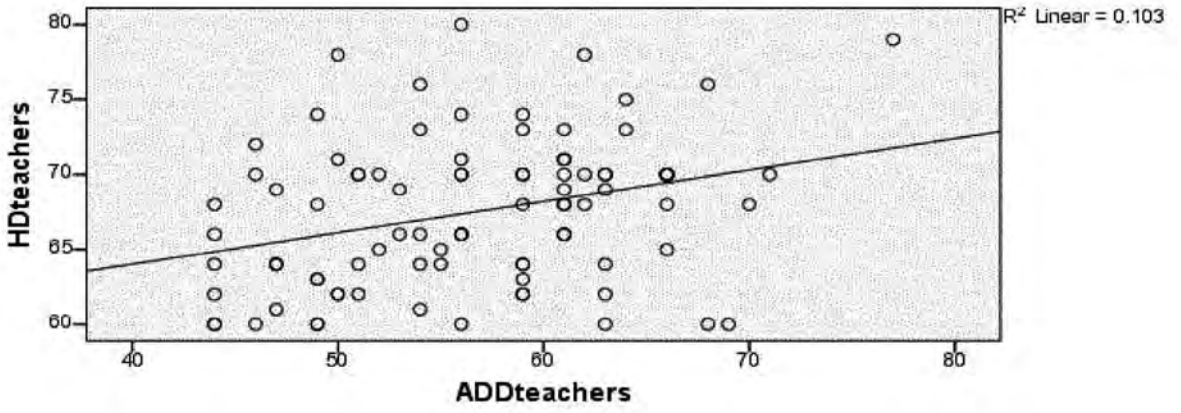


Fig. 9　Distribution of HD and ADD point (Teachers)

Table 8　Cross Tabulation (HD and ADD levels by Teachers)

			Levels ADD teachers				Total
			Average	Above average	High	Very high	
Levels HD teachers	Above average	Count	26	3	2	0	31
		% within Levels HD teachers	83.9%	9.7%	6.5%	0.0%	100.0%
	High	Count	13	7	2	1	23
		% within Levels HD teachers	56.5%	30.4%	8.7%	4.3%	100.0%
	Very high	Count	19	10	7	2	38
		% within Levels HD teachers	50.0%	26.3%	18.4%	5.3%	100.0%
Total		Count	58	20	11	3	92
		% within Levels HD teachers	63.0%	21.7%	12.0%	3.3%	100.0%

Fig. 10 shows the correlation between HD and ODD in parents. The correlation between HD and ODD in children assessed by parents tends to go up significantly. However, there are some cases scattered around this trend. Testing showed a high correlation, positive and statistically significant between HD and ODD in parents' assessment. Accordingly, the HD children have the average points at above average/high/very high levels and the corresponding ODD points (Pearson = 0.634, Sig = 0.000).

Table 9 shows:

(1) HD children at above average: Parents assessed that 82.4% of children with no signs of ODD, 14.7% of children with above average ODD, and 2.9% with high ODD

(2) HD children at high: Parents assessed 55.6% of children with no signs of ODD, 22.2% of children with above average ODD, 11.1% with high ODD and 11.1% with very high ODD

(3) HD children at very high: Parents assessed 32.5% of children with no signs of ODD, 10% of children with above average ODD, 10% with high ADD and 47.5% with very high ODD

(4) Inspection shows a positive correlation and statistic significance in the parents' evaluation of HD and ODD in children. Accordingly, HD children with points at above average / high / very high have ADD points at respective levels. (Cramer's V= 0.408, Sig=0.000)

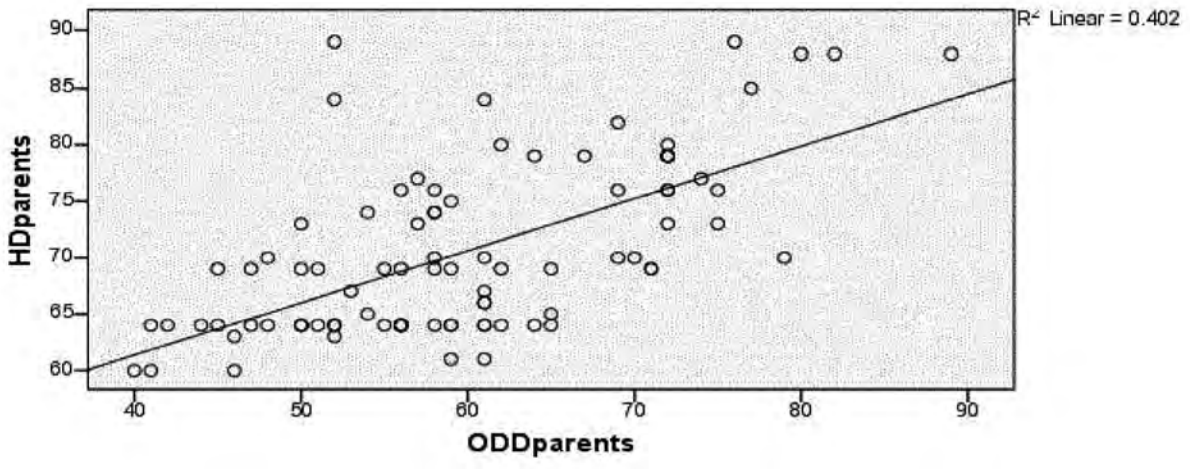


Fig. 10 Distribution of HD and ODD (Parents)

Table 9 Cross Tabulation (HD and ODD levels by parents)

			Levels ODD parents				Total
			Average	Above average	High	Very high	
Levels HD parents	Above average	Count	28	5	1	0	34
		% within Levels HD parents	82.4%	14.7%	2.9%	0.0%	100.0%
	High	Count	10	4	2	2	18
		% within Levels HD parents	55.6%	22.2%	11.1%	11.1%	100.0%
	Very high	Count	13	4	4	19	40
		% within Levels HD parents	32.5%	10.0%	10.0%	47.5%	100.0%
Total		Count	51	13	7	21	92
		% within Levels HD parents	55.4%	14.1%	7.6%	22.8%	100.0%

Fig. 11 shows the correlation between HD and ODD in teachers' assessment tends to go up significantly. However, there are some cases scattered around this trend. Testing showed a high correlation, positive and statistically significant between HD and ODD in teachers' assessment. Accordingly, some HD children with the average points at above average/high/very high levels have the corresponding ODD points. (Pearson＝0.520, Sig＝0.000)

Table 10 shows that:

(1) HD children at above average: 41.9% of children with no signs of ODD, 16.1% of children with above average ODD, 22.6% with high ODD and 19.4% with very high ODD

(2) HD children at high: 17.4% of children with no signs of ODD, 8.7% of children with above average ODD, 34.8% with high ODD and 39.1% with very high ODD

(3) HD children at very high: 10.5% of children with no signs of ODD, 2.6% of children with above average ODD, 10.5% with high ODD and 47.8% with very high ODD

(4) Inspection shows a low correlation and statistical significance in the teachers' evaluation of HD and ODD in children. Accordingly, only some young HD have points at above average / high / very high, and have ODD points at respective levels. (Cramer's V = 0.387, Sig = 0.000)

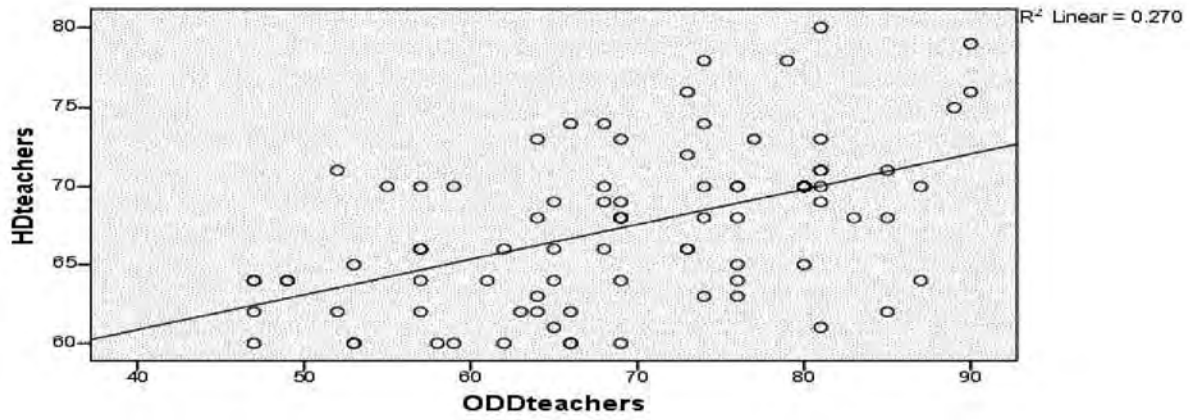


Fig. 11　Distribution of HD and ODD point (Teachers)

Table 10　Cross Tabulation (HD and ODD levels by teachers)

			Levels ODD teachers				Total
			Average	Above average	High	Very high	
Levels HD teachers	Above average	Count	13	5	7	6	31
		% within Levels HD teachers	41.9%	16.1%	22.6%	19.4%	100.0%
	High	Count	4	2	8	9	23
		% within Levels HD teachers	17.4%	8.7%	34.8%	39.1%	100.0%
	Very high	Count	4	1	4	29	38
		% within Levels HD teachers	10.5%	2.6%	10.5%	76.3%	100.0%
Total		teachers Count	21	8	19	44	92
		% within Levels HD teachers	22.8%	8.7%	20.7%	47.8%	100.0%

Ⅲ. Conclusion

◆According to the investigation in Ho Chi Minh City, based on Conners' scale, the rate of children who belong to the above average score level is 5.1%, and the high score level is 6.1%.

◆The number of HD children aged 8-12 decreases over the ages; it focuses more on children aged 8 (34.78%) and aged 9 (32.61%). There is a certain correlation and statistical significance between teachers' and parents' evaluation of children aged 8, 9 and 10, which means if parents assessed the HD children aged 8, 9 and 10 at a certain level, the teachers also rated them at the corresponding level. No significant difference in the average score of HD children is shown at the ages. However, both teachers and parents have assessment of HD children at high to very high levels.

◆The male HD rate is higher than female. There are significant differences between HD average points of male and female assessed by teachers and parents, in which the HD average in boys is higher than in girls.

◆There are significant differences in the HD average point according to the birth methods. Accordingly, the method forceps births and surgery tend to have higher average points of HD in children.

◆There is no correlation between HD and ADD in assessment by teachers. Accordingly, many children at the above average/high/very high levels of HD do not have ADD points at respective levels. But parents evaluated the positive correlation, and high statistical significance between HD and ADD in children.

◆Both parents and teachers agree that there is a positive correlation, low and statistical significance in the evaluation of teachers on children's HD and ODD. Accordingly, only some HD children point at the above average/high/very high levels have ODD at respective levels.

From the research results, we find it necessary to promote research, intervention and education for children with ADHD in Ho Chi Minh City in particular and in Vietnam in general in order that teachers and parents can understand the disorder features in children as well as to benefit professionals and researchers interested in this disorder.

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