Factors associated with Attention Deficit/Hyperactivity Disorders in school-age children In Thailand

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Abstract

This cross-sectional study examined relationship between risk factors and Attention Deficit/ Hyperactivity Disorders (ADHD) among school-age children. Samples were 7,188 Thai students in grade 1-5 in primary schools by using three-stages stratified cluster sampling and classified by regions, provinces and school types. Participants and their parents were screened by SNAP-IV Thai (parent version) and then interviewed by child and adolescent psychiatrists following DSM-IV criteria which there were 521 ADHD and 1,750 non-ADHD children for this study. Descriptive statistic, Chi-square test and multiple logistic regressions were used. Results suggested that factors associated with ADHD among school-age children were male, grade 1-3, living with relatives, class repetition or punishment of teacher. Also, family and parental factors which were widow, divorced or separated parent, low educated parents, family with insufficient income and debt, father who had history of inattention/hyperactivity, drug addicted, or disruptive behavior, and parent with lack of knowledge about ADHD. This study illustrated that ADHD relates to not only personal factors of the children themselves but also parental and family factors. The stakeholders of child health care should concern on those factors with regards to early screening and getting appropriate treatment.

Keywords: ADHD, associated factors, school-age children

Background

Attention Deficit/Hyperactivity Disorder (ADHD) is one of the most common behavioral and neurodevelopment pediatric disorders, with symptoms of inattention, hyperactivity and impulsivity, associated with dysfunctional school performance and social behavior, persists into adulthood up to 60% of case and usually associated with the presence of one or more major comorbid psychiatric disorders (APA, 2000)

The prevalence of ADHD is higher in the Arab region than that in the other parts of the world (Bener et al., 2006). ADHD have been found approximately 9% of schoolage children worldwide (Halperin& Healey, 2011). In Thailand, the prevalence of ADHD in Thai students is 8.1% which boys(12%) was substantially higher than girls (4.2%) (Visanuyothin et al., 2013).

Researches of factors related to ADHD focused on various fields including genetic and biological factors, personality traits, social and personal factors (Strine et al., 2006).Also, environmental factors, which are financial status, marital status, violent parenting, parents' history of psychiatric illness, children with low intelligence, academic failure and social rejection, lead to associated with ADHD(Miller et al., 2006). However, only a few studies in these areas have been found in Thailand.

Early diagnosis of ADHD children and discovery of factors leading to ADHD would be helpful for developing suitable treatment plan for specific symptoms and further complications from treatment (Rosenberg et al., 2013). Accordingly, this study aimed to examine factors associated with ADHD among primary school students. The results from this study would be useful for treatment planning together with other medical teams in order to improve the life quality of the children and their family

Objective

This cross-sectional analytical study examined relationship between risk factors and ADHD among school-age children.

Methods

Sample and population

Participants were 7,188 students in primary school from grade 1 to 5 in four regions of Thailand and Bangkok. Regarding inclusion and exclusion criterias, 521 ADHD children from the study of prevalence of ADHD in Thailand (Visanuyothinet al.,2013) were selected by using random three-stage stratified sampling method. For the control group, non-ADHD participants were matched the ADHD by years of age.

Research Tools

A set of questionnaires about personal factors including sex, age, religion, educational level and background; along with parents information consisting of marital status, educational background, occupation, sufficiency of income, knowledge on ADHD and past behavioral problems such as hyperactivity, drug addiction, lying, stealing, and disruptive behaviors.

There were two steps of diagnostic process. The first step was screening by using SNAP-IV Thai version which has the sensitivity 82% and specificity 60% (Buransuksakul&Pityratsatian, 2008). Afterwards, participants and their parents were interviewed by child and adolescent psychiatrists following DSM-IV criteria.

Statistical methods

Collected data were analyzed by the Statistical Package for the Social Sciences (SPSS) version 17. Descriptive statistics chi-square test and univariate analysis, odds ratio, and 95% confidence interval were run. The variables with p < 0.25 was chosen for multiple logistic regressions.

Results

In ADHD group, there were 134 (25.7%) girls and 387 (74.3%) boys. The control group were 902 (51.8%) girls and 840 (48.2%) boys. The results from the chi-square test and univariate analysis showed that factors associated with ADHD among schoolage children were male, the grade 1-3 students, children who were living with relatives, children who were repeatedly in class and punished by teacher. Also, having parents who were widow, divorced, or separated, parents graduated from high school and under, family with insufficient income, having father who had history of inattention/hyperactivity, drug abuse, disruptive behaviors, and parents who did not have knowledge of ADHD (Table 1 and 2).

From table 3, the relevant risk factors of ADHD are illustrated. Boys with ADHD has 3.7 times higher than girls. Children who stay with relatives has 1.6 times higher risk than that those with parents. Student who had the history of repeating educational level or getting punishment from teacherhas 1.9 and 2.8 times higher risk than those who has no history. Divorced or separatedparents and family with insufficient income were at risk by 1.7 and 1.4 times. Having father withhistory of behavioral problem(hyperactivity/drug abuse/disruptive) and lacking knowledge on ADHDincrease the risk by 2.0, 2.0, 1.7 and 2.3 times, respectively.

	N ('		
Child factors	Non-ADHD	ADHD	p-value
	(n=1750)	(n=521)	
Sex			
-Female	902 (51.8)	134 (25.7)	
-Male	840 (48.2)	387 (74.3)	< 0.01*
Level			
-Upper Primary	729 (41.7)	163 (31.3)	
-Lower Primary	1,020 (58.3)	358 (68.7)	< 0.01*
Number of children			
-More than 1	1,333 (77.6)	391 (76.7)	
-Only 1	384 (22.4)	119 (23.3)	0.64
Caretakers			
-Both father and mother	1,033 (60.2)	250 (48.4)	
-Father or mother	332 (19.3)	132 (25.5)	< 0.01*
-Relatives	352 (20.5)	135 (26.1)	< 0.01*
History of changing school			
-No	1,290 (76.3)	382 (74.9)	
-Yes	401 (23.7)	128 (25.1)	0.52
History of retention			
-No	1,658 (97.0)	477 (92.6)	
-Yes	51 (3.0)	38 (7.4)	< 0.01*
History of getting punished			
-No	1,606 (95.0)	420 (82.5)	
-Yes	84 (5.0)	89 (17.5)	< 0.01*

 Table 1
 Comparison of child factors between Non-ADHD and ADHD students

	NI		
D	N (%)		
Parental Factors	Non-ADHD	ADHD	p-value
	(n=1750)	(n=521)	
Marital status			< 0.01
-Married	1,230 (73.0)	311 (61.1)	
-Divorced/Separated	455 (27.0)	198 (38.9)	
Education level			< 0.01
-High School	250 (15.8)	46 (9.7)	
-lower than high school	1,328 (84.2)	427 (90.3)	
Sufficiency of income			0.02
-Suffiecient	482 (29.2)	120 (24.0)	
-Insufficient	1,168 (70.8)	381 (76.0)	
Knowledge on ADHD			< 0.01
-Have	277 (15.8)	43 (8.3)	
-No have	1,473 (84.2)	478 (91.7)	
History of hyperactivity (Father)			< 0.01
-No	1,313 (84.3)	294 (64.6)	
-Yes	245 (15.7)	161 (35.4)	
Drug abuse (Father)			< 0.01
-No	1,470 (94.5)	388 (85.1)	
-Yes	86 (5.5)	68 (14.9)	
Disruptive behavior (Father)			< 0.01
-No	1,333 (86.1)	308 (68.1)	
-Yes	215 (13.9)	144 (31.9)	

Table 2Comparison of parental and family factors in non-ADHD and ADHD
students

Risk Factors	Adjusted OR (95%CI)	p-value
-Sex : Male	3.7 (2.3, 4.2)	< 0.01
-Child caretaker : Parents	1.5 (1.2, 2.0)	< 0.01
: Relative	1.6 (1.2, 2.1)	< 0.01
-History of repeating: Yes	1.9 (1.1, 3.2)	< 0.01
-History of getting punished: Yes	2.8 (2.1, 3.7)	< 0.01
-Marital Status: Divorced/Separated	1.7 (1.2, 2.3)	< 0.01
-Education Level (Father) : Lower than high school	1.6 (1.1, 2.6)	0.01
-Income sufficiency:Insufficient/on debts	1.4 (1.0, 1.8)	0.04
-Parents' knowledge on ADHD: No	2.3 (1.4, 3.7)	< 0.01
-Father's history of hyperactivity	2.0 (1.5, 2.7)	< 0.01
-Father's drug abuse	2.0 (1.2, 3.1)	< 0.01
-Father's disruptive behaviour	1.5 (1.1, 2.3)	0.01
-Mother's disruptive behviour	1.7 (1.2, 2.6)	0.01

 Table 3
 Results of binary logistic regression

Discussion

This study found that chances of boys having ADHD symptoms were higher than girls by 3.7 times, which was consistent with many previous studies (Larry, 2004; Sukanich&Lotrakul, 1998; Trangkasombat, 1998). Especially for those who are in elementary school (grade 1-3), the result corresponded to many studies both in local and overseas. The study also found that children with poor academic record and have history of repeating level of education were 1.9 times at risk which is supported by Hanna's study (2009) which found that most children with ADHD had difficulty learning (i.e. poor academic record). Moreover, 30% of children with ADHD also have learning disabilities (LD). Poor academic record is caused by the impact of the disease (Russell, 2011; Molina, Marshal, &Pelham, 2005). If teachers and parents work together to support the child, learning difficulty will be reduced. For children with aggressive behavior who were prone to punishment, the risk is as high as 2.8 times. Similarly, the study of Unnever& Cornell (2003) showed that children with ADHD were likely to have aggressive behaviors. Children are abused and like hurting others. Also, Ignorance and punishment of teachers blocked recovery of students' conditions. For ADHD children, severe punishment does not help them to behave better. On the other hand, the ways to reduce inappropriate behaviors are to provide supports, teach the right behavior clearly and provide opportunities to learn repeatedly. For parenting factors, children staying with divorced/separeated parents were 1.7 times riskier comparing with staying with normal family. Correspondingly, Brookes et al. (2006) discovered that the dysfunction of ADHD family led to development of aggressive behaviour in children with ADHD and could even lead to drug abuse during adolescent age. For parents who have poorly educated, insufficient

income or on debtsand lackof knowledge on ADHD, the risk is 2.3 times, which is consistent with the study of Masamani Veeranarong (2003), which demonstrated that most parents were lack of knowledge on ADHD, misconceptions, poor awareness and alsono compliance to the treatment process. As such, parents should be provided information of ADHD, so that they can help preventing the problem at early stage. Government should also provide financial aid to lower burden of parents.

Furthermore, the research findings discovered that parents with the history of hyperactivity were at risk of having ADHD children. This genetic characteristic has major influence on children (Hudziak et al., 2005). Parents with the history of drug usage and disruptive behaviour has high chance of bearing ADHD children, which also found in other studies (Wacharasindhu&Panyayong, 2002; Johnstone&Mash, 2001) that external factors, such as income suffiiency, marital status, violent parenting, lack of discipline influence, history of parent's psychosis and large family, contribute to the children aggressive behaviour. With low intellectual level and academic failure, children tended to below socially accepted leading to association with delinquent friends together with aggressive and inappropriate acts, eventually.

Conclusion

Students with factors associated with ADHD in school-age children- both personal factors, parenting, and environmental influences on students -should be identified for the future treatment process.

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