# Clinical Characteristics of ADHD in Thai Children

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***Objective:*** *To study the clinical characteristics of children who were diagnosed as ADHD.*
***Material and Method:*** *A retrospective chart review was conducted on 202 children who came to a child mental health clinic and were diagnosed as ADHD.*
***Results:*** *Most cases were in the 6-12 years age group and came from small families with 1-2 children. Males outnumbered females (M:F = 3.4:1). One-fifth of the sample received previous psychiatric evaluation from other health professionals but parents needed 'second opinion'. The most frequent chief complaints were academic/learning problems. Almost one-fourth of the samples came for problems not directly related to ADHD. In this group the most frequent complaints were aggressive and oppositional behavior. Comorbidity was found in 53.5%. More than half of the cases who took intelligence tests had an IQ below 90. Behavioral management was the only treatment modality in 38% of the sample. In 62% stimulants were instituted either at the beginning of treatment or as an "add-on" after behavioral management proved to be insufficient. Among cases that received stimulants, 28% needed the combination of other psychotropic medications, mostly antidepressant and anxiolytic drugs.*
***Conclusion:*** *A study of the clinical characteristics of ADHD in Thai children revealed male preponderance and high rates of non-ADHD presentations and comorbid conditions. Awareness of varied presentations of ADHD and proper treatment of comorbid conditions is imperative in the comprehensive care of ADHD children.*

***Keywords:*** *ADHD, Hyperactive children, Inattention, Learning problems, Mental health problems*

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Attention deficit hyperactivity disorder (ADHD) is a neurobehavioral disorder characterized by the core symptoms of pervasive inattention, hyperactivity and impulsivity that often result in substantial functional impairment. It has been described as one of the most common problems in school children. In the United States prevalence estimates of ADHD in school-aged children ranged from 2% to 18% in community samples[1,2]. In Brazil, the prevalence of ADHD was estimated to be 5.8%[3]. In Qatar the overall prevalence of ADHD was 9.4%[4], and in Thailand it was 6.5%[5]

ADHD symptoms vary by race, gender and age, and are associated with other emotional and behavioral difficulties[6,7]. Children with ADHD were significantly more likely than controls to have a higher prevalence of mood disorders, other disruptive behavior disorders, anxiety disorders, substance use disorders and conduct disorder[8]. Youths with ADHD had significantly higher rates of school repetitions, suspensions, and expulsions than controls[3]. Children who have a higher score for ADHD symptoms have a poorer school performance than those with lower scores[4].

In Thailand ADHD is currently a public health concern because of the diagnosis of a large and growing number of children. Yet, little is known about the characteristics of Thai children diagnosed as ADHD. A research project was started with the aim to study the characteristics of ADHD in children, the clinical course, the treatment given to these children and the outcome of treatment. The present paper reports the first part of the study which consisted of data detailing the clinical characteristics of children diagnosed as ADHD.

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## Material and Method

### *Sample and procedure*

This was a retrospective study of clinical characteristics of ADHD in children and adolescents who came to a child mental health clinic in Bangkok. This is a private outpatient healthcare facility and most of the clients came from middle to high socioeconomic status. From January 2002 to December 2003 there were 425 children and adolescents aged 1-19 years who were referred for psychiatric evaluation and treatment. Among these, 202 cases, or 47.5% were diagnosed as having ADHD. The charts of these 202 cases were systematically reviewed.

The case evaluation, treatment and follow-up of each patient were done by a child psychiatrist. Data of each case were systematically recorded. The diagnosis of ADHD was based on DSM IV criteria[9], together with the information from parents and teachers. The instruments used in the assessment included the teachers' and the parents' rating scales for ADHD which were constructed in the Thai language[10]. In some cases, where indicated, the IQ and the achievement tests were performed. All of the samples received routine clinical care for ADHD.

## Results

### *Characteristics of the sample*

The demographic and basic data of 202 children diagnosed as having ADHD are shown in Table 1. Males outnumbered females (M:F = 3.4:1). Most were in the 6-12 years age group and came from small families with 1-2 children. Regarding education, most were studying in grade 1-3 at the time of the first visit. The level of academic achievement (average grade of last academic year) was in the mid-range (GPA 2.0-2.9) and poor level (GPA below 2).

**Table 1.** Characteristics of the sample (n = 202)

| | n | % |
|---|---|---|
| Sex: | | |
| Male | 156 | 77.2 |
| Female | 46 | 22.8 |
| Age range: | | |
| 0-5 years | 30 | 14.9 |
| 6-12 years | 143 | 70.8 |
| 13-15 years | 20 | 9.9 |
| 16 years and above | 9 | 4.5 |
| Family size (no. of children): | | |
| 1-2 | 144 | 71.3 |
| 3-5 | 43 | 21.3 |
| 6 or more | 3 | 1.5 |
| No information | 12 | 5.9 |
| Ordinal position: | | |
| Single child | 47 | 23.3 |
| First-born | 71 | 35.1 |
| Youngest | 46 | 22.8 |
| Middle | 18 | 8.9 |
| Other positions | 6 | 3.0 |
| No information | 14 | 6.9 |
| Marital status of parents: | | |
| Married | 180 | 89.1 |
| Divorce | 19 | 9.4 |
| Parents deceased | 3 | 1.5 |
| Grade level: | | |
| Not entered school yet | 1 | 0.5 |
| Kindergarten | 33 | 16.3 |
| Grade 1-3 | 87 | 43.1 |
| Grade 4-6 | 43 | 21.3 |
| Grade 7-9 | 28 | 13.9 |
| Grade 10-12 | 9 | 4.5 |
| College/university | 1 | 0.5 |
| School achievement | | |
| High (GPA 3.0-4.0) | 38 | 18.8 |
| Average (GPA 2.0-2.9) | 77 | 38.1 |
| Low (GPA 0-1.9) | 67 | 33.2 |
| No definite information* | 20 | 9.9 |

* The children were still in kindergarten and never sat for school test

### *Referral characteristics*

As seen in Table 2, most children were 'new' cases (78.2%, 158 cases). However, in 21.8% of the samples the children had previously been seen by other health professionals especially child psychiatrists before coming to the clinic. The main reason for the current visits was to seek a "second opinion" regarding diagnosis and medication.

In the overall sample the chief complaints or reasons for seeking evaluation were mostly academic/learning problems (47.0%). In 25.7% the chief complaints were core symptoms of hyperactivity, inattention and impulsivity. However, 24.3% of the sample came for 'other problems', that is, problems that were not directly related to ADHD core symptoms. In this group the frequent complaints were aggressive and violent behavior 12 cases, oppositional behavior 7 cases, nail biting 3 cases, parents sought advice to help their children through divorce 3 cases, bullying peers 2 cases, and irritable mood 2 cases. Others which were found in one case each included hair pulling, head banging, masturbation, withdrawn behavior, spending too much money, no self-confidence, unable to accept failure, wanting to drop out of school, could

**Table 2.** Referral characteristics, diagnoses and treatment (n = 202)

| | n | % |
|---|---|---|
| Types of referral: | | |
| New cases | 158 | 78.2 |
| Previously seen by other health professionals | 44 | 21.8 |
| Chief complaints: | | |
| Learning problems with/without ADHD core symptoms | 95 | 47.0 |
| ADHD core symptoms only | 52 | 25.7 |
| Other problems only | 49 | 24.3 |
| Other problems with ADHD core symptoms | 6 | 3.0 |
| Diagnoses | | |
| ADHD only | 94 | 46.5 |
| ADHD with comorbid conditions | 108 | 53.5 |
| Treatment | | |
| Behavior management only | 77 | 38.0 |
| Needed stimulant medication | 125 | 62.0 |

**Table 3.** IQ level (n = 116)

| | n | % |
|---|---|---|
| IQ 90 and above | 55 | 47.4 |
| Low average (IQ 80-89) | 43 | 37.1 |
| Borderline (IQ 70-79) | 14 | 12.1 |
| Intellectual deficient (IQ 69 and below) | 4 | 3.5 |

not get along with a babysitter, could not get along with peers, poor sleep, self-biting, eye blinking, school refusal, obsessional thoughts, paranoid ideas, speech problem, poor self-control, being defiant towards mother and frequent urination.

***Diagnoses and intellectual assessment***

Of all sample, 46.5% received the diagnosis of ADHD only. In 53.5% there were comorbid conditions or other diagnoses besides ADHD.

Since most children came because of learning problems, intellectual assessments with WISC-R and WISC-III were done when possible. Out of 116 cases who were tested, 52.6% (61 cases) were found to have an IQ below 90 (Table 3).

***Treatment and follow-up***

In most cases the assessment was completed after 2-3 visits and treatment with either behavioral management or medication was instituted afterwards. Patients were followed to see if the initial treatment was successful. The duration of follow-up ranged from one month to more than 3 years.

Thirty-eight percent of the sample (77 cases) received behavioral management as the only treatment modality. Most of the children in this group were in preschool years and the severity of ADHD was mild. The behavioral management program was instituted both at home and at school.

In 62% (125 cases) stimulants (mostly short-acting methylphenidate), were instituted either at the beginning of treatment or as an "add-on" at follow-up when behavioral management was found to be insufficient. In this group, 35 cases needed the combination of other psychotropic medications, mostly anti-depressants and anxiolytic drugs. In 17% of the sample (35 cases) there was persistent aggressive and/or violent behavior as shown in the history given by parents, and during evaluation and follow-up period. In these cases, major tranquilizers and antiepileptic drugs were added.

There were 90 children who received stimulants without other psychotropic medications. In this group, 17.8% (16 cases) developed side effects, the most common of which was decreased appetite (8 cases). Others included headache, stomachache, palpitations and withdrawn behavior which were found in 3 cases each. Insomnia, fainting and the exacerbation of tics were found in one case each. In most cases the side effects were mild and some grew out of the side effects eventually. In children whose side effects were severe, the switch to other medication such as clonidine or imipramine, was warranted.

**Discussion**

Although ADHD is prevalent in Thailand, there are few studies on this subject. The present report adds more information on ADHD especially in children from the middle to high socioeconomic bracket. Although it is retrospective, the large sample size gave us a wide and varied range of information. As the medical record information was taken in a systematic manner, few data were missing in the present study.

The findings that most cases came during early primary school years pointed to the high concern of parents about their children's school achievement. Because the concept of hyperactivity / inattention as a disorder is still new in Thailand, many parents are anxious about the diagnosis and need to seek a 'second opinion'. The rate of 'shopping around' in the present study was as high as 21.8%. In view of this,

clinicians should be more aware of parents' concern. They should take time to explain the diagnosis and treatment plan to parents as clear as possible and also give parents enough time to ask questions.

Poor school performances were reported to be more frequent among children with ADHD than controls[11]. In the present study around 47% of the sample came to medical attention because of academic/ learning problems. However, almost one-fifth came for other problems, which were not directly related to the core symptoms of hyperactivity, inattention and impulsivity. Some presenting problems were related to comorbidity such as oppositional behavior and depression. The diagnosis of ADHD is complicated by the frequent occurrence of comorbid conditions such as learning disability, conduct disorder, and anxiety disorder. Symptoms of these conditions may also mimic ADHD[1] This highlights the need for clinicians to be aware of 'other faces' of ADHD in children who come to mental health clinics. In addition, some of the 'other problems' were not related to ADHD at all. The example is the case of parents who sought advice to help their children through divorce. As ADHD is one of the most common problems in children, clinicians should be aware of the possibility of ADHD in children who come for mental health assessment.

Many studies found that comorbidity was very high in ADHD. A study in Brazil found that the comorbidity with other disruptive behavior disorders was as high as 47.8%[3]. According to the Strength and Difficulty Questionaire (SDQ), three quarter of the hyperactive-inattentive children had co-existing symptoms, the most common being conduct problems[11]. The finding that 53% of the sample had comorbid conditions has very important implication in the assessment of ADHD. Clinicians should bear in mind that ADHD with comorbidity is more common than 'pure ADHD' and should look for coexisting problems or diagnoses, even when parents do not bring out any other concerns.

In Thailand, intellectual assessment (IQ tests) is not a routine investigation in the diagnosis of ADHD. However, in more than half of the sample, the history of very poor school achievement, developmental delay found during initial evaluation and poor treatment outcome prompted the need for IQ tests. Intellectual limitations (IQ below 90) were found in 52.6% of children who were tested. This high rate underscores the need for IQ tests in children diagnosed with ADHD.

In the United States about 56% (2.5 million) of children aged 4-17 years with a history of ADHD diagnosis, were reported to be taking medication for the disorder[2]. Although stimulant medication is an effective first-line treatment, concern persists regarding the possible side effects and long-term health outcomes associated with stimulant consumption. The need for stimulants depends on many factors such as the severity of the problems and the subtypes of the disorder. Children with ADHD-inattention subtype (IA) were found to have less overall functional impairment, and were less likely to be treated with stimulants[12]. As stimulants are usually taken for a long period, economic issues must be taken into consideration. In Thailand, the cost of stimulants is rather high. Treatment with stimulants constitutes financial burden for many families in long term use. Moreover, starting medication too soon usually contributes to the development of 'medication-can-fix-everything' attitude in many parents and they may not work hard enough in the behavioral management program prescribed concomitantly with medication. Many child psychiatrists therefore start treatment with behavior management if there is no urgent or serious problem that warrants medication (for example; aggressive behavior in the child, or the child to be suspended from school etc.). In this sample behavior management alone was successful in one- third of the cases. The other two-thirds either needed medication at the beginning of treatment or later on when behavior management did not yield good enough results. The failure of behavior management may be due to high rates of comorbidity or other complicating factors such as low IQ as described previously.

There are some limitations in the present study. First, the sampled population was from middle to high socioeconomic status and the results can not be generalized. Second, the study was naturalistic in nature, that is, the assessment and treatment was done in a routine manner with no special intervention. In the follow-up period some cases dropped out of treatment and the data in some aspects were missing. However, many cases were followed for more than 3 years. The longer follow-up period allowed the clinician to fully observe the nature of the disorder and the comorbidity patterns. As ADHD is increasingly diagnosed in Thai children, more research is needed especially on subtypes of ADHD and also the risks and benefits which might be associated with medication treatment.

**Conclusion**

The clinical characteristics of 202 ADHD children were reviewed. Most children were males and

were in their early primary school years. Although most sought psychiatric evaluation because of ADHD core symptoms, one-fifth of the sample came because of other problems. In more than half of the sample, there were comorbid conditions and stimulants were needed as part of the treatment.

**References**


1. Rowland AS, Lesesne CA, Abramowitz AJ. The epidemiology of attention-deficit/hyperactivity disorder (ADHD): a public health view. Ment Retard Dev Disabil Res Rev 2002; 8: 162-70.
2. Centers for Disease Control and Prevention. Mental health in the United States. Prevalence of diagnosis and medication treatment for attention-deficit/hyperactivity disorder - United States, 2003 MMWR Morb Mortal Wkly Rep 2005; 54: 842-7.
3. Rohde LA, Biederman J, Busnello EA, Zimmermann H, Schmitz M, Martins S, et al. ADHD in a school sample of Brazilian adolescents: a study of prevalence, comorbid conditions, and impairments. J Am Acad Child Adolesc Psychiatry 1999; 38: 716-22.
4. Bener A, Qahtani RA, Abdelaal I. The prevalence of ADHD among primary school children in an Arabian society. J Atten Disord 2006; 10: 77-82.
5. Benjasuwantep B, Ruangdaraganon N, Visudhiphan P. Prevalence and clinical characteristics of attention deficit hyperactivity disorder among primary school students in Bangkok. J Med Assoc Thai 2002; 85 (Suppl 4): S1232-40.
6. Cuffe SP, Moore CG, McKeown RE. Prevalence and correlates of ADHD symptoms in the national health interview survey. J Atten Disord 2005; 9: 392-401.
7. Willcutt EG, Pennington BF, Chhabildas NA, Friedman MC, Alexander J. Psychiatric comorbidity associated with DSM-IV ADHD in a nonreferred sample of twins. J Am Acad Child Adolesc Psychiatry 1999; 38: 1355-62.
8. Busch B, Biederman J, Cohen LG, Sayer JM, Monuteaux MC, Mick E, et al. Correlates of ADHD among children in pediatric and psychiatric clinics. Psychiatr Serv 2002; 53: 1103-11.
9. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed. Washington, D.C.: American Psychiatric Association; 1994.
10. Trangkasombat U. Using the hyperactivity-inattention questionnaires in the assessment of ADHD in school age children. Book of Abstracts, Annual Scientific Meeting of the Pediatric Society of Thailand, Pattaya, Thailand; 1994.
11. Kashala E, Lundervold A, Sommerfelt K, Tylleskar T, Elgen I. Co-existing symptoms and risk factors among African school children with hyperactivity-inattention symptoms in Kinshasa, Congo. Eur Child Adolesc Psychiatry 2006; 15: 292-9.
12. Weiss M, Worling D, Wasdell M. A chart review study of the inattentive and combined types of ADHD. J Atten Disord 2003; 7: 1-9.

# ลักษณะทางคลินิกของโรคสมาธิบกพร่องในเด็กไทย

**อุมาพร ตรังคสมบัติ**

***วัตถุประสงค์***: *เพื่อศึกษาลักษณะทางคลินิกของโรคสมาธิบกพร่องในเด็ก*

***วัสดุและวิธีการ***: *เป็นการศึกษาย้อนหลังโดยการทบทวนเวชระเบียนของผู้ป่วย 202 คน ที่มารับการตรวจที่คลินิกสุขภาพจิตเด็ก และได้รับการวินิจฉัยว่าเป็นโรคสมาธิบกพร่อง*

***ผลการศึกษา***: *ผู้ป่วยส่วนใหญ่มีอายุระหว่าง 6-12 ปี และมาจากครอบครัวที่มีบุตรเพียง 1-2 คน เด็กชายมีจำนวนมากกว่าเด็กหญิง (ชายต่อหญิงเท่ากับ 3.4:1) ผู้ป่วยประมาณ 1 ใน 5 เคยพบแพทย์อื่นมาก่อน แต่ผู้ปกครองต้องการความเห็นที่สอง ปัญหาที่นำมาพบแพทย์บ่อยที่สุดคือปัญหาการเรียน ประมาณ 1 ใน 4 ของกลุ่มตัวอย่างมาด้วยปัญหาที่ไม่เกี่ยวข้องกับโรคสมาธิบกพร่องโดยตรง ในกลุ่มนี้ปัญหาที่พบบ่อยที่สุดคือ พฤติกรรมก้าวร้าวและต่อต้าน พบการวินิจฉัยอื่นร่วมด้วยร้อยละ 53.5 มากกว่าครึ่งหนึ่งของผู้ป่วยที่ได้รับการตรวจเชาวน์ปัญญามีค่า IQ ต่ำกว่า 90 การรักษาโดยพฤติกรรมบำบัดได้ผลในผู้ป่วยร้อยละ 38 ส่วนร้อยละ 62 ต้องใช้ยา stimulant ตั้งแต่เริ่มต้นการรักษาหรือหลังจากที่การรักษาโดยพฤติกรรมบำบัดไม่ได้ผล ในผู้ป่วยที่ได้รับ stimulant ร้อยละ 28 ต้องได้รับยาอื่นร่วมด้วย โดยเฉพาะยาบำบัดอาการซึมเศร้าและยาลดความวิตกกังวล*

***สรุป***: *การศึกษาเกี่ยวกับลักษณะทางคลินิกของโรคสมาธิบกพร่องในเด็กพบว่า ผู้ป่วยเป็นชายมากกว่าหญิง มีอาการนำที่ไม่เกี่ยวกับโรคสมาธิบกพร่องโดยตรงและ มีการวินิจฉัยอื่นที่พบร่วมด้วยในอัตราสูง การตระหนักถึงอาการนำที่หลากหลายในโรคสมาธิบกพร่องและการรักษาโรคอื่นที่พบร่วมด้วย เป็นสิ่งสำคัญยิ่งที่จะทำให้การดูแลผู้ป่วยเป็นไปอย่างครบถ้วน*