ADHD in a Chinese Medicine Perspective

Can the application of Acupuncture and Tuina lead to reduction of the intake of psychotropic drugs for ADHD treatment?

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ADHD in a Chinese Medicine Perspective

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Contents

Contents ........................................................................................................................................... 3
Abstract ........................................................................................................................................... 4
Introduction ...................................................................................................................................... 6
1 Definition and incidence .................................................................................................................. 7
2 Etiology ........................................................................................................................................ 10
  2.1 Western medicine view on etiology ........................................................................................ 10
  2.2 Chinese medicine view on etiology ....................................................................................... 12
3 Diagnosis ...................................................................................................................................... 14
  3.1 DSM-definition based diagnosis ............................................................................................ 14
  3.2 Chinese medicine view on diagnosis ..................................................................................... 16
4 Treatment ...................................................................................................................................... 17
  4.1 Western medicine therapy options ....................................................................................... 17
  4.1.1 Psycho-stimulants and anti-depressives .......................................................................... 17
  4.1.2 Behavioral and life style therapy ....................................................................................... 19
  4.3 Chinese medicine therapy options ....................................................................................... 21
  4.3.1 Introduction ....................................................................................................................... 21
  4.3.2 Acupuncture therapy ......................................................................................................... 22
  4.3.3 Tuina therapy ................................................................................................................... 26
  4.3.4 Integration of Chinese medicine therapy options ............................................................. 27
5 Discussion and conclusions ........................................................................................................ 28
References ......................................................................................................................................... 31
Annex 1: Definition of ADHD according to the DSM-IV .............................................................. 32
Annex 2: Overview of symptoms for ADHD pattern diagnosis .................................................... 34
Annex 3: Overview of acupuncture formulae for ADHD treatment ............................................. 40
Annex 4: Overview of tuina techniques for ADHD treatment ..................................................... 43
Annex 5: Treatment effect analysis Acupuncture / Ritalin trial ................................................... 50
Abstract

Principal manifestations of ADHD are hyperactivity, impulsivity and inattention [4: p. 277-279; 9: p. 543-545], as is further discussed in Chapter 1. When inattention is the dominating manifestation, the term ADD (i.e. ADHD without the ‘H’ for hyperactivity), is also encountered in literature. Symptoms usually begin to show gradually over the course of many months. Children, who predominantly present with hyperactivity and impulsiveness symptoms and who therefore ‘can't sit still’ or are otherwise disruptive, will be noticeable in school. On the other hand, the child presenting predominantly with inattention symptoms, will at first hand appear to be just an inattentive daydreamer who may easily be overlooked. In other words, the impulsive child who acts before thinking is in practice likely to be considered a ‘discipline problem’, while the child who is inattentive and passive, may be considered to be unmotivated. In fact, each of these children may have different types of ADHD. Possible causes include primarily neurobiological and genetic factors, while environmental factors appear to only secondarily influence the severity of ADHD symptoms, as further discussed in Chapter 2.

Of course, all children are restless at times, or may sometimes act without thinking and /or at times they may also be daydreaming. However, as discussed in Chapter 3, only when the individual’s hyperactivity, impulsivity and inattentiveness begin to affect performance in school/work, social relationships, or behavior at home, the disease ADHD as defined by means of the DSM-IV criteria [3] may be suspected. Because of the wide variation in ADHD symptoms and the relative difficulty of an objective interpretation of behavioral symptoms in general, but especially when concerning people who are closely related, it is essential that ADHD is diagnosed by a person who is qualified to this interpretation of behavior in terms of DSM-criteria.

Western medicine intervention, usually primarily consisting of pharmaceutical stimulants, is generally the first choice in treating ADHD. Behavioral therapy is often also prescribed. As is further discussed in Chapter 4, efforts to control ADHD affected individuals, appears to lead to an increasing number of especially school-age children who are regularly medicated [1: p. 1-5; 13; 15]. Since the pharmaceuticals do not act on the cause, but only suppress symptoms during a number of hours after intake they need to be taken on a continu-
ing basis for an effective suppression of ADHD symptoms. Furthermore, regular occurrence of side-effects may disturb sleep, appetite and other both psychic and physical functions. Because of this dependence of the pharmaceutical medication in itself and because of the reported side-effects [1; 4: p. 277-279; 9: p. 543-545; 13; 14], people are increasingly searching for alternative methods of ADHD treatment.

Chinese medicine appears to offer such alternative treatment methods for ADHD in the spheres of acupuncture, tuina and herbal therapy [1; 5; 4: 279-285; 9: p. 547-559; 15]. Although herbal therapy is out of scope for this thesis, the nature of the patterns underlying ADHD often being deficiency (of either Kidney, Liver, Spleen, Heart or a combination of these Zang), herbal therapy is likely to be able to play an important role in effective combined methods for ADHD treatment. Focusing on acupuncture and tuina, it is further discussed in Chapter 4 that both acupuncture and tuina seem to be offering effective ADHD treatment [1; 10: p. 43-44; 13].

For acupuncture, it has been conclusively shown in a documented clinical trial [1], that it can as such be an alternative therapy which can totally replace the pharmaceutical medication by means of the stimulant ‘Ritalin’. With regard to the applicability of tuina for ADHD treatment, no conclusive trials are reported in the literature under investigation, but it is clearly indicated in studies [15], that tuina can especially strongly support sedative action for the diminishing of hyperactivity and impulsiveness symptoms.

Advantages of the replacement of pharmaceutical medication by acupuncture would include the non-dependence on the daily intake of psychotopic drugs and the absence of disturbing side-effects. A disadvantage of the presented acupuncture therapy, concerns the limited feasibility in clinical practice of the apparent necessary daily acupuncture treatment for a prolonged period of time (i.e. three months or more) [1]. In final Chapter 5, it is further discussed whether the acupuncture treatment results achieved in a clinical trial environment [1] can be implemented in everyday practice in order to realistically contribute to the diminishing of psychotropic drug intake.

It seems that further investigation in order to increase the effectiveness of acupuncture treatment needs to be explicitly combined with its implementation in clinical practice. In other words, its practicality needs further research for its improvement, if acupuncture is to be widely adopted to be an effective method of ADHD treatment.
**Introduction**

Subject of this thesis is the impact of *Attention Deficit Hyperactivity Disorder* (ADHD) on both children and adults. This is examined by way of a literary research, focusing on a comparison of the views of Western medicinal treatment methods with those of Chinese medicine. As to the Chinese medicine aspects, the scope of this literary research includes the combined application of acupuncture and tuina therapy. The Chinese medicine option of herbal therapy is considered important in the context of ADHD treatment, but for this thesis herbal therapy is out of scope.

Goal of this thesis is to see whether this literature research gives clues and possibly conclusions answering the question: ‘can the application of acupuncture and tuina lead to reduction of the intake of psychotropic drugs for ADHD treatment?’.

Before discussing this question in detail in final Chapter 5, four introductory chapters describe the following aspects of ADHD: (1) ADHD definition and incidence, (2) etiology, (3) diagnosis and (4) treatment.
1 Definition and incidence

The disorder which is subject of this paper, viz. Attention Deficit Hyperactivity Disorder abbreviated as ADHD, concerns a collective term for disorders which, as is literally implied in the name, may involve: (1) a deficit of attention to environmental stimuli, leading for example to a general inattentiveness and a lack of concentration concerning things being said or asked for by others, (2) hyperactivity, as shown for instance by not being able to sit still for prolonged periods, or continually fidgeting with one’s hands, etc., or (3) both [1; 3; 4: p. 277-279; 5; 9: p. 543-545].

Inattentive children find it very hard to concentrate on any one thing. When they are assigned a task, they may quickly get bored with it. Doing something they really enjoy, paying attention is much less of a problem. But to focus attention to organize and complete a task, like for example doing homework or polishing shoes, is generally very difficult.

Hyperactive children are in motion almost constantly. They are often moving around, or talking continuously. It seems very hard for them to sit still, for example in school or while eating. Hyperactive teenagers or adults often report to feel internally restless, needing to stay busy and doing several things at the same time, often finishing none.

Impulsive children often are unable to think before they act or control their immediate reactions. They often display their emotions without restraint, give inappropriate comments, and act without thinking about the consequences of their conduct. Furthermore, it is often hard for them to wait for things they want, like taking their turn in games and disturbing the play of another child or even hit when impatience and or anger upsets them. As teenagers or adults, they impulsively choose to engage in short term low cost activities instead of engaging in higher cost activities with greater longer term rewards.

ADHD is at present especially infamous as a problem affecting children, conservative estimates ranging from 3-5% of all school age children in the U.S. [12], some estimations being even as high as 10% on average (actual values depending on exact criteria for diagnosis and local circumstances affecting incidence) [6; 14], whereas in China, the rate of ADHD is slightly lower than in the West [1]. However, it is a much less known fact that, since children
suffering from ADHD appear to take the disorder along into adulthood, also many adults in fact suffer from ADHD, estimates ranging from 30-70% of the number of individuals previously having had ADHD as a child [6; 10].

Furthermore, it is indicated in the literature that the incidence of ADHD in boys is greater than it is in girls. Sources claim in this respect, that ADHD is three times more likely to occur in boys than in girls, while the overall incidence of ADD (that is ADHD without the hyperactivity) is similar in both genders [6]. Boys in general seem to relatively often fall into the ‘impulsive’ category, unlike the girls who would relatively often fall into the category of ‘inattentive’. Of course, the very nature of impulsivity makes the ADHD impulsivity category easier to recognize, impulsiveness often being disruptive and attended to. The behavior deviation manifested by the inattentive category will often remain unnoticed, or may even be considered desirable behavior under stressful environmental conditions.

Although ADHD was already first described as a disorder of children in the nineteenth century [11], it would not be widely known as an important disorder of both children and adults for quite a long time after that. During the relatively short time since it became known to a wider public almost one and a half century later (i.e. around 1990), the four letter abbreviation ADHD that at first indicated some ‘issue of troublesome children’, has become almost commonplace as a problem of serious proportions (in the Netherlands ADHD is also popularly known as ‘Alle Dagen Heel Druk’, literally meaning ‘everyday very busy’). In those cases where this disorder occurs without the phenomenon of a surplus of activity being significantly present, one may also encounter the more or less outdated term ‘ADD’ (i.e. by leaving out the H for ‘hyperactivity’ in ADHD). The term ‘ADD’ should be considered to be comprised in the term ‘ADHD’ in the remainder of this paper, ADD being considered the ‘inattentive’ ADHD subtype.

In 80% of ADHD cases, concurrent psychic disorders may aggravate the situation. Disorders which are seen to occur together with ADHD significantly more often than the prevalence on average, are: (1) Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS), a group of disorders in the autistic spectrum, (2) Disruptive Behavior Disorders (DBD), consisting of Oppositional Defiant Disorder (ODD) seen to occur in 3,2% of children and Conduct Disorders (CD), being antisocial behavioral disorders, seen to occur in 2% of
ADHD in a Chinese Medicine Perspective

the children, (3) learning disorders like dyslexia and dyscalculia, (4) anxiety and depression disorders, (5) motor disorders like dyspraxia, (6) speech and lingual disorders and (7) syndromes, like ‘Gilles de la Tourette’ (characterized by involuntary tics, moves and utterances) [12; 14].

Identification of ADHD as a disorder of its own, is in both spheres of Western and Chinese medicine generally based on the definition given in the so called Diagnostic and Statistical Manual of Mental Disorders, which is commonly known by the abbreviation of its most recent version to date: ‘the DSM-IV-TR, 4th edition’ [3]. A summary of the DSM-criteria for ADHD is given in Annex 1.

ADHD is a disorder found in both children and adults. Manifestations and incidence are different for both categories to a certain extent, because of the differences that normally distinguish a child from an adult. By far most of the research done so far has concerned children. Indeed, many people who are aware of the existence of ADHD still think that only children may be affected. Adults with ADHD typically are unaware that they may in fact be suffering from this disorder; often they just feel that it is difficult for them to get organized, to keep an appointment or to stay with the same job. Everyday tasks of getting up, getting dressed and getting to work on time, can all present difficulties for the ADHD adult.
2 Etiology

2.1 Western medicine view on etiology

In the literature on ADHD, a diversity of possible causes of ADHD is mentioned. Recent research confirms that the genetic component seems to be relatively highly significant, but also environmental factors and both physiological and psychological internal causes have been shown to potentially be of significance in causing ADHD. Effects of some specific environmental factors, that are often informally advanced as being of the utmost importance, like for instance allergy responses related to food additives hypersensitivity (to e.g. dyes, refined sugar, etc.), are in fact inconclusively supported by evidence in trials [4: p. 279].

In conformity with the categorization of models of pathogenesis for ADHD by Flaws & Lake [4: 279-281], the following theories that have been put forward by various researchers over the past two decades, shall be briefly discussed: (1) genetic impact, (2) cerebral dysfunction, (3) thyroid dysfunction, (4) amine hypothesis, (5) environmental models, and (6) psychological models.

Genetic impact -- In first degree relatives of ADHD patients, a four times higher incidence of ADHD is observed and in identical twins it has been found that if one identical twin has ADD, there is an 80-90% chance that the other twin will also have ADD [6]. Also, ADHD accompanying disorders like e.g. Tourette Syndrom, Conduct Disorder, depression and anxiety are genetically linked: on average 50% of Tourette patients having ADHD, fathers of ADHD patients showing higher rated of CD and rates of depression/anxiety being higher in ADHD first degree relatives [4: p. 280].

According to NIMH reports [12], recent brain scan research has revealed that ADHD affected children showed 3-4% smaller brain volumes in the regions of the frontal lobes, temporal gray matter, caudate nucleus and cerebellum.

Cerebral dysfunction -- One of the earliest theories stated that ADHD-type disorders were caused by trauma related accidents (e.g. in traffic or at an earlier stage during birth), leading to brain injury, but it appears that only a relatively small percentage of children with ADHD have been found to have suffered a traumatic brain injury [12]. Other forms of cere-
bral dysfunction, like e.g. decreased frontal lobe metabolism or frontal cortical atrophy, are named to possibly be playing a significant role in causing ADHD [4: 280; 10], but research in this field is complex and progress is slow.

*Thyroid dysfunction and amine hypothesis* -- Positive correlations have been found between thyroid dysfunctions and some cases of ADHD, while thyroid regulation through hormone replacement appeared to improve some ADHD symptoms. Also, correlations have been found between levels of dopamine/serotine and the observed severity of ADHD symptoms [4: p. 280].

*Environmental models* -- There are many reported cases of ADHD incidence going together with a documented history of fetal exposure to infections, minor brain insults, birth trauma, nutritional deficiency and neonatal exposure to toxins. There is to date no conclusive research evidence to indicate higher than normal incidence of hypersensitivity in ADHD children for food additives and or refined sugar [4: p. 280]. There does seem to be a highly significant correlation between ADHD occurrence and iron shortage in the blood; a possible explanation would be, that iron is an important element for the effective operation of dopamine in the brains [2: p.53].

*Psychological models* -- Neglect and loss in early childhood has been reported to lead to higher rates of ADHD incidence [4: p. 280].

In clinical practice one can often see more than one of the above mentioned factors combined give ADHD disorder complaints. For instance ‘birth trauma’ and ‘cerebral dysfunction’ may be relatively closely related, and possibly also ‘nutritional deficiency’ and ‘thyroid dysfunction’. Since primarily neurobiological and genetic factors seem to be playing a significant role in causing ADHD, it is generally concluded [12; 14], that ADHD cannot be cured. ADHD treatment is consequently directed towards symptom control.
2.2 Chinese medicine view on etiology

Although ADHD is both in the western countries and China diagnosed along the criteria for its definition given in DSM-IV [3] (see Annex 1), etiology according to the Chinese medicine view diversifies along the lines of the underlying patterns [4: p. 281], which may cause the various forms of ADHD that are encountered in clinical practice.

According to Flaws [4: p. 281-285], Chinese medicine distinguishes the following six different patterns which may, occurring in isolation or combined, cause manifestation of ADHD: (1) Spleen vacuity – Liver hyperactivity pattern, (2) Heart-Spleen dual vacuity pattern, (3) Yin vacuity – yang hyperactivity pattern, (4) Phlegm heat harassing internally pattern, (5) Static blood obstructing internally pattern and (6) Yang qi insufficiency pattern.

In the view of Maciocia [9: p. 549], the pathology of ADHD may occur when pathology occurs involving either one or more of the organs Heart, Liver, Spleen and their respective psycho-emotional aspects: the Spirit (Shén), the Ethereal Soul (Hún) and the Intellect (Yì). Maciocia argues that in ADD (without the hyperactivity-impulsiveness) there is a prevalence of pathology of the Intellect, while in the hyperactive type of ADHD the Ethereal Soul is more involved, whereas the Heart is involved in both. Distinguished patterns evolve from the fact that disorders of one or more of the organs Heart, Liver and Spleen may manifest with Full or Empty conditions [9: p. 549-559]: (1) Deficiency of Heart and Spleen blood, (2) Heart and Kidney-Yin deficiency, (3) Kidney and Liver-Yin deficiency with Liver –Yang rising, (4) Heart- en Spleen-Qi deficiency, (5) Liver- and Heart Fire and (6) Heart and Spleen deficiency with Phlegm. Accompanying symptoms of these ADHD causing patterns will be discussed in the next chapters on ADHD diagnosis and ADHD treatment respectively.

The ADHD pattern subdivisions by Bob Flaws et.al [4: p. 281-285] and that of Maciocia [9: p. 555-558] show differences in some respects, as is indicated in the table below (Maciocia subdivision in Italics). However, the existing differences do not seem to be expressing a basically different view.
<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Spleen vacuity – Liver hyperactivity pattern</td>
<td>(1) Deficiency of Heart and Spleen blood</td>
</tr>
<tr>
<td>(2) Heart-Spleen dual vacuity pattern</td>
<td>(3) Kidney and Liver-Yin deficiency with Liver –Yang rising, (2) Heart and Kidney-Yin deficiency</td>
</tr>
<tr>
<td>(3) Yin vacuity – yang hyperactivity pattern</td>
<td>(4) Phlegm heat harassing internally pattern</td>
</tr>
<tr>
<td>(5) Static blood obstructing internally pattern</td>
<td>(5) Liver- and Heart Fire, (6) Heart and Spleen deficiency with Phlegm</td>
</tr>
<tr>
<td>(6) Yang qi insufficiency pattern</td>
<td>(4) Heart- en Spleen-Qi deficiency</td>
</tr>
</tbody>
</table>

For efficiency reasons, the Flaws subdivision of ADHD patterns [4: p. 281-285] will be followed in the remainder of this paper.

ADHD’s main symptoms are in the Chinese medical literature described to correspond to the following Chinese disease categories: (1) irritability (yi nu, duo nu), (2) insomnia (bu mian), (3) profuse dreams (duo meng), (4) oppressive ghost dreams (meng yan), (5) vexation and agitation (fan zao) and (6) impaired memory (jian wang) [4: p. 281].

The hyperactivity aspect of ADHD is in Chinese medicine essentially related to the Spirit (Shén) not being calm. In that respect, pediatric hyperactivity is believed to be originating in the disturbance of Shén through the following three basic mechanisms: (1) Shén is not sufficiently nourished, (2) Shén is harassed by a pathological factor, like e.g. wind or heat, and (3) the residence of Shén is being blocked by a pathological factor, such as phlegm or blood stasis obstructing the heart’s orifices. The complementary ADHD aspect of attention deficit (ADD), is believed to be similar to the hyperactivity aspect in terms of etiology, with the following discerned mechanisms: (1) insufficient qi and blood to construct Shén, (2) some pathological factor, like wind or heat, harassing the Shén and thereby making the Shén disquieted, and (3) some pathological disturbance, like phlegm or blood stasis blocking the orifices of the Shén’s residence (i.e. the heart, thereby misting and confounding the Shén).
3 Diagnosis

3.1 DSM-definition based diagnosis

As discussed in Chapter 1, concerning definition and occurrence of ADHD, the definition of this disorder is both in Western and Chinese medicine generally based on the definition given in the so called Diagnostic and Statistical Manual of Mental Disorders, its most recent version to date being abbreviated as ‘the DSM-IV’ [3]. Thus, diagnosis of ADHD is solely based on the identification of manifestations that are as such defined to be ADHD manifestations.

As it appears, ADHD is manifested as ‘just’ a variation of normal patterns of behavior. Most other diseases produce abnormal symptoms, but ADHD is manifested through a combination of in themselves perfectly normal characteristics, which may appear more frequently and more intensely whenever ADHD occurs. Depending on the source [1; 12; 14], this appears to happen in 1 out of 10 to 20 children of the same age and roughly the same number of adults are affected in the United states [12]. In other words, all children and all adults are impulsive, easily distracted and inattentive some of the time. However, children with ADHD show these ways of behavior relatively intensely, some almost continuously. Adults generally manifest the same symptoms, although with a lesser intensity. But, although ADHD concerns in itself normal characteristics of behavior, ADHD can have a potentially profound impact because ADHD patients seem to actually think, act, feel, and learn in a different way.

Because of the above described nature of the ADHD disorder, it can only be identified through the perception of deviation in behavior, which is not easily determined by means of objective indicators. Therefore, it is not unlikely that ADHD may in practice often go undiagnosed when ADHD is the case, or be erroneously diagnosed when ADHD is not the case.

Also, an extra complicating aspect in ADHD diagnosis is the fact that in as much as an estimated 80% of all ADHD cases, one may encounter co-morbidity with other disorders with a strong behavioral compound like e.g. learning disabilities and conduct disorders [4: 278-279; 6; 12; 14]. These so called ADHD attendant disorders were already briefly discussed in Chapter 1. It is out of scope of this document to go into detail about ADHD atten-
tant disorders. However, in order to give an impression regarding quantity involved in this, two examples illustrating the possible secondary impact of ADHD will be given here: (1) indicatively, approximately at least 30% of children with ADHD also seem to have a serious specific Learning Disability, estimates depending on definition issues even being as high as 70% [12, 14] and (2) about 20 to 40% of ADHD children may eventually develop Conduct Disorder (CD), which is a more serious pattern of antisocial behavior.

As already mentioned ADHD is generally diagnosed (both in Western and Chinese medicine) by way of applying the DSM-IV guidelines [3]. The DSM guidelines, which are in fact a set of relatively concrete norms with regard to behavioral traits, are to be applied in relation to the person’s age and environmental circumstances, including family conditions regarding ADHD occurrence (higher incidence being correlated with greater chance of ADHD occurrence in offspring).

In the DSM-IV reference document, three different behavioral patterns are distinguished which determine a disorder to belong to one of the following three discerned subtypes of ADHD: (1) the predominantly hyperactive-impulsive type (not showing significant inattention), (2) the predominantly inattentive type (not showing significant hyperactivity and/or impulsiveness) which is sometimes still also called ADD, and (3) the combined type (displaying both inattentive and hyperactive-impulsive symptoms).

To assess whether a child should be diagnosed to actually suffer from ADHD, DSM-specialists consider following conditional questions:
(1) Are the manifestations of behavior excessive and of long duration (that is, do they occur relatively often as compared to other children of the same age)?
(2) Is the problem of behavior deviation rather continuous or is it associated with the responding in reaction to temporary situations?
(3) Is the problem location specific, like e.g. explicit manifestation on the playground or in the schoolroom or is, by contrast, the shown behavior deviation manifest in several settings.

The person’s pattern of behavior is finally compared against the set of criteria and characteristics of the disorder as differentiated according to the three distinguished ADHD subtypes listed in the DSM-IV [3].
For the reader’s reference, more details concerning the DSM-IV guidelines are added to this document in Annex 1. Given the complexity of correctly interpreting ADHD related symptoms, it seems that in clinical practice it is essential for a good diagnosis of suspected ADHD, to involve a well qualified person to carry out such DSM-IV based investigations.

3.2 Chinese medicine view on diagnosis.

Once ADHD is diagnosed along the guidelines given in DSM-IV [3], Chinese medicine needs to take diagnosis a step further towards identifying the pattern or combination of patterns which are causing ADHD symptoms to manifest (which were previously listed in Section 2.2 [4: p. 281-285]), in order to be able to give appropriate treatment.

For the purpose of forming a reference for the discussion of ADHD treatment options when combining acupuncture and tuina therapy to treat ADHD, summaries will be given for each and all of the ADHD causing patterns: (1) Spleen vacuity – Liver hyperactivity pattern, (2) Heart-Spleen dual vacuity pattern, (3) Yin vacuity – yang hyperactivity pattern, (4) Phlegm heat harassing internally pattern, (5) Static blood obstructing internally pattern and (6) Yang qi insufficiency pattern. These summaries contain the pattern’s main accompanying symptoms, a brief symptom analysis and the treatment principle [4: p. 281-285]. When encountered with ADHD in clinical practice, a combination of these ADHD causing patterns is usually encountered [1].

This overview containing (1) symptoms, (2) symptom analysis and (3) treatment principle for each of the above listed ADHD causing patterns, is given in Annex 2.

Thus, a diagnosis of ADHD is usually also in China in the first place acknowledged through application of the DSM-IV criteria. Then, further differentiation of the patient’s complaints, symptoms and signs into one or a combination of more of the above described patterns will be needed for the appropriate treatment by way of one or more of the available Chinese medicine therapy options. These therapy options, along with those offered by Western medicine, shall be further discussed in the next chapter.
4 Treatment

Traditional Western medicine treatment of ADHD and ADD has for more than 15 years existed of the prescription of the stimulant methylphenidate under the commercial name of ‘Ritalin’. The production of this psychotopic drug has increased seven times in the 1990’s alone, and is still continually administered to increasingly younger patients. Parents are beginning to question the drug side-effects and are asking for alternative approaches to ADHD / ADD, which are increasingly found within the realm of Chinese medicine [6; 13; 15].

4.1 Western medicine therapy options

By means of the presently available Western medicine therapy options, ADHD cannot be cured [4: p. 281; 10; 12; 13, 14]. Although medication is available which appears to suppress much of the adverse effects of ADHD accompanying symptoms in children and adults alike, long-term drug dependence and medicinal side-effects of the psycho-stimulants and anti-depressives involved, have been met with ever growing concerns recently. Complementary treatment methods which are reported to be successful to a certain degree are dominated by measures in the behavioral and life style spheres [10; 12]. In the following sections summaries will be given of respectively the medication and behavioral therapy methods that are generally practiced within a Western medicine approach of ADHD treatment.

4.1.1 Psycho-stimulants and anti-depressives

Over the past twenty years, psychotopic drugs have been used more or less successfully to treat the symptoms of ADHD on an ever increasing scale [5; 9: p. 546-5479; 12, 14].

The most effective medications seem to belong to a class of drugs known as stimulants. Following is a list of the stimulants [12], their trade (or brand) names, and their generic names. “Approved Age” means that the drug has been tested and found safe and effective in children of that age.
<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Generic Name</th>
<th>Approved Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adderall</td>
<td>amphetamine</td>
<td>3 and older</td>
</tr>
<tr>
<td>Concerta</td>
<td>methylphenidate</td>
<td>6 and older</td>
</tr>
<tr>
<td></td>
<td>(long acting)</td>
<td></td>
</tr>
<tr>
<td>Cylert*</td>
<td>pemoline</td>
<td>6 and older</td>
</tr>
<tr>
<td>Dexedrine</td>
<td>dextroamphetamine</td>
<td>3 and older</td>
</tr>
<tr>
<td>Dextrostat</td>
<td>dextroamphetamine</td>
<td>3 and older</td>
</tr>
<tr>
<td>Focalin</td>
<td>dexamethamphetamine</td>
<td>6 and older</td>
</tr>
<tr>
<td>Metadate ER</td>
<td>methylphenidate</td>
<td>6 and older</td>
</tr>
<tr>
<td></td>
<td>(extended release)</td>
<td></td>
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<tr>
<td>Metadate CD</td>
<td>methylphenidate</td>
<td>6 and older</td>
</tr>
<tr>
<td></td>
<td>(extended release)</td>
<td></td>
</tr>
<tr>
<td>Ritalin</td>
<td>methylphenidate</td>
<td>6 and older</td>
</tr>
<tr>
<td>Ritalin SR</td>
<td>methylphenidate</td>
<td>6 and older</td>
</tr>
<tr>
<td></td>
<td>(extended release)</td>
<td></td>
</tr>
<tr>
<td>Ritalin LA</td>
<td>methylphenidate</td>
<td>6 and older</td>
</tr>
<tr>
<td></td>
<td>(long acting)</td>
<td></td>
</tr>
</tbody>
</table>

*Because of its potential for serious side effects affecting the liver, Cylert should not ordinarily be considered as first-line drug therapy for ADHD.*
A recently approved medication for ADHD which is not a stimulant, i.e. atomoxetine or ‘Strattera’, works on the neurotransmitter norepinephrine, while the stimulants all primarily work on dopamine. Not everybody reacts the same way to these medications, so that results may differ widely in clinical practice. That is why it is important to work with the prescribing physician to find the right medication and dosage [12]. Hyperactivity and impulsivity are dramatically reduced by these stimulants for many people. Also these medications are reported to improve the ability to focus, work, and learn, as well as improve physical coordination, as is needed in handwriting and in sports.

These stimulant drugs are generally considered safe when used with medical supervision. Side effects of the stimulant medications are considered minor by the NIMH (the US National Institute for Mental Health) [12]. Occurring side effects are usually related to the dosage, higher doses producing more side effects. The most common side effects are decreased appetite, insomnia, increased anxiety, and/or irritability. Some children report mild stomach aches or headaches.

These medications do not cure ADHD, but only control the symptoms on the day they are taken. The apparent success of these stimulant drugs to subdue symptoms of hyperactivity and impulsiveness has lead to a massive prescription of these medications to both children and adults diagnosed to have ADHD. It is today also reported that about 80 percent of children who need medication for ADHD still need it as teenagers, while over 50 percent need medication as adults [12]. Although the medications can help by way of enabling to pay better attention and complete work, they can of course not themselves increase knowledge or improve skills, so that both ADHD affected children and adults will often also need extra encouragement to invest in personally motivating activities in order to further their knowledge and/or skills.

4.1.2 Behavioral and life style therapy

As mentioned in the former section, medication can help the ADHD patient in everyday life, by way of controlling the symptoms during the day on which medication is taken. Thereby, he or she may be better able to control some of the behavioral problems that may have led to
problems within family, school or work. But of course it will take other means and also time to come to terms with the frustration, blame, and anger that may have gone on for a long time as a consequence of ADHD symptoms interfering with everyday life.

In case of ADHD/ADD in children, special help may be needed for both parents and children, in order to develop techniques for managing the deviant patterns of behavior [12; 14]. Mental health professionals can counsel the child and/or the family, helping them to develop new skills, attitudes, and ways of relating to each other. A diversity of methodologies and techniques has been developed over the past decennia which can be applied, individually or combined, depending on specific circumstances. For example in the United States all of the following methodologies and techniques for behavioral and life style therapy have been used in different cases with apparent success [12]:

(1) In individual counseling, the therapist helps children with ADHD learn to feel better about themselves.

(2) Psychotherapy works to help people with ADHD to like and accept themselves despite their disorder.

(3) Behavioral therapy (BT) helps people develop more effective ways to work on immediate issues.

(4) Social skills training can also help children learn new behaviors; in social skills training, the therapist discusses and models appropriate behaviors important in developing and maintaining social relationships, like waiting for a turn, sharing toys, asking for help, or responding to teasing, then gives children a chance to practice.

(5) Support groups help parents connect with other people who have similar problems and concerns with their ADHD children.

(6) Parenting skills training, offered by therapists or in special classes, gives parents tools and techniques for managing their child’s behavior.

ADHD in an adult is, as far as behavioral treatment is concerned, in practice focused on education and psychotherapy. Although medication may often give the needed support to function in a demanding environment, the individual must in the end of course succeed on his or her own. To help the adult ADHD patient in this struggle, both ‘psycho-education’ and individual psychotherapy can be helpful. A professional coach can help the ADHD adult by way of learning how to organize his life for example through the use of a large calendar.
(posted in such a place that it will be seen in the morning), what-to-do-lists, reminder notes, and also have special places for keys, bills, and the paperwork of everyday life. Also, tasks may be organized into sections, giving a sense of accomplishment upon completion of each such section. Above all, ADHD adults should themselves learn as much as they can about their disorder, in order to anticipate and control for themselves as much as they can [12; 14].

It seems clear that behavioral and life style therapy can significantly contribute to the well-being of people suffering from ADHD. However, it does not seem to be an alternative for medication therapy, since in a famous study undertaken by the NIMH under the title ‘Multimodal Treatment Study of children with ADHD’ (the so called ‘MTA study’, in which 579 boys and girls with ADHD were involved), it was shown that long-term combination treatment and medication-management alone, were determinedly superior to intensive behavioral treatment and routine community treatment [12].

4.3 Chinese medicine therapy options

4.3.1 Introduction

Chinese medicine is founded on the three major disciplines (1) acupuncture therapy, (2) tuina therapy and (3) herbal therapy (out of scope of this thesis). As will be seen in the next sections, both acupuncture and tuina can be especially helpful when the ADHD underlying pattern concerns ‘fullness’ through e.g. stagnation of Qi or Blood. It appears that ADHD underlying patterns concerning ‘emptiness’ are in general less successfully treated with acupuncture as compared to patterns concerning ‘fullness’ which will manifest with symptoms of the hyperactive/impulsiveness type.

With Chinese medicine therapies, treatment of the organ systems includes treatment of the emotions associated with that organ. Many of the emotional and the physical symptoms that contribute to the manifestation of ADHD are routinely treated with acupuncture. The emotional factors involved with ADHD are chiefly (1) frustration, which is associated with the liver energy, (2) anxiety, which is associated with the Spleen energy, and (3) fear, which is associated with the Kidney energy. The ADHD associated physical symptoms
which may be hearing difficulties, asthma, sleep apnea, rheumatoid arthritis, irritable bowel syndrome, PMS, migraines and chemical sensitivities, all generally respond well to Chinese medicine therapies. Whether the root cause is behavioral or neurological, Chinese medicine looks at the body, mind and spirit as one interactive system. When the body and mind are in harmony, the spirit is calm and the person is then able to perform to potential.

Clearly, also Chinese medicine does not appear to be a panacea, but therapy results to date do indicate [1; 10; 15] that it is at least helpful in enabling the child, adolescent or adult plagued with ADHD to better utilize the resources within themselves, and can even be effective to the point that the hyperactive variant of ADHD is adequately controlled by acupuncture alone [1].

4.3.2 Acupuncture therapy

With reference to sections 2.2 and 3.2, starting point for Chinese medicine acupuncture therapy is that any ADHD diagnosis along the DSM-IV guidelines, may involve the following patterns: (1) Spleen vacuity – Liver hyperactivity pattern, (2) Heart-Spleen dual vacuity pattern, (3) Yin vacuity – yang hyperactivity pattern, (4) Phlegm heat harassing internally pattern, (5) Static blood obstructing internally pattern and (6) Yang qi insufficiency pattern.

For each and all of these patterns acupuncture formula citations [4] are listed below, together with a recapitulation of the treatment principles that were cited in section 3.2 regarding Chinese medicine view on diagnosis. These descriptions are taken from the book by Flaws and Lake [4: p. 281-285], but also Maciocia describes a number of ADHD underlying patterns which are not identical, but by and large covered by the ADHD underlying patterns identified by Flaws and Lake [9: p. 551-558], as was earlier illustrated in section 2.2.

For the reader’s direct reference, an overview of (1) treatment principle and (2) acupuncture formulae for each of the above listed ADHD causing patterns are given in Annex 3.
Both Flaws [4: p. 281-285] and Maciocia [9: p. 551-558] indicate that successful treatment of the ADHD patterns by means of acupuncture (as is specified in Annex 3) is feasible and effective, but quantified trial based results are not given. Indeed, quantified results through clinical trials are as yet as such, extremely scarce. However, effectiveness of acupuncture against ADHD has in fact been demonstrated in at least one well documented clinical trial in China [1]. Another interesting experiment in this respect, which was undertaken in the UK [10] in 2005, will also briefly be discussed here.

As to the trial conducted in China, Becker [1] reports in an often cited article on the work by Professor Lai Xin-sheng from the Guangzhou Chinese Medical University, having many years of experience in the treatment of ADHD with acupuncture. Lai Xin-sheng states that the treatment effect of Western drugs, as well as that of Chinese medicinal herbs, is just limited to the time period the child is actually taking them and that recurrence rates after discontinuing intake of these medications are high. Therefore, both Western drugs prescription and Chinese herbal therapy are not considered effective therapies. Rather, it was found that acupuncture appears to be the most stable and effective treatment for children with ADHD. In a clinical trial (described by Becker [1] on the basis of an article which originally appeared in the January 1999 edition of the Zhong Guo Zhen Jiu / Chinese Acupuncture & Moxibustion) Professor Lai Xin-sheng applies his method of treatment, comparing a group of 155 children treated by acupuncture alone, with a control group of 58 children who were treated by way of the regular intake of the stimulant Ritalin only.

In this trial, which will be summarized here because of the importance for this thesis, the treatment group received the following acupuncture treatment (as cited from the article by Becker [1]):

**Main points:** Si Shen Zhen (Four Spirit Needles, a.k.a., Si Shen Cong [Alert Spirit Quartet]), Nao San Zhen (Three Brain Needles, i.e., Nao Hu (GV 17) and Nao Kong (GB 19), Nie San Zhen (Three Temple Needles, i.e., a group of three points located 2 cun directly above the ear apex and 1 cun anterior and posterior to that first point).

**Additional points:** for heart-kidney yin vacuity, manifesting with slack spirit thinking, i.e., inattentive subtype, Nei Guan (Per 6), Shen Men (Hi 7), Lao Gong (Per 8), Zu San Li (St
36), Fu Liu (Ki 7), and Tai Xi (Ki 3) were added. For heart-liver fire effulgence, manifesting with copious impulsive stirring, i.e., hyperactive subtype, Hou Xi (SI 3), Lie Que (Lu 7), Zhi Gou (TB 6), Tai Chong (Liv 3), Chong Yang (St 42), and Fei Yang (Bl 58) were added.

Needling method: On the scalp, the needles were inserted horizontally to about one inch depth. On the body, they were inserted perpendicularly to the normal depth. After obtaining qi, the needles were retained for 30 minutes and twirled every 10 minutes. Five treatments per week for two weeks constituted one course of treatment, and six courses of treatment were administered. All main points were needled daily (i.e., every treatment), while the supplemental points were divided into two groups that were alternated between treatments. Treatment effects were analyzed at the end of the six treatment courses and again one month later.

Children in the control group were started at 5mg of Ritalin in the morning and 2.5mg at lunch. If this was not strong enough, the Ritalin amount was increased to 10mg in the morning and 5mg at lunch. If this still was not strong enough, Ritalin was increased as needed but did not exceed a daily dose of 30mg. Furthermore, Ritalin was only taken for five days per week so as to reduce the side effects. This type of therapy was continued for three months after which the treatment effect was observed. One month after having stopped the Ritalin therapy, treatment effects were re-evaluated.

Experimental data have been summarized in Annex 5.

Comparison between the treatment results of the Ritalin treatment group and the acupuncture treatment group points out that both treatments are about equally effective [1]. The advantage of using acupuncture over Ritalin lies in the fact that acupuncture does not cause any side effects and that its treatment success is not as short lived as Ritalin's. This was clearly demonstrated in the follow-up evaluation, conducted one month after stopping treatment in both groups, when the acupuncture group's treatment effects had remained significantly more stable.

Further study results included following findings [1]:

Qing Bai Academy -- Frank Wiedijk -- Final Thesis for the Studies of Acupuncture and Tuina -- November 2009
• Acupuncture was more effective for younger children than for older patients. The author explains this by the fact that the cerebrum in younger children is still developing at a much higher rate than in older children and that, therefore, the intervention caused by the insertion of needles on the scalp is more apt to regulate the brain's function. After age 12, the cerebrum has already reached adult-level shape and form. Hence, the regulatory functions of acupuncture are more limited.

• Also, acupuncture seems to be much more effective to repress hyperactive behavior than to stimulate inattentive behavior; the treatment of the hyperactive and mixed subtypes was much more effective than the treatment of the inattentive subtype.

• The comparison between the number of treatment courses and the improved treatment effect demonstrates that this acupuncture protocol's regulation of the nervous system is progressively heightened by more treatments. It also points out that an abbreviated version of this protocol would certainly lead to decidedly reduced treatment results.

In 2006, H. Rabone [10] reported successful application of acupuncture at Stanchester Community School in the UK, treating young people identified to have ADHD showing anxiety, stress and problems controlling anger. Rabone believes ADHD patients present with underlying Spleen qi deficiency and/or Kidney qi deficiency, thereby indicating that these deficiency based patterns are nevertheless manifesting with very energetic symptoms of hyperactive ADHD. ‘Hyperactive’ Spleen qi would be accompanied by symptoms of poor appetite and other symptoms of Spleen deficiency and Kidney deficiency. Patients would tend to become hyperactive when tired or excited. Points used for treatment included Sanyinjiao Sp-6, to tonify the Spleen, Zusanli St-36 to tonify the Spleen and Stomach, Taichong Liv-3 to calm the spirit and regulate the free movement of qi and Taixi Kid-3 to tonify the Kidney. Also Taichong Liv-3 and Hegu L.I.-4 (‘the Four Gates’) may be used to calm the Liver and move Liver qi stagnation in order to calm down anger and frustration and also Shenmen HE-7 and Yintang M-HN-3, in order to calm the spirit. The acupuncture treatment was generally very positively received by these young people. Although these results were not statistically quantified in terms of a clinical trial outcome, results were reported to include: ‘marked improvement in well-being, happiness, sleep and energy’.
4.3.3 Tuina therapy

With reference to sections 2.2 and 3.2, starting point for Chinese medicine tuina therapy is the same as for acupuncture. Thus also for tuina it holds true that treatment of ADHD by way of tuina is adapted after the fact that any ADHD diagnosis along the DSM-IV guidelines, may actually involve the following patterns: (1) Spleen vacuity – Liver hyperactivity pattern, (2) Heart-Spleen dual vacuity pattern, (3) Yin vacuity – yang hyperactivity pattern, (4) Phlegm heat harassing internally pattern, (5) Static blood obstructing internally pattern and (6) Yang qi insufficiency pattern.

For each and all of these patterns, tuina treatment examples have been compiled by the author of this thesis, as based on the identification of patterns by Flaws [4: p. 281-285] and generally applicable, pattern specific tuina treatment plans for the ADHD patterns concerned. These tuina treatment plans, which can in practice be varied in dependence of a therapist’s preferences, are listed in Annex 4 for the reader’s reference, together with a recapitulation of the treatment principles (as previously discussed in section 3.2, regarding the Chinese medicine view on diagnosis and also specified in Annex 2).

Several sources acknowledge that massage is perfectly suited for reducing the symptoms of ADHD [13, 15]. However, well documented studies applying massage for ADHD therapy are indeed very scarce.

Examples of documented studies investigating massage therapy for reducing anxiety and hyperactivity (which appear to be the major and most difficult symptoms to manage in children with ADHD) have been published by the Touch Research Institute (TRI). Thirty students diagnosed with ADHD participated in one of the reported trials, of which the treatment group received massage therapy for 20 minutes, twice a week, during one month. It appeared that the treatment group showed ‘improved short-term mood state and longer-term classroom behavior’. Other TRI-studies on the effect of tuina on ADHD show that massage therapy was effective in ‘increasing focus, improving mood, reducing fidgeting and lowering hyperactivity in adolescents with ADHD’ [7].
4.3.4 Integration of Chinese medicine therapy options

A Chinese medicine approach of ADHD is not limited to the possible application of acupuncture, tuina and herbal therapy, but may also include advice with regard to lifestyle and nutrition, which may be of great importance especially for the treatment of ADHD [12; 14]. These aspects will not be discussed within the context of this thesis.

Although herbal theory is also out of scope within this literature study, it is once again explicitly mentioned here as one of the three pillars, together with acupuncture and tuina, which constitute Chinese medicine [4: p. 281-285; 9: p. 555-558]. Although combination studies appear to be non-existent or not published as yet, the diverse therapies that are associated with these three pillars are well suited to be applied in combination for the control of symptoms of both the hyperactive and inattentive types of ADHD. Complementary to the published study results revealing significant effect of both acupuncture and tuina controlling especially the ‘excessive’ ADHD symptoms of hyperactivity and impulsiveness (as discussed in the previous sections), herbal therapy appears in addition to be able to significantly contribute to the control of the ‘deficient’ ADHD-type symptoms involving inattentiveness [4: p. 281-285; 5; 9: p. 555-559].

Since both acupuncture and tuina seem to be able to effectively contribute to the control of excessive ADHD symptoms, a choice for either of the two seems to be largely subjective. As for treatment into which the application of acupuncture and tuina therapies are combined, both sequence and frequency of treatment should also be tuned to the characteristics and preferences of the ADHD patient at hand.

Clearly, more quantified research is needed to assess the relative effectiveness of the available Chinese medicine therapies, in order to optimize their combined use for ADHD treatment.
5 Discussion and conclusions

In order to work towards reducing suffering by ADHD, it is foremost of importance to facilitate the correct diagnosis of this behavioral disorder. This diagnosis cannot be done easily without expert knowledge and experience concerning interpretation of observations in the context of DSM-IV [3; 12]. Improvement of instruction in schools and health centers concerning ADHD suspicious symptoms in both children and adults should be linked with consultation by qualified persons in those cases where ADHD is suspected. Especially the inattentive type of ADHD is prone to be neglected, since it does not conspicuously disrupt school or work environments, but also the hyperactive type of ADHD may be overlooked or misinterpreted.

Current practice is that once ADHD is diagnosed, often pharmaceutical stimulants are prescribed. For decades Ritalin has been the most common drug used in the treatment of ADHD in the US as well as in China. However, this stimulant may cause disturbing side effects, such as appetite suppression with weight loss, irritable mood, insomnia, visual hallucinations and tics. Furthermore, even though Ritalin and related stimulants control the symptoms associated with ADHD in most children effectively, they only do so as long as they are taken regularly and on a daily basis, since for example Ritalin's stimulatory effect only lasts for about 4 hours. Unfortunately, Ritalin (like all other stimulants) does not cure the disease but rather seems to stimulate the brain to stay ‘alert’, thereby eliminating the child's need to stimulate the brain him or herself through the manifestation of hyperactive and/or impulsive behavior [1].

Naturally, a treatment method which does not cause side-effects and which has more permanent results, is in itself highly desirable. But also, the use of Ritalin or other pharmaceutical stimulants for the treatment of children suffering from ADHD is becoming increasingly unpopular among many health conscious parents, precisely because of the children’s continued dependence on the stimulant medication, as well as the disturbing side effects. Consequently, the number of parents looking for alternative treatments to solve their children's behavioral problems caused by ADHD seems to be steadily increasing.
Besides implementation of measures in the sphere of behavioral and life style therapies as described in section 4.1.2 of this document and also often prescribed in the realm of Western medicine as measures complementary to the prescribed intake of pharmaceutical stimulants, several promising ‘alternative’ treatment methods are available within Chinese medicine, viz. acupuncture, tuina and herbal therapy, the latter being out of scope within the context of this study. Although numerous sources report effective treatment by way of both acupuncture and tuina, as was described in the respective sections 4.3.2 and 4.3.3, studies quantifying the effect of acupuncture and or tuina treatment appear to be very scarce as yet.

One such study concerns a trial conducted by Professor Lai Xin-sheng from the Guangzhou Chinese Medical University, comparing the effect of acupuncture treatment with a standard Ritalin treatment, as described in section 4.3.2 on acupuncture therapy of this document. In this study it has been clinically tested and reported that acupuncture has a controlling effect on ADHD symptoms, comparing a group of 155 children treated with acupuncture to a control group of 58 children who were treated with Ritalin [1]. Results indicated that acupuncture can control ADHD symptoms none less effectively than regular Ritalin-therapy (i.e. medication by way of an often prescribed psycho-stimulant) [12]. The effect was especially pronounced where the hyperactive-impulsive ADHD-type is concerned.

However, although the effect of acupuncture shown in this trial is in itself promising, the clinical applicability might be questioned because of (1) the frequency of treatments and (2) the heavy use of head points used in the acupuncture formulae, whereas both of these factors are believed to be essential for achieving treatment success with this protocol [1]. Becker states in his conclusion [1, p. 4-5]: “It is both my opinion and experience that an abbreviated version of the above protocol needled once or even twice weekly would not be nearly as effective as the protocol presented above. This means, then, that the parent has to bring the child to the acupuncture clinic five times per week for three months and has, if regular Western acupuncture rates are charged, to spend a lot of money. Unfortunately, it is also my opinion and experience that few Western parents are willing to do so. Hence, solutions to the above problems need to be found”.

Some suggestions to solve these problems are also given by Becker: (1) schools may set up programs where an acupuncturist would come in once daily in order to give treatment to a pre-selected and willing group of children with ADHD, (2) payment may then be distri-
buted over these children's parents or possibly even the school, thereby diminishing treatment costs to a fraction of the regular cost for any one child's parents. The second problem, the heavy use of head points, may be overcome by way of: (1) careful instruction of the children and parents involved, in order to reduce possible feelings of fear and uneasiness and (2) correct needle insertion ensuring almost painless needling.

Concluding this thesis, it may be stated that although the documented clinical trial basis is as yet shallow, acupuncture appears to be able to achieve a relatively good clinical effectiveness in the treatment of ADHD, to the extent that pharmaceutical stimulant intake could be lessened or even replaced altogether, particularly for the hyperactive and mixed ADHD subtypes [1]. Also, acupuncture post-treatment recurrence rates appear to be low [1]. Similar quantitative trials with regard to the effect of tuina are as yet not available, but in the light of qualitative research done thus far [7; 15], it seems likely that tuina will play a valuable contributive role in relieving ADHD complaints, especially regarding the hyperactive and mixed types of ADHD.

Consequently, both acupuncture and tuina should be stimulated to be applied for ADHD treatment, while at the same time further research for the optimization of application methods and their applicability, in terms of their implementation in practical situations, should be undertaken as soon as possible.
References

Literature


Websites


[14] www.balansdigitaal.nl

Annex 1: Definition of ADHD according to the DSM-IV


The definition of ADHD given in the Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR, 4th edition, categorizes symptoms into two categories: (1) inattention and (2) hyperactivity-impulsivity.

Children with a diagnosis of ADHD should meet A through E of the criteria below:

A Either 1 or 2:

1 Six or more of the following symptoms of inattention have persisted for at least six months to a degree that is maladaptive and inconsistent with developmental level:

1.1 Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities

1.2 Often has difficulty sustaining attention in tasks or play activities

1.3 Often does not seem to listen when spoken to directly

1.4 Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)

1.5 Often has difficulty organizing tasks and activities

1.6 Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as homework)

1.7 Often loses things necessary for tasks or activities (toys, school assignments, pencils, books, or tools)

1.8 Is often easily distracted by extraneous stimuli

1.9 Is often forgetful in daily activities
2 Six or more of the following symptoms of hyperactivity-impulsivity have persisted for at least six months to a degree that is maladaptive and inconsistent with developmental level:

Hyperactivity

2.1 Often fidgets with hands or feet or squirms in seat
2.2 Often leaves seat in classroom or in other situations in which remaining seated is expected
2.3 Often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
2.4 Often has difficulty playing or engaging in leisure activities quietly
2.5 Is often "on the go" or often acts as if "driven by a motor"
2.6 Often talks excessively

Impulsivity

2.7 Often blurts out answers before questions have been completed
2.8 Often has difficulty awaiting turn
2.9 Often interrupts or intrudes on others (such as butting into conversations or games)

B Some hyperactive, impulsive, or inattentive symptoms that caused impairment were present before age seven years.

C Some impairment from the symptoms is present in two or more settings (such as in school or work and at home).

D There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E The symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia, or another psychotic disorder and are not better accounted for by another mental disorder (such as a mood, anxiety, dissociative or personality disorder).
Annex 2: Overview of symptoms for ADHD pattern diagnosis


(1) Spleen vacuity – Liver hyperactivity pattern

Main symptoms:
- Uncontrollable fidgeting
- Emotional tension
- Easy anger
- Poor sleep
- Fatigue
- Diminished appetite
- Easily developed diarrhea due to emotional stress

*Tongue:* thin white tongue fur
*Pulse:* xian mai (wiry).

Symptoms analysis:
Liver stagnation symptoms (emotional tension, easy anger, xian mai / wiry pulse) are mixed with spleen vacuity symptoms (fatigue, diminished appetite). Poor sleep and uncontrollable fidgeting are in this context due to the malnourishment of the spirit leading to a disquieted spirit.

Treatment principle:
- Fortify the spleen
- Harmonize the liver

(2) Heart-Spleen dual vacuity pattern

Main symptoms:
- Sallow yellow or somber white facial complexion
- Pale nails, lips
- Fatigue
- Insomnia
- Profuse dreams
- Heart palpitations
- Shortness of breath
- Poor appetite
- Tendency to loose stools
- Impaired memory

*Tongue:* fat, pale, teeth marks, thin/white fur

*Pulse:* xi mai, ruo mai (fine, weak)

**Symptoms analysis:**

Blood vacuity symptoms (color of facial complexion, pale lips, nails and tongue, xi mai) are mixed with spleen qi vacuity symptoms (fatigue, shortness of breath, poor appetite, tendency to loose stools, fat tongue with teeth marks, ruo mai / weak pulse).

Insomnia, profuse dreams, impaired memory and heart palpitations are in this context due to qi and blood not constructing and nourishing the heart spirit.

**Treatment principle:**

- Fortify the spleen
- Supplement the heart
- Boost the qi
- Nourish the blood

**(3) Yin vacuity – yang hyperactivity pattern**

**Main symptoms:**

- Tending to be thin
- Poor concentration
- Insomnia
- Heart palpitations
- Easy agitation
- Easy anger
- Excessive movement and speech
- Dizziness
- Tinnitus
- Possible low back pain
- Possible enuresis
- Flushed cheeks
- Dry mouth and throat
- Possible night sweats

*Tongue:* diminished fur or pale with red tip

*Pulse:* xi mai, shuo mai (fine, rapid)

**Symptoms analysis:**

Pre-heaven natural endowment yin insufficiency symptoms (thin body, confirmed by symptoms of dry mouth/throat, red tongue with scanty fur, and xi/shuo mai) are mixed with symptoms upwardly counter flowing yang not being controlled by yin (poor concentration, insomnia, heart palpitations, easy agitation, easy anger, excessive movement and speech, dizziness, flushed cheeks and night sweats).

The root of this condition is kidney yin vacuity, as is specifically indicated by the enuresis and low back pain.

**Treatment principle:**

- Enrich and nourish kidney yin
- Level the liver and subdue yang
- Calm the heart and boost intelligence

**(4) Phlegm heat harassing internally pattern**

**Main symptoms:**

- Excessive movement and speech
- Difficulty controlling one self
- Lack of concentration
- Easy anger
- Pronounced irritability
- Vexation and agitation
- Possible nausea
- Profuse phlegm
- Chest and abdominal fullness and oppression
- Torpid intake
ADHD in a Chinese Medicine Perspective

- Possible bad breath
- Bitter taste in the mouth
- Yellow-red urination
- Tongue: red edges and slimy/yellow fur
- Pulse: hua mai, shuo mai, xian mai (slippery, rapid, wiry)

**Symptoms analysis:**

Symptoms of heat harassing the heart spirit (excessive movement and speech, difficulty controlling oneself, lack of concentration, easy anger, pronounced irritability, vexation and agitation) can be affirmed by the heat symptoms of bad breath, yellow-red urine, red tongue, yellow tongue fur and rapid pulse (shuo mai), while the symptoms of xian mai, red tongue edges, anger and irritability indicate that the apparent heat is arising from the stagnated liver-gallbladder. Phlegm symptoms include the profuse phlegm, chest and abdominal fullness and oppression, torpid intake, slimy tongue fur and slippery pulse (huo mai).

**Treatment principle:**

- Clear heat
- Disinhibit dampness
- Transform phlegm
- Calm the heart

(5) **Static blood obstructing internally pattern**

**Main symptoms:**

- Poor concentration
- Difficulty studying
- Easy anger
- Excessive movement and restlessness
- Dry, withered hair and scaly skin
- Prominent blue green sinews (i.e. veins)
- Possible history of birth trauma with intracranial hemorrhage
- Blue-green or dull, dark facial complexion

*Tongue:* dark and/or purple tongue and or static spots or macules; engorged, tortuous sublingual veins
**ADHD in a Chinese Medicine Perspective**

*Pulse:* chen mai, se mai, xi mai or jie mai (deep, choppy, fine or bound)

**Symptoms analysis:**
Most of the above symptoms concern blood stasis symptoms which are found to be mixed with symptom due to a disquieted spirit (poor concentration, difficulty studying and excessive movement) that is in turn due to blockage of the heart portals and heart blood and essence vacuity not constructing and nourishing the spirit. The symptom of easy anger indicates that beside blood stasis, there is also qi stagnation.

**Treatment principle:**
- Quicken the blood and transform stasis
- Nourish the blood
- Engender essence
- Calm the spirit and boost intelligence

(6) **Yang qi insufficiency pattern**

**Main symptoms:**
- Poor concentration
- Excessive movement but not over-excitation
- Lassitude of the spirit
- Somber white facial complexion
- Torpid intake
- Loose stools
- Low back and knee soreness and limpness
- Cold body and chilled limbs

*Tongue:* pale with moist fur

*Pulse:* chen mai, ruo mai (deep, weak)

**Symptoms analysis:**
Yang qi insufficiency of spleen and kidneys causing non-construction of the heart spirit lead to the symptoms of poor concentration, excessive movement but not over-excitation and lassitude of the spirit, which are mixed with symptoms indicating spleen qi vacuity (torpid intake and loose stools) and kidney vacuity (low back and knees soreness and weakness). Furthermore the yang qi
insufficiency may lead to vacuity cold (somber white facial complexion, cold body and chilled limbs, pale tongue and deep/weak pulse) and the moist tongue fur indicating yang qi is too vacuous to transform and transport fluids adequately.

**Treatment principle:**
- Supplement the kidneys
- Boost the qi
- Strengthen the will (or mind)
- Quiet the spirit
Annex 3: Overview of acupuncture formulae for ADHD treatment


(1) Spleen vacuity – Liver hyperactivity pattern

**Treatment principle:**
- Fortify the spleen
- Harmonize the liver

**Acupuncture treatment:**
=main acupuncture formula=
Tai Chong (Liv-3), He Gu (LI-4), Zu San Li (St-36), Shen Men (Ht-7):
use even method.

=additions & subtractions=
- If scattered concentration is present, add:
  Bai Hui (Du-20), Si Shen Cong (M-HN-1), Da Ling (Pc-7).
- If hyperactive stirring is present, add:
  Ding Shen (N-HN-32), An Mian (N-HN-22), Xin Shu (Bl-15).
- If emotions are labile and vexation/and agitation are present, add:
  Shen Ting (du-24), Dan Zhong (RM-17), Zhao Hai (Kid-6).

(2) Heart-Spleen dual vacuity pattern

**Treatment principle:**
- Fortify the spleen
- Supplement the heart
- Boost the qi
- Nourish the blood.

**Acupuncture treatment:**
=main acupuncture formula=
Xin Shu (Bl-15), Ge Shu (Bl-17), Gao Huang Shu (Bl-43), Pi Shu (Bl-20):
use supplementing technique.

= additions & substractions =

Same as for pattern (1) Spleen vacuity – Liver hyperactivity pattern.

(3) *Yin vacuity – yang hyperactivity pattern*

**Treatment principle:**
- Enrich and nourish kidney yin
- Level the liver and subdue yang
- Calm the heart and boost intelligence

**Acupuncture treatment:**
= main acupuncture formula =
Tai Xi (Kid-3), San Yin Jiao (Sp-6): use supplementing technique;
Nei Guan (Pc-6), Da Zhui (Du-14), Qu Chi (LI-11): use draining technique.

= additions & substractions =
Same as for pattern (1) Spleen vacuity – Liver hyperactivity pattern.

(4) *Phlegm heat harassing internally pattern*

**Treatment principle:**
- Clear heat
- Disinhibit dampness
- Transform phlegm
- Calm the heart

**Acupuncture treatment:**
= main acupuncture formula =
Feng Long (St-40), Zhong Wan (Du-12), Nei Guan (Pc-6), Da Zhui (Du-14),
Qu Chi (LI-11): use draining technique.

= additions & substractions =
Same as for pattern (1) Spleen vacuity – Liver hyperactivity pattern.
(5) Static blood obstructing internally pattern

Treatment principle:
- Quicken the blood and transform stasis
- Nourish the blood
- Engender essence
- Calm the spirit and boost intelligence

Acupuncture treatment:
=main acupuncture formula=
Xue Hai (Sp-10, He Gu (LI-4), Xin Shu (Bl-15): use draining technique;
Ge Shu (Bl-17), Shen Shu (Bl-23): use supplementing technique.
=additions & substractions=
Same as for pattern (1) Spleen vacuity – Liver hyperactivity pattern.

(6) Yang qi insufficiency pattern

Treatment principle:
- Supplement the kidneys
- Boost the qi
- Strengthen the will (or mind)
- Quiet the spirit

Acupuncture treatment:
=main acupuncture formula=
Shen Shu (Bl-23), Ming Men (Du-4), Zhi Shi (Bl-51), Guan Yuan (RM-4), Zu San Li (St-36): moxa all points.
=additions & substractions=
none
Annex 4: Overview of tuina techniques for ADHD treatment


(1) *Spleen vacuity – Liver hyperactivity pattern*

**Treatment principle:**
- Fortify the spleen
- Harmonize the liver

**Tuina treatment:**

*=dorsal side treatment=*

<table>
<thead>
<tr>
<th>Technique</th>
<th>Location</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca Fa</td>
<td>back</td>
<td>open meridians</td>
</tr>
<tr>
<td>Tui Fa</td>
<td>back</td>
<td>“</td>
</tr>
<tr>
<td>Gun Fa</td>
<td>back (GB- and BL-meridians)</td>
<td>harmonize liver</td>
</tr>
<tr>
<td>Na Fa</td>
<td>neck &amp; shoulders (GB-meridian)</td>
<td>“</td>
</tr>
<tr>
<td>Ya Fa</td>
<td>Gan Shu</td>
<td>BL-18</td>
</tr>
<tr>
<td></td>
<td>Pi Shu</td>
<td>BL-20 fortify spleen</td>
</tr>
<tr>
<td>Da Fa</td>
<td>back &amp; legs</td>
<td>harmonize qi / blood</td>
</tr>
</tbody>
</table>

=*ventral side treatment=*

Shu Liver harmonize liver
Ya-Rou Fa Zhang Men LIV-13 harmonize liver / spleen
Yun Fa belly fortify spleen
He Fa belly “
Play the ball belly “
Yun-Tui stomach/spleen “
Ya-Rou Fa Tai Chong LIV-3 harmonize liver
San Yin Jiao SP-6 fortify spleen / harm. liv.
Na Fa (Bu) 3 Yin leg “
(2) Heart-Spleen dual vacuity pattern

**Treatment principle:**
- Fortify the spleen
- Supplement the heart
- Boost the qi
- Nourish the blood

**Tuina treatment:**

=dorsal side treatment=

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Point / Location</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca Fa</td>
<td>back</td>
<td>open meridians</td>
</tr>
<tr>
<td>Rou Fa</td>
<td>back</td>
<td>“</td>
</tr>
<tr>
<td>Gun Fa</td>
<td>lower back</td>
<td>boost the qi</td>
</tr>
<tr>
<td>He Fa</td>
<td>lower back</td>
<td>nourish the blood</td>
</tr>
<tr>
<td>Ya Fa</td>
<td>Xin Shu BL-15</td>
<td>supplement heart</td>
</tr>
<tr>
<td>Ge Shu</td>
<td>BL-17</td>
<td>nourish the blood</td>
</tr>
<tr>
<td>Pi Shu</td>
<td>BL-20</td>
<td>fortify spleen</td>
</tr>
<tr>
<td>Tui Fa</td>
<td>back</td>
<td>harmonize qi / blood</td>
</tr>
<tr>
<td>Da Fa</td>
<td>back &amp; legs</td>
<td>“</td>
</tr>
</tbody>
</table>

=ventral side treatment=

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Point / Location</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yun Fa</td>
<td>belly</td>
<td>fortify spleen</td>
</tr>
<tr>
<td>He Fa</td>
<td>belly</td>
<td>“</td>
</tr>
<tr>
<td>Play the ball</td>
<td>belly</td>
<td>“</td>
</tr>
<tr>
<td>Rou Fa</td>
<td>belly</td>
<td>“</td>
</tr>
<tr>
<td>Gun Fa</td>
<td>belly</td>
<td>“</td>
</tr>
<tr>
<td>Yun-Tui</td>
<td>stomach/spleen</td>
<td>“</td>
</tr>
<tr>
<td>Ya-Rou Fa</td>
<td>Qi Hai REN-6</td>
<td>boost the qi</td>
</tr>
<tr>
<td></td>
<td>San Yin Jiao SP-6</td>
<td>“</td>
</tr>
<tr>
<td>Na Fa</td>
<td>3 Yin leg (Bu)</td>
<td>“</td>
</tr>
<tr>
<td>An Bai Hui</td>
<td>head</td>
<td>supplement heart</td>
</tr>
</tbody>
</table>
With this condition of dual vacuity, treatment by way of tuina is likely to be relatively less effective and patients with this disorder should therefore be advised to also consider treatment by means of herbs and/or acupuncture.

(3) **Yin vacuity – yang hyperactivity pattern**

**Treatment principle:**
- Enrich and nourish kidney yin
- Level the liver and subdue yang
- Calm the heart and boost intelligence

**Tuina treatment:**

* =dorsal side treatment=

<table>
<thead>
<tr>
<th>Ca Fa</th>
<th>back</th>
<th>open meridians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tui Fa</td>
<td>back</td>
<td>“</td>
</tr>
<tr>
<td>Y-Rou Fa</td>
<td>Shen Shu BL-23</td>
<td>nourish kidney yin</td>
</tr>
<tr>
<td>He Fa</td>
<td>lower back</td>
<td>“</td>
</tr>
<tr>
<td>Gun Fa</td>
<td>lower back</td>
<td>level liver / subdue yang</td>
</tr>
<tr>
<td>Yun Fa</td>
<td>back (BL-18)</td>
<td>“</td>
</tr>
</tbody>
</table>

* =ventral side treatment=

| Na Fa (Bu) | 3 yin arms | calm heart / subdue yang |
| Ya Fa | Nei Guan PC-6 | “ |
| Shu liver | belly | level liver / subdue yang |
| Yun Fa | “ |
| Na Fa (Bu) | 3 yin leg | “ |
| Ya-Rou Fa | Qu Quan LIV-3 | “ |
| | San Yin Jiao SP-6 | nourish kidney yin |
| | Yong Quan KID-1 | “ |
| Zhua Fa | head | subdue yang |
| Fen yin yang | head | “ |
| Open heaven door | head | calm the spirit / heart |
**ADHD in a Chinese Medicine Perspective**

<table>
<thead>
<tr>
<th>Point</th>
<th>Location</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tui-Na-Rou</td>
<td>head</td>
<td>“</td>
</tr>
<tr>
<td>An Bai Hui</td>
<td>head</td>
<td>“</td>
</tr>
<tr>
<td>5 Finger Tui</td>
<td>head</td>
<td>“</td>
</tr>
</tbody>
</table>

(4) **Phlegm heat harassing internally pattern**

**Treatment principle:**
- Clear heat
- Disinhibit dampness
- Transform phlegm
- Calm the heart

**Tuina treatment:**

= **dorsal side treatment** =

<table>
<thead>
<tr>
<th>Point</th>
<th>Location</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca Fa</td>
<td>back</td>
<td>open meridians</td>
</tr>
<tr>
<td>Cuo Huatuojiaji / Xie</td>
<td>back</td>
<td>clear heat</td>
</tr>
<tr>
<td>Fen Fa</td>
<td>upper back (DM-14)</td>
<td>“</td>
</tr>
<tr>
<td>Che Fa</td>
<td>back</td>
<td>“</td>
</tr>
<tr>
<td>Tui Fa</td>
<td>back</td>
<td>“</td>
</tr>
<tr>
<td>Ya-Rou Fa</td>
<td>Gao Huang Shu</td>
<td>BL-43 transform Phlegm</td>
</tr>
</tbody>
</table>

= **ventral side treatment** =

<table>
<thead>
<tr>
<th>Point</th>
<th>Location</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ya-Rou Fa</td>
<td>Tou Wei</td>
<td>ST-8 transform Phlegm</td>
</tr>
<tr>
<td>Rou Tai Yang</td>
<td>head</td>
<td>calm the spirit / heart</td>
</tr>
<tr>
<td>Fen yin yang</td>
<td>head</td>
<td>“</td>
</tr>
<tr>
<td>Open heaven door</td>
<td>head</td>
<td>“</td>
</tr>
<tr>
<td>Tui-Na-Rou</td>
<td>head</td>
<td>“</td>
</tr>
<tr>
<td>Yun Fa</td>
<td>belly</td>
<td>disinhibit Dampness</td>
</tr>
<tr>
<td>Fen Fa</td>
<td>upper belly</td>
<td>“</td>
</tr>
<tr>
<td>Rou Fa</td>
<td>belly</td>
<td>“</td>
</tr>
<tr>
<td>Play the ball</td>
<td>belly</td>
<td>“</td>
</tr>
<tr>
<td>Na Fa</td>
<td>belly</td>
<td>“</td>
</tr>
</tbody>
</table>
(5) Static blood obstructing internally pattern

Treatment principle:
- Quicken the blood and transform stasis
- Nourish the blood
- Engender essence
- Calm the spirit and boost intelligence

Tuina treatment:
= dorsal side treatment =
Ca Fa      back    open meridians
Tui Fa     back BL-meridian "
He Fa      lower back / Mingmen engender essence "
Gun Fa     lower back and Ba Liao  "
Yun Fa     lower back  "
Ban FaLeg  lower back and Ba Liao  "
Huang Fa   lower back  quicken the blood
Ya-Rou Fa  Ge Shu BL-17 nourish the blood
            Shen Shu BL-23 engender essence "
            Zhi Shi BL-52 "
Cuo Fa     Ba Liao  "

= ventral side treatment =
Shu liver quicken the blood
Ya Rou Fa  He Gu LI-4 "
Na Fa (Bu)  3 Yin arms  "

ADHD in a Chinese Medicine Perspective

Yun-Tui   stomach / spleen "
Ya Fa     Zhong Wan REN-12 "
Ya Fa     Yin Ling Quan SP-9 "
          Feng Long ST-40 transform Phlegm
Na Fa     3 Yang leg (Xie) clear heat
(6) **Yang qi insufficiency pattern**

**Treatment principle:**
- Supplement the kidneys
- Boost the qi
- Strengthen the will (or mind)
- Quiet the spirit

**Tuina treatment:**

*=dorsal side treatment=

<table>
<thead>
<tr>
<th>Point</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca Fa</td>
<td>back</td>
<td>open meridians</td>
</tr>
<tr>
<td>Rou Fa</td>
<td>back BL-meridian</td>
<td>“</td>
</tr>
<tr>
<td>Gun Fa</td>
<td>lower back</td>
<td>supplement kidneys</td>
</tr>
<tr>
<td>He Fa</td>
<td>lower back / BL-23</td>
<td>“</td>
</tr>
<tr>
<td>Cuo Fa</td>
<td>lower back / Mingmen</td>
<td>“</td>
</tr>
<tr>
<td>Ya Fa</td>
<td>Shen Shu</td>
<td>BL-23</td>
</tr>
<tr>
<td></td>
<td>Zhi Shi</td>
<td>BL-52</td>
</tr>
</tbody>
</table>

*=ventral side treatment=

<table>
<thead>
<tr>
<th>Point</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yun Fa</td>
<td>belly</td>
<td>boost the qi</td>
</tr>
<tr>
<td>Procedure</td>
<td>Location</td>
<td>Acupuncture Treatment</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Ya Fa (Bu)</td>
<td>Guan Yuan</td>
<td>REN-4</td>
</tr>
<tr>
<td></td>
<td>Qi Hai</td>
<td>REN-6</td>
</tr>
<tr>
<td>Na Fa (Bu)</td>
<td>3 Yin leg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Yang leg</td>
<td></td>
</tr>
<tr>
<td>Ya Fa</td>
<td>Tai Xi</td>
<td>KID-3</td>
</tr>
<tr>
<td>Moxibustion</td>
<td>REN-8 (salt/ginger)</td>
<td></td>
</tr>
<tr>
<td>Fen Eyebrows</td>
<td>head</td>
<td></td>
</tr>
<tr>
<td>Fen Yin-Yang</td>
<td>head</td>
<td></td>
</tr>
<tr>
<td>Open Heaven Door</td>
<td>head</td>
<td></td>
</tr>
<tr>
<td>Tui-Na-Rou</td>
<td>head</td>
<td></td>
</tr>
<tr>
<td>Rou Fa</td>
<td>Tai Yang</td>
<td></td>
</tr>
<tr>
<td>Rou Big Fish</td>
<td>head</td>
<td></td>
</tr>
<tr>
<td>An Bai Hui</td>
<td>DM-20</td>
<td></td>
</tr>
<tr>
<td>5 Finger Tui</td>
<td>head</td>
<td></td>
</tr>
</tbody>
</table>
Annex 5: Treatment effect analysis Acupuncture / Ritalin trial


In the light of the importance for this thesis, following treatment effect analysis is cited (presented in Italics) from the article by Becker [1], as part of the trial by Professor Lai Xin-sheng from the Guanzhou Chinese Medical University, comparing the effect of acupuncture treatment with a standard Ritalin treatment, as described in section 4.3.2 of this document on acupuncture therapy.

Treatment effect analysis: Treatment effect criteria: Patients were judged cured if the 18 diagnostic symptoms listed in the DSM-IV had basically dispersed. Patients in whom five or more of the 18 symptoms were relieved were considered as demonstrating a marked effect. Patients in whom two or more (up to five) symptoms had been resolved were considered to have had some effect. No improvement in disease symptoms was considered no effect.

Treatment results:

<table>
<thead>
<tr>
<th>Group</th>
<th>Total Cases</th>
<th>Cured</th>
<th>Marked Effect</th>
<th>Some Effect</th>
<th>No Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acupuncture</td>
<td>155 (100)</td>
<td>19 (12.3)</td>
<td>72 (46.4)</td>
<td>37 (23.9)</td>
<td>27 (17.4)</td>
</tr>
<tr>
<td>Ritalin</td>
<td>58 (100)</td>
<td>21 (24.1)</td>
<td>21 (36.2)</td>
<td>16 (27.6)</td>
<td>7 (12.1)</td>
</tr>
</tbody>
</table>

Table 1: Acupuncture and Ritalin group treatment results; Cases (%)

From the above, it can be seen that the treatment effect in the acupuncture group was 82.58% and the treatment effect in the Ritalin group was 87.9%. Thus, the treatment efficacy from the two different treatment protocols did not differ significantly (P>0.05).

<table>
<thead>
<tr>
<th>Group</th>
<th>Total Cases</th>
<th>Cured</th>
<th>Marked Effect</th>
<th>Some Effect</th>
<th>No Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acupuncture</td>
<td>155 (100)</td>
<td>12 (7.7)</td>
<td>53 (34.2)</td>
<td>63 (40.7)</td>
<td>27 (17.4)</td>
</tr>
<tr>
<td>Ritalin</td>
<td>58 (100)</td>
<td>2 (3.5)</td>
<td>5 (8.6)</td>
<td>12 (20.7)</td>
<td>39 (67.2)</td>
</tr>
</tbody>
</table>

Table 2: Treatment effect after having stopped therapy, either Ritalin or acupuncture, for 1 month; Cases (%)

Table 2 shows that, after either therapy had been stopped for one month, the treatment effect in the acupuncture group remained at 82.6% whereas the treatment effect in the Ritalin group decreased to 32.8%. This difference in treatment effect is significant (P<0.01) and points out that in the acupuncture group, the treatment effect, even after stopping treatment for one month, had remained relatively stable; in the Ritalin treatment group, as can be expected, a majority of cases regressed into the no effect category.
ADHD in a Chinese Medicine Perspective

Table 3: Relationship between age and treatment effect in the acupuncture group

Table 3 shows that acupuncture treatment was significantly more effective in younger children (P<0.001).

<table>
<thead>
<tr>
<th>Age</th>
<th>Total Cases</th>
<th>Cured</th>
<th>Marked Effect</th>
<th>Some Effect</th>
<th>No Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-9 yr</td>
<td>65</td>
<td>11</td>
<td>43</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>9-12 yr</td>
<td>56</td>
<td>6</td>
<td>23</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>12 or older</td>
<td>34</td>
<td>2</td>
<td>6</td>
<td>9</td>
<td>17</td>
</tr>
</tbody>
</table>

Table 4: Relationship between ADHD subtypes and treatment effect in the acupuncture group; Cases (%)

Table 4 points out that the acupuncture protocol was most effective in the treatment of the hyperactive subtype followed by the mixed subtype. Acupuncture was least effective in the treatment of the inattentive subtype. The difference in treatment effect between the different subtypes is significant (P<0.001).

<table>
<thead>
<tr>
<th>ADHD Subtype</th>
<th>Total Cases</th>
<th>Cured</th>
<th>Marked Effect</th>
<th>Some Effect</th>
<th>No Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed</td>
<td>69 (100)</td>
<td>4 (5.8)</td>
<td>43 (62.3)</td>
<td>12 (17.4)</td>
<td>10 (14.5)</td>
</tr>
<tr>
<td>Hyperactive</td>
<td>49 (100)</td>
<td>12 (24.5)</td>
<td>18 (36.7)</td>
<td>15 (30.6)</td>
<td>4 (8.2)</td>
</tr>
<tr>
<td>Inattentive</td>
<td>37 (100)</td>
<td>3 (8.1)</td>
<td>11 (29.7)</td>
<td>10 (27.0)</td>
<td>13 (35.2)</td>
</tr>
</tbody>
</table>

Table 5: Relationship between the number of treatment courses and treatment effect in the acupuncture group.

As Table 5 clearly points out, the amount of treatment courses has a direct relationship to the treatment efficacy: the more treatments, the higher the treatment success (P<0.001).