CLINICAL, PSYCHOLOGICAL AND SOCIAL ASPECTS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN

THESIS

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By

MIRIAM ARCHANA SWAMINATHAN

Under the Supervision

and

Guidance of:

DR. A. ANDAL

Senior Consultant and Head

Department of Paediatrics

Kanchi Kamakoti Childs Trust Hospital,

Chennai

Co-Guidance of:

DR. B.S.VIRUDHAGIRINATHAN

Senior Consultant and Head- Department of Neuropsychology-Kanchi Kamakoti Childs Trust Hospital, Chennai and

Course Coordinator, Post Graduate Diploma in Learning Disabilities, The TamilNadu Dr. M.G.R. Medical University

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Miriam Archana Swaminathan

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INTRODUCTION

"Phil stop acting like a worm,

The table's not a place to squirm."

Thus speaks the father to the son,

Severely says, not in fun,

Mother frowns and looks around,

But Philip will not take advice,

He'll have his way at any price.

He turns,

He churns,

He wriggles,

He giggles,

Here and there on the chair;

"Phil, these twists I cannot bear."

(After which he leans backward in his chair, and as he is falling, grabs the tablecloth, tumbling him, the dishes, and the chair to the floor.)

-'Fidgety Phil' (1863), translated from a German nursery rhyme.

Attention Deficit Hyperactivity Disorder (ADHD) is not a recent discovery. Attention Deficit Hyperactivity Disorder was first described by Dr. Heinrich Hoffman in 1845. A physician who wrote books on medicine and psychiatry, Dr. Hoffman was also a poet who became interested in writing for children when he couldn't find suitable materials to read to

his 3-year-old son. The result was a book of poems, complete with illustrations, about children and their characteristics. "The Story of Fidgety Philip" was an accurate description of a little boy who had Attention Deficit Hyperactivity Disorder. Yet it was not until 1902 that Sir George F. Still published a series of lectures to the Royal College of Physicians in England in which he described a group of impulsive children with significant behavioural problems, caused by a genetic dysfunction and not by poor child rearing—children who today would be easily recognized as having Attention Deficit Hyperactivity Disorder. Since then, several thousand scientific papers on the disorder have been published, providing information on its nature, course, causes, impairments, and treatments.

The essential feature of Attention Deficit Hyperactivity Disorder is a persistent pattern of inattention and/or hyperactivity- impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development. For diagnosis, some hyperactive-impulsive or inattentive symptoms that cause impairment must have been present before age 7 years. Some impairment from the symptoms must be present in at least two settings (e.g. at home and at school). There will be interference with developmentally appropriate social, academic or occupational functioning.

Child Psychiatrists used to believe that the symptoms of Attention Deficit Hyperactivity Disorder diminished and disappeared as children grew older, but recent studies have found that Attention Deficit Hyperactivity Disorder persists into adolescence and adult life. Attention Deficit Hyperactivity Disorder is the most recent term given to a childhood disorder that has had a variety of names in the past. This disorder was first termed ‘hyperactivity’, then ‘Attention Deficit Disorder’ (ADD), and then, to differentiate between

children who had ADD, but did not exhibit hyperactivity, either ADD or ADD-H. The new official term is Attention Deficit Hyperactivity Disorder (ADHD). This disorder may be classified into: (1) Attention Deficit Hyperactivity Disorder, combined type; (2) Attention Deficit Hyperactivity Disorder, predominantly inattentive type; (3) Attention Deficit Hyperactivity Disorder, predominantly hyperactive-impulsive type.

Children with this disorder will commonly fail to give close attention to details and make careless mistakes, will have difficulty sustaining attention in tasks or play activities, will not follow through on instructions and fail to finish schoolwork or chores, will lose things necessary for tasks or activities, will often fidget with hands or feet and squirm in seat, will often run about excessively in situations in which it is inappropriate, are talkative and are often ‘on the go’ and act as if ‘driven by a motor’.

Malhi and Singhi (2000) report that in India, the prevalence of Attention Deficit Hyperactivity Disorder is estimated at 10% to 20% in school age children. Data on the prevalence in adolescence and adulthood are limited. Attention Deficit Hyperactivity Disorder is frequently accompanied by learning disorders and other behaviour disorders. Attention Deficit Hyperactivity Disorder is more common in boys than girls.

SYMPTOMS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

The principal characteristics of Attention Deficit Hyperactivity Disorder are **inattention**, **hyperactivity**, and **impulsivity**. These symptoms appear early in a child's life. Because many normal children may have these symptoms, at a low level, or the symptoms may be caused by another disorder, it is important that the child receive a thorough examination and appropriate diagnosis by a well-qualified professional.

Symptoms of Attention Deficit Hyperactivity Disorder will appear over the course of many months, often with the symptoms of impulsiveness and hyperactivity preceding those of inattention, which may not emerge for a year or more. Different symptoms may appear in different settings, depending on the demands the situation may pose for the child's self-control. A child who "can't sit still" or is otherwise disruptive will be noticeable in school, but the inattentive daydreamer may be overlooked. The impulsive child who acts before thinking may be considered just a "discipline problem," while the child who is passive or sluggish may be viewed as merely unmotivated. Yet both may have different types of Attention Deficit Hyperactivity Disorder. All children are sometimes restless, sometimes act without thinking, sometimes daydream the time away. When the child's hyperactivity, distractibility, poor concentration, or impulsivity begin to affect performance in school, social relationships with other children, or behaviour at home, Attention Deficit Hyperactivity Disorder may be suspected. But because the symptoms vary so much across settings, Attention Deficit Hyperactivity Disorder is not easy to diagnose. This is especially true when inattentiveness is the primary symptom.

According to the most recent version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), there are three patterns of behaviour that indicate Attention Deficit Hyperactivity Disorder. Children with Attention Deficit Hyperactivity Disorder may show several signs of being consistently inattentive. They may have a pattern of being hyperactive and impulsive far more than others of their age. Or they may show all three types of behaviour. This means that there are three subtypes of Attention Deficit Hyperactivity Disorder recognized by professionals. These are the **predominantly hyperactive-impulsive type** (that does not show significant inattention); the **predominantly inattentive type** (that does not show significant hyperactive-impulsive behaviour) sometimes called Attention Deficit Disorder—an outdated term for this entire disorder; and the **combined type** (that displays both inattentive and hyperactive-impulsive symptoms).

Hyperactivity-Impulsivity

Hyperactive children always seem to be “on the go” or constantly in motion. They dash around, touching or playing with whatever is in sight, or talk incessantly. Sitting still at dinner or during a school lesson or story can be a difficult task. They squirm and fidget in their seats or roam around the room. Or they may wiggle their feet, touch everything, or noisily tap their pencil. Hyperactive teenagers or adults may feel internally restless. They often report needing to stay busy and may try to do several things at once.

Impulsive children seem unable to curb their immediate reactions or think before they act. They will often blurt out inappropriate comments, display their emotions without restraint, and act without regard for the later consequences of their conduct. Their impulsivity may

make it hard for them to wait for things they want or to take their turn in games. They may grab a toy from another child or hit when they're upset. Even as teenagers or adults, they may impulsively choose to do things that have an immediate but small payoff rather than engage in activities that may take more effort yet provide much greater but delayed rewards.

Some signs of hyperactivity-impulsivity are:

- Feeling restless, often fidgeting with hands or feet, or squirming while seated
- Running, climbing, or leaving a seat in situations where sitting or quiet behaviour is expected
- Blurting out answers before hearing the whole question
- Having difficulty waiting in line or taking turns.

Inattention

Children who are inattentive have a hard time keeping their minds on any one thing and may get bored with a task after only a few minutes. If they are doing something they really enjoy, they have no trouble paying attention. But focusing deliberate, conscious attention to organizing and completing a task or learning something new is difficult.

Homework is particularly hard for these children. They will forget to write down an assignment, or leave it at school. They will forget to bring a book home, or bring the wrong one. The homework, if finally finished, is full of errors and erasures. Homework is often accompanied by frustration for both parent and child.

The DSM-IV-TR gives these signs of inattention:

- Often becoming easily distracted by irrelevant sights and sounds
- Often failing to pay attention to details and making careless mistakes
- Rarely following instructions carefully and completely losing or forgetting things like toys, or pencils, books, and tools needed for a task
- Often skipping from one uncompleted activity to another.

Children diagnosed with the predominantly Inattentive Type of Attention Deficit Hyperactivity Disorder are seldom impulsive or hyperactive, yet they have significant problems paying attention. They appear to be daydreaming, “spacey,” easily confused, slow moving, and lethargic. They may have difficulty processing information as quickly and accurately as other children. When the teacher gives oral or even written instructions, this child has a hard time understanding what he or she is supposed to do and makes frequent mistakes. Yet the child may sit quietly, unobtrusively, and even appear to be working but not fully attending to or understanding the task and the instructions.

These children don’t show significant problems with impulsivity and overactivity in the classroom, on the school ground, or at home. They may get along better with other children than the more impulsive and hyperactive types of Attention Deficit Hyperactivity Disorder, and they may not have the same sorts of social problems so common with the combined type of Attention Deficit Hyperactivity Disorder. So often their problems with inattention are overlooked. But they need help just as much as children with other types of Attention Deficit Hyperactivity Disorder, who cause more obvious problems in the classroom.

Other difficulties children with Attention Deficit Hyperactivity Disorder face include:

Impaired Short-Term Memory. As reported by McInnes et al (2003), many experts now believe that an essential feature in Attention Deficit Hyperactivity Disorder, as well as in learning disabilities, is an impaired working (also called short-term) memory. Children with Attention Deficit Hyperactivity Disorder can't hold groups of sentences and images in their mind long enough to extract organized thoughts. They are not necessarily inattentive. Instead, a child with Attention Deficit Hyperactivity Disorder may be unable to remember a full explanation (such as a homework assignment), or unable to complete processes that require remembering sequences, such as model building. In general, children with Attention Deficit Hyperactivity Disorder are often attracted to activities (television, computer games, or active individual sports) that do not tax the working memory, or produce distractions. Children with Attention Deficit Hyperactivity Disorder have no differences in long-term memory compared with other children.

Inability to Manage Time. Ryan et al (2005) and Ratley (2008) suggest that children with Attention Deficit Hyperactivity Disorder have difficulties being on time and planning the correct amount of time to complete tasks. (This may coincide with short-term memory problems.) Although children with probable Attention Deficit Hyperactivity Disorder were able to self-report many Attention Deficit Hyperactivity Disorder symptoms, they tended to believe they used their time wisely, in contrast to reports by their teacher.

Lack of Adaptability. Attention Deficit Hyperactivity Disorder children have a very difficult time adapting to even minor changes in routines, such as getting up in the morning, putting on shoes, eating new foods, or going to bed. Any shift in a situation can

precipitate a strong and noisy negative response. Even when they are in a good mood, they may suddenly shift into a tantrum if met with an unexpected change or frustration. In one experiment, children with Attention Deficit Hyperactivity Disorder could closely focus their attention when directly cued to a specific location, but they had difficulty shifting their attention to an alternative location.

Hypersensitivity and Sleep Problems. Lamberg (2001) reports that children with Attention Deficit Hyperactivity Disorder are often hypersensitive to sights, sounds, and touch. They usually complain excessively about stimuli that seem low key or bland to others. Sleeping problems usually occur well after the point when most small children sleep through the night. Around 63% of children with Attention Deficit Hyperactivity Disorder had trouble sleeping.

DIAGNOSIS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

Some parents see signs of inattention, hyperactivity, and impulsivity in their toddler long before the child enters school. The child may lose interest in playing a game or watching a television show, or may run around completely out of control. But because children mature at different rates and are very different in personality, temperament, and energy levels, it is useful to get an expert's opinion of whether the behaviour is appropriate for the child's age. Parents can ask their child's pediatrician, a child psychologist or psychiatrist, to assess whether their toddler has Attention Deficit Hyperactivity Disorder. Attention Deficit Hyperactivity Disorder may be suspected by a parent or caretaker or may go unnoticed until the child runs into problems at school. Given that this disorder tends to affect functioning most strongly in school, sometimes the teacher is the first to recognize that a child is hyperactive or inattentive and may point it out to the parents and/or consult with

the school psychologist. Because teachers work with many children, they come to know how “average” children behave in learning situations that require attention and self-control.

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IVR) is then used to confirm a diagnosis of Attention Deficit Hyperactivity Disorder.

CAUSES OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

Over the last few decades, scientists have come up with possible theories about what causes Attention Deficit Hyperactivity Disorder. Some of these theories have led to dead ends, some to exciting new avenues of investigation.

Environmental Agents

Mick et al (2002) have shown a possible correlation between the use of cigarettes and alcohol during pregnancy and risk for Attention Deficit Hyperactivity Disorder in the offspring of that pregnancy. As a precaution, it is best during pregnancy to refrain from both cigarette and alcohol use.

Another environmental agent that may be associated with a higher risk of Attention Deficit Hyperactivity Disorder is high levels of lead in the bodies of young preschool children. Since lead is no longer allowed in paint and is usually found only in older buildings, exposure to toxic levels is not as prevalent as it once was. Children who live in old buildings in which lead still exists in the plumbing or in lead paint that has been painted over may be at risk.

Brain Injury

One early theory was that attention disorders were caused by brain injury(Keenan et al, 1984). Some children who have suffered accidents leading to brain injury may show some signs of behaviour similar to that of Attention Deficit Hyperactivity Disorder, but only a small percentage of children with Attention Deficit Hyperactivity Disorder have been found to have suffered a traumatic brain injury.

Food Additives and Sugar

It has been suggested that attention disorders are caused by refined sugar or food additives, or that symptoms of Attention Deficit Hyperactivity Disorder are exacerbated by sugar or food additives (Whitaker, 1996). It was found that diet restrictions helped about 5 percent of children with Attention Deficit Hyperactivity Disorder, mostly young children who had food allergies. A more recent study on the effect of sugar on children, using sugar one day and a sugar substitute on alternate days, without parents, staff, or children knowing which substance was being used, showed no significant effects of the sugar on behaviour or learning.

Also, children whose mothers felt they were sugar-sensitive were given aspartame as a substitute for sugar. Half the mothers were told their children were given sugar, half that their children were given aspartame. The mothers who thought their children had received sugar rated them as more hyperactive than the other children and were more critical of their behaviour.

Genetics

Attention disorders often run in families, so there are likely to be genetic influences. Elia et al (1999) indicate that 25 percent of the close relatives in the families of Attention Deficit Hyperactivity Disorder children also have Attention Deficit Hyperactivity Disorder, whereas the rate is about 5 percent in the general population. Many studies of twins now show that a strong genetic influence exists in the disorder.

Researchers continue to study the genetic contribution to Attention Deficit Hyperactivity Disorder and to identify the genes that cause a person to be susceptible to Attention Deficit Hyperactivity Disorder. Since its inception in 1999, the Attention-Deficit Hyperactivity Disorder Molecular Genetics Network has served as a way for researchers to share findings regarding possible genetic influences on Attention Deficit Hyperactivity Disorder.

Recent Studies on Causes of Attention Deficit Hyperactivity Disorder

Some knowledge of the **structure of the brain** is helpful in understanding the research scientists are doing in searching for a physical basis for Attention Deficit Hyperactivity Disorder. One part of the brain that scientists have focused on in their search is the frontal lobes of the cerebrum. The frontal lobes allow us to solve problems, plan ahead, understand the behaviour of others, and restrain our impulses. The two frontal lobes, the right and the left, communicate with each other through the corpus callosum, (nerve fibers that connect the right and left frontal lobes).

The basal ganglia are the interconnected gray masses deep in the cerebral hemisphere that serve as the connection between the cerebrum and the cerebellum and, with the cerebellum,

are responsible for motor coordination. The cerebellum is divided into three parts. The middle part is called the vermis.

All of these parts of the brain have been studied through the use of various methods for seeing into or imaging the brain (Rosack, 2004). These methods include functional magnetic resonance imaging (fMRI) positron emission tomography (PET), and single photon emission computed tomography (SPECT). The main or central psychological deficits in those with Attention Deficit Hyperactivity Disorder have been linked through these studies. By 2002 the researchers in the National Iinstitute of Mental Health, U.S.A, Child Psychiatry Branch had studied 152 boys and girls with Attention Deficit Hyperactivity Disorder, matched with 139 age- and gender-matched controls without Attention Deficit Hyperactivity Disorder. The children were scanned at least twice, some as many as four times over a decade. As a group, the Attention Deficit Hyperactivity Disorder children showed 3-4 percent smaller brain volumes in all regions—the frontal lobes, temporal gray matter, caudate nucleus, and cerebellum.

This study also showed that the Attention Deficit Hyperactivity Disorder children who were on medication had a white matter volume that did not differ from that of controls. Those never-medicated patients had an abnormally small volume of white matter. The white matter consists of fibers that establish long-distance connections between brain regions. It normally thickens as a child grows older and the brain matures.

Although this long-term study used MRI to scan the children’s brains, the researchers stressed that MRI remains a research tool and cannot be used to diagnose Attention Deficit

Hyperactivity Disorder in any given child. This is true for other neurological methods of evaluating the brain, such as PET and SPECT.

Brain Chemicals. Abnormal activity of certain brain chemicals in the prefrontal cortex may contribute to Attention Deficit Hyperactivity Disorder (Courvoise, 2003). The chemicals dopamine and norepinephrine are of special interest. Dopamine and norepinephrine are neurotransmitters, or chemical messengers, that affect both mental and emotional functioning. They also play a role in the "reward response." This response occurs when a person experiences pleasure in response to certain stimuli (such as food or love). Studies suggest that increased levels of the brain chemicals glutamate, glutamine, and GABA interact with the pathways that transport dopamine and norepinephrine.

Nerve Pathways. Another area of interest is a network of nerves called the basal-ganglia thalamocortical pathways. Abnormalities along this neural route have been associated with Attention Deficit Hyperactivity Disorder, Tourette syndrome, and obsessive-compulsive disorders, all of which share certain symptoms.

Dietary Factors: Infant malnutrition is a strong risk indicator of Attention Deficit Hyperactivity Disorder. Even if children receive enough food later on, infants who suffer from malnutrition may develop behaviour problems, the most prevalent being attention-deficit disorder.

Deficiencies in Zinc and Essential Fatty Acids. Several dietary factors have been researched in association with Attention Deficit Hyperactivity Disorder, including sensitivities to certain food chemicals, deficiencies in fatty acids (compounds that make up fats and oils) and zinc, and sensitivity to sugar. Starobrat et al (1997) have found an

association between deficiencies in certain fatty acids and Attention Deficit Hyperactivity Disorder. Other research reports an association between zinc deficiencies and Attention Deficit Hyperactivity Disorder. Zinc aids in the breakdown of fatty acids, which affects dopamine, the neurotransmitter likely to be involved with Attention Deficit Hyperactivity Disorder.

No clear evidence has emerged that implicates any of these nutritional factors in Attention Deficit Hyperactivity Disorder.

COMORBID FEATURES IN ATTENTION DEFICIT HYPERACTIVITY DISORDER

Learning Disabilities

Many children with Attention Deficit Hyperactivity Disorder —approximately 20 to 30 percent—also have a specific learning disability (SLD). In preschool years, these disabilities include difficulty in understanding certain sounds or words and/or difficulty in expressing oneself in words. In school age children, reading or spelling disabilities, writing disorders, and arithmetic disorders may appear. A type of reading disorder, dyslexia, is quite widespread. Reading disabilities affect up to 8 percent of elementary school children.

Tourette Syndrome

A very small proportion of people with Attention Deficit Hyperactivity Disorder have a neurological disorder called Tourette syndrome. People with Tourette syndrome have various nervous tics and repetitive mannerisms, such as eye blinks, facial twitches, or grimacing. Others may clear their throats frequently, snort, sniff, or bark out words. These

behaviours can be controlled with medication. While very few children have this syndrome, many of the cases of Tourette syndrome have associated Attention Deficit Hyperactivity Disorder. In such cases, both disorders often require treatment that may include medications.

Oppositional Defiant Disorder

As many as one-third to one-half of all children with Attention Deficit Hyperactivity Disorder —mostly boys—have another condition, known as oppositional defiant disorder (ODD). These children are often defiant, stubborn, non-compliant, have outbursts of temper, or become belligerent. They argue with adults and refuse to obey.

Conduct Disorder

About 20 to 40 percent of Attention Deficit Hyperactivity Disorder children may eventually develop conduct disorder (CD), a more serious pattern of antisocial behaviour. These children frequently lie or steal, fight with or bully others, and are at a real risk of getting into trouble at school or with the police. They violate the basic rights of other people, are aggressive toward people and/or animals, destroy property, break into people's homes, commit thefts, carry or use weapons, or engage in vandalism. These children or teenagers are at greater risk for substance use experimentation, and later dependence and abuse.

Anxiety and Depression

Some children with Attention Deficit Hyperactivity Disorder often have co-occurring anxiety or depression. If the anxiety or depression is recognized and treated, the child will

be better able to handle the problems that accompany Attention Deficit Hyperactivity Disorder. Conversely, effective treatment of Attention Deficit Hyperactivity Disorder can have a positive impact on anxiety as the child is better able to master academic tasks.

Bipolar Disorder

There are no accurate statistics on how many children with Attention Deficit Hyperactivity Disorder also have bipolar disorder. Differentiating between Attention Deficit Hyperactivity Disorder and bipolar disorder in childhood can be difficult. In its classic form, bipolar disorder is characterized by mood cycling between periods of intense highs and lows. But in children, bipolar disorder often seems to be a rather chronic mood dysregulation with a mixture of elation, depression, and irritability. Furthermore, there are some symptoms that can be present both in Attention Deficit Hyperactivity Disorder and bipolar disorder, such as a high level of energy and a reduced need for sleep. Of the symptoms differentiating children with Attention Deficit Hyperactivity Disorder from those with bipolar disorder, elated mood and grandiosity of the bipolar child are distinguishing characteristics.

Sleep Disorders

Sleep disorders or disturbances are very common with Attention Deficit Hyperactivity Disorder patients. Insomnia is common. In addition, specific sleep disorders -- restless legs syndrome and sleep-disordered breathing -- have been identified with hyperactivity and conduct disorder.

Restless Legs Syndrome (RLS):

Desautels (2005) has reported that RLS and periodic limb movement disorder are strongly associated with Attention Deficit Hyperactivity Disorder in some children. One theory is that the two are linked by a common mechanism. The disorders have much in common, including poor sleep habits, twitching, and the need to get up suddenly and walk about frequently. They may even be genetically linked. For example, both have been associated with lower levels of dopamine in the brain, which is associated with faulty motor control, a common problem in both disorders.

Sleep-Disorder Breathing and Sleep Apnea. Some research has shown an association between mild symptoms of Attention Deficit Hyperactivity Disorder and sleep-disordered breathing, including snoring and obstructive sleep apnea in children and adults. Treating the sleep-related breathing disorders may improve the attention disorder in some children.

Persistence of Attention Deficit Hyperactivity Disorder into Adulthood.

Young (2001) suggests that Attention Deficit Hyperactivity Disorder persists in one- to two-thirds of those diagnosed with the condition in childhood. Many researchers describe the pattern of Attention Deficit Hyperactivity Disorder as they would a chronic illness, with remission and periods of worsening.

THE MANAGEMENT OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

Every family wants to determine what treatment will be most effective for their child. This question needs to be answered by each family in consultation with their health care professional.

The Multimodal Treatment Study (MTA) of Children with

Attention Deficit Hyperactivity Disorder

The MTA study included 579 (95-98 at each of 6 treatment sites) elementary school boys and girls with Attention Deficit Hyperactivity Disorder, who were randomly assigned to one of four treatment programs: (1) medication management alone; (2) behavioural treatment alone; (3) a combination of both; or (4) routine community care. In each of the study sites, three groups were treated for the first 14 months in a specified protocol and the fourth group was referred for community treatment of the parents' choosing. All of the children were reassessed regularly throughout the study period. An essential part of the program was the cooperation of the schools, including principals and teachers. Both teachers and parents rated the children on hyperactivity, impulsivity, and inattention, and symptoms of anxiety and depression, as well as social skills.

The children in two groups (medication management alone and the combination treatment) were seen monthly for one-half hour at each medication visit. During the treatment visits, the prescribing physician spoke with the parent, met with the child, and sought to determine any concerns that the family might have regarding the medication or the child's Attention Deficit Hyperactivity Disorder -related difficulties. The physicians, in addition, sought input from the teachers on a monthly basis. The physicians in the medication-only group did not provide behavioural therapy but did advise the parents when necessary concerning any problems the child might have.

In the behaviour treatment-only group, families met up to 35 times with a behaviour therapist, mostly in group sessions. These therapists also made repeated visits to schools to

consult with children's teachers and to supervise a special aide assigned to each child in the group. In addition, children attended a special 8-week summer treatment program where they worked on academic, social, and sports skills, and where intensive behavioural therapy was delivered to assist children in improving their behaviour.

Children in the combined therapy group received both treatments, that is, all the same assistance that the medication-only received, as well as all of the behaviour therapy treatments.

In routine community care, the children saw the community-treatment doctor of their parents' choice one to two times per year for short periods of time. Also, the community-treatment doctor did not have any interaction with the teachers.

The results of the study indicated that long-term combination treatments and the medication-management alone were superior to intensive behavioural treatment and routine community treatment. And in some areas—anxiety, academic performance, oppositionality, parent-child relations, and social skills—the combined treatment was usually superior. Another advantage of combined treatment was that children could be successfully treated with lower doses of medicine, compared with the medication-only group.

In India, the multimodal approach has been adapted in the treatment of Attention Deficit Hyperactivity Disorder. An eclectic approach involving the pediatrician, psychiatrist, psychologist, occupational therapist, speech therapist, family and teachers is most effective in dealing with Attention Deficit Hyperactivity Disorder.

Medication can help the Attention Deficit Hyperactivity Disorder child in everyday life. He or she may be better able to control some of the behaviour problems that have led to trouble with parents and siblings. But it takes time to undo the frustration, blame, and anger that may have gone on for so long. Both parents and children may need special help to develop techniques for managing the patterns of behaviour. In such cases, mental health professionals can counsel the child and the family, helping them to develop new skills, attitudes, and ways of relating to each other. In individual counseling, the therapist helps children with Attention Deficit Hyperactivity Disorder learn to feel better about themselves. The therapist can also help them to identify and build on their strengths, cope with daily problems, and control their attention and aggression. Sometimes only the child with Attention Deficit Hyperactivity Disorder needs counseling support. But in many cases, because the problem affects the family as a whole, the entire family may need help. The therapist assists the family in finding better ways to handle the disruptive behaviours and promote change. If the child is young, most of the therapist's work is with the parents, teaching them techniques for coping with and improving their child's behaviour.

Several intervention approaches are available. Knowing something about the various types of interventions makes it easier for families to choose a therapist that is right for their needs.

Psychotherapy works to help people with Attention Deficit Hyperactivity Disorder to like and accept themselves despite their disorder. It does not address the symptoms or underlying causes of the disorder. In psychotherapy, patients talk with the therapist about upsetting thoughts and feelings, explore self-defeating patterns of behaviour, and learn

alternative ways to handle their emotions. As they talk, the therapist tries to help them understand how they can change or better cope with their disorder.

Behavioural therapy helps children develop more effective ways to work on immediate issues. Rather than helping the child understand his or her feelings and actions, it helps directly in changing their thinking and coping and thus may lead to changes in behaviour. The support might be practical assistance, like help in organizing tasks or schoolwork or dealing with emotionally charged events. Or the support might be in self-monitoring one's own behaviour and giving self-praise or rewards for acting in a desired way such as controlling anger or thinking before acting.

Social skills training can also help children learn new behaviours. In social skills training, the therapist discusses and models appropriate behaviours 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. For example, a child might learn to "read" other people's facial expression and tone of voice in order to respond appropriately. Social skills training helps the child to develop better ways to play and work with other children.

Support groups help parents connect with other people who have similar problems and concerns with their Attention Deficit Hyperactivity Disorder children. Members of support groups often meet on a regular basis (such as monthly) to hear lectures from experts on Attention Deficit Hyperactivity Disorder, share frustrations and successes, and obtain referrals to qualified specialists and information about what works. There is strength in

numbers, and sharing experiences with others who have similar problems helps people know that they aren't alone.

Parenting skills training, offered by therapists or in special classes, gives parents tools and techniques for managing their child's behaviour. One such technique is the use of token or point systems for immediately rewarding good behaviour or work. Another is the use of "time-out" or isolation to a chair or bedroom when the child becomes too unruly or out of control. During time-outs, the child is removed from the agitating situation and sits alone quietly for a short time to calm down. Parents may also be taught to give the child "quality time" each day, in which they share a pleasurable or relaxing activity. During this time together, the parent looks for opportunities to notice and point out what the child does well, and praise his or her strengths and abilities.

This system of positive and negative reinforcement can be an effective way to modify a child's behaviour. The parents (or teacher) identify a few desirable behaviours that they want to encourage in the child—such as asking for a toy instead of grabbing it, or completing a simple task. The child is told exactly what is expected in order to earn the reward. The child receives the reward when he performs the desired behaviour and a mild penalty when he doesn't. A reward can be small, perhaps a token that can be exchanged for special privileges, but it should be something the child wants and is eager to earn. The penalty might be removal of a token or a brief time-out. Make an effort to find your child being good. The goal, over time, is to help children learn to control their own behaviour and to choose the more desired behaviour. The technique works well with all children, although children with Attention Deficit Hyperactivity Disorder may need more frequent rewards.

In addition, parents may learn to structure situations in ways that will allow their child to succeed. This may include allowing only one or two playmates at a time, so that their child doesn't get overstimulated. Or if their child has trouble completing tasks, they may learn to help the child divide a large task into small steps, then praise the child as each step is completed. Regardless of the specific technique parents may use to modify their child's behaviour, some general principles appear to be useful for most children with Attention Deficit Hyperactivity Disorder. These include providing more frequent and immediate feedback (including rewards and punishment), setting up more structure in advance of potential problem situations, and providing greater supervision and encouragement to children with Attention Deficit Hyperactivity Disorder in relatively unrewarding or tedious situations.

Parents may also learn to use stress management methods, such as meditation, relaxation techniques, and exercise, to increase their own tolerance for frustration so that they can respond more calmly to their child's behaviour.

"How many hopes and fears, how many ardent wishes and anxious apprehensions are twisted together in the threads that connect the parent with the child?" said Samuel. G. Goodrich

Every day, every hour, children with disabilities are born. The role of the family of the disabled child is vital. The family is thought to be the optimum environment for the development of disabled individuals. The addition of a disabled member usually results in substantial adjustments in the roles, norms, goals and communication patterns of the family. The level of acceptance of the disabled may vary from one family to the next.

Frequently, the presence of a disabled child does precipitate a range of problems that may hinder the functioning and development of the family unit as well as individual members. Adjustment and problems are not static but change throughout the course of the family.

PARENTAL REACTIONS TO A CHILD WITH A DISABILITY

Parents play a crucial role in facilitating and maintaining developmental gains in disabled children. The diagnosis of disability in a child is a traumatic event. Parental reactions to their child's disability are highly individualistic. The type and intensity of their response depends on how parents handle crisis situations in general, stability of the marital relationships and parental aspirations. Some of the common reactions include guilt, disappointment, shame, grief, anger and disbelief.

Parents may experience guilt. Often, parents are not prepared for the ambivalence that frequently characterizes the emotional interplay between a parent and a child with a handicap. Guilt may ensue from experiencing feelings of rejection or hostility that are not befitting of a good parent. Guilt may be related to a parent's feeling that something he or she did or failed to do, cause the child's disability, and that they failed in the biological aspect of their role as a parent. Loss of self- esteem, loneliness and what has been termed 'chronic sorrow' are other possible reactions to a child with a disability. Some situations that might kindle sorrow in parents of children with handicaps include: the child reaching the age when peers reach developmental milestones, a younger sibling overtaking the handicapped child's ability, the child being labelled as 'different' and parental management of a crisis.

Grief is often caused not so by the reality of the situation, but by the sudden shattering of expectations. Parents experience social isolation and loneliness, some isolation results from embarrassment because of the child's behaviour and appearance. Parents may feel lonely because they are different, with problems and responsibilities unique to their role. Anger may also be a typical reaction of parents whose child has a disability. Parents may be angry with God, fate, society and professionals involved. Sometimes anger may be at their child too. Feelings of resentment may build due to increasing demands made on parents' time, patience, physical endurance and financial resources.

A family's reaction to a child's handicap begins at the point of diagnosis or confirmation of disability. The family's acceptance of the disabled child is in part dependent on the parent's response. If they are reasonably optimistic and willing to integrate the child, the family will reflect her reaction. On the other hand, if they are despondent and disappointed, the family is more likely to respond negatively to the child.

The time and attention needed to deal with a child with Attention Deficit Hyperactivity Disorder can change internal family relationships and have devastating effects on parents and siblings.

Effect on Parents: Barkley (2000) observes that any intervention for the child must include the parents. Parents who are responsive to their child in a positive way can help reduce the chances for oppositional behaviours. But it can be very difficult. A child with Attention Deficit Hyperactivity Disorder is wonderful one day and terrible the next, for no apparent reason. The parent can feel betrayed and hurt, and believe they have no control over their child. Parents must protect themselves and their child by establishing tough but

kind rules about where their space ends and the child's begins. There are many effects on parents:

Mothers generally get the brunt of the emotional and physical abuse that a child with Attention Deficit Hyperactivity Disorder can produce. Parents may have to give up on the idea of an immaculate house and a hot meal every night. Parents must learn that striving for perfection is among the most counterproductive goals to pursue in raising a child with Attention Deficit Hyperactivity Disorder, or any child.

Parents must face the hostility and anger of other parents and see their own child rejected. It is very easy to fall into an emotional black hole, and feel alone, inadequate, and helpless. Marriages are often stressed to the breaking point because of exhaustion and disagreements between the husband and wife on how to respond to the child.

Effect on Sibling: Siblings of children with Attention Deficit Hyperactivity Disorder have particular difficulties, and are also at risk for psychologic impairment, depression, drug abuse, and language disorders. The non- Attention Deficit Hyperactivity Disorder sibling does not have the control a parent does in the management of the Attention Deficit Hyperactivity Disorder child's behaviour and is very likely to feel alienated and alone. Children without Attention Deficit Hyperactivity Disorder are often victimized by siblings with Attention Deficit Hyperactivity Disorder who may be demanding or bullying.

A sibling who does not receive attention in their own right may begin to imitate undesirable behaviours or to act out negatively in other ways. It is very important to make the brothers and sisters equally vital to the family's functioning. However, they should never be made to feel that their value in the family is as caregivers of the Attention Deficit Hyperactivity Disorder sibling.

Parents play a crucial role in facilitating and maintaining developmental gains in children with disabilities. The diagnosis of disability in a child is a traumatic event. Parental reactions to their child's disability, though highly individualistic, commonly include guilt, disappointment, shame, grief, anger and disbelief, thus affecting their quality of life, stress experienced and self esteem.

QUALITY OF LIFE

The pursuit of health and happiness is age-old. The Quality of Life (QOL) of an individual determines the happiness or satisfaction he or she experiences. Quality of life thus depends on the physical, psychological and spiritual wellbeing of an individual. The ancient Indian science of medicine-Ayurveda, means, knowledge of life. Charaka Samhitha, an ancient medical text believed to be written around 1000.B.C, described two kinds of medicine"…one kind is promotive of vigour in the healthy, the other destructive of disease in the ailing." The ideal quality of life has also been conceptualized as 'sukham ayuh', a life which is not affected by bodily and mental diseases, is endowed with vigour, strength, energy, vitality, activity and is full of all sorts of enjoyment and success.

Consideration of what constitutes wellbeing has traditionally been more the province of philosophers and theologians, than scientists. Systematic consideration of 'happiness' certainly existed among the classical Greek philosophers. Aristotle in 'Ethics' considered the nature of human conduct. He identified desired human behavioural goal as lying with

mankind's pursuit of good. This goal he identified as the condition of eudaemonia, literally 'a favourable providence' or wellbeing.

In recent years, there has been a broadening in the focus on health, beyond traditional indicators such as mortality and morbidity, to include measures of the impact of disease and impairment on daily activities and behaviour. Also, the increasingly mechanistic model of medicine, concerned only with the eradication of disease and symptoms, reinforces the need for the introduction of a humanistic element into health care. Focus on the individuals' quality of life has thus increased as the emphasis on a holistic approach to health and health care continues.

Quality of life is a broad concept which incorporates all aspects of an individual's existence, including both an individual's success in obtaining certain prerequisite circumstances, states or conditions, as well as the sense of wellbeing and satisfaction experienced. According to Flanagan (1982), efforts to measure life quality began in the U.S.A. during the decade of the 1950's, with the Eisenhower Commission on National Goals, which noted a variety of social and environmental influences.

Quality of life is an important but over-determined concept and it is possible that no single direct measure of life quality exists, or perhaps will ever exist. Life quality may be inferred through its constituent influences. That is to say that life quality is best regarded as a sum total of its determinants or causes as understood in any particular time and cultural context. A simplified breakdown of the main categories of quality of life are: personal characteristics including socio-economic status and ethnicity; objective quality of life including social or economic indicators, behavioural competence or role

performance measures, biological factors; subjective quality of life including subjective satisfaction, mental health, happiness and morale, personality, adjustment, social adaptation and personal growth.

The ideological thrust of quality of life is to promote means for people within their environments to live in ways that are best for them. The study of quality of life is an examination of factors that contribute to the goodness and meaning of life, as well as peoples' happiness. The ultimate goal of quality of life research and its subsequent application to peoples' lives is to enable people to live quality lives-lives that are both meaningful and enjoyed.

A few perspectives on Quality of Life are listed below:

McCall (1975) noted that the best way of approaching quality of life measurement is to measure the extent to which people's 'happiness requirements' are met – that is those requirements which are a necessary (although not sufficient) condition of anyone's happiness - those 'without which no member of the human race can be happy.' Lehaman (1983) said that 'Quality of life refers to the sense of wellbeing and satisfaction experienced by people under their current life condition.'

Quality of life is seen as a balance between stressors, life events, environmental or social factors and resources (knowledge, sense of competency, security, coping skills, a stable value and belief system, a support system) observed -MIND/WFMH (1985)

An Indian Perspective of Quality of Life by Mukherjee (1989) is that there are essentially two perspectives taken in quality of life research: social indicators research which

considers the elites' valuation of what the people need, and conventional quality of life research which studies what people want, in order to improve their quality of life. .

United Nations Development Program has been publishing the annual Human Development Index (HDI) for countries around the world. It examines the health, education and wealth of each nation's citizens by measuring:

- life expectancy
- educational achievement -- adult literacy plus combined primary, secondary and tertiary enrolment; and
- standard of living -- real GDP per capita based on PPP exchange rates.

WHAT IS Quality Of Life (QOL)? QOL may be defined as subjective well-being. Recognising the subjectivity of QOL is a key to understanding this construct. QOL reflects the difference, the gap, between the hopes and expectations of a person and their present experience. Human adaptation is such that life expectations are usually adjusted so as to lie within the realm of what the individual perceives to be possible. This enables people who have difficult life circumstances to maintain a reasonable QOL observed Janssen Quality-of-life Studies

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PARENTAL STRESS

FACTORS INFLUENCING THE SEVERITY OF STRESS

The effects of stress – the intensity of the anxiety it arouses and the degree to which it disrupts the individual’s ability to function – depend on a number of factors. These factors include some characteristics of the stress itself, the situation in which stress occurs, the

individual's appraisal and evaluation of the stressful situation and his or her resources for coping with it.

Predictability

Being able to predict the occurrence of a stressful event – even if the individual cannot control it – usually reduces the severity of the stress. Laboratory experiments show that both human and animals prefer predictable aversive events to unpredictable ones. In one study, rats were given a choice between a signalled shock and an un-signalled shocked. If the rat pressed a bar at the start of a series of shock trials, each shock was preceded by a warning tone; if the rat failed to press the bar, no warning tones sounded during that series of trials. All of the rats quickly learned to press the bar showing a marked preference for predictable shock. In fact, rats prefer predicable shock even when it is much longer and more intense that unpredictable shock. With unpredictable shock, there is no "Safe" period; with predictable shock, animals can relax until the tone sounds to signal shock (Badia, Culbertson, and Harsh, 1973). Studies showing that people prefer immediate to delayed shock also indicate a preference for aversive events that are predictable.

Control over Duration

Having control over the durations of a stressful event also reduces the severity of the stress. In one study, subjects were shown colour photographs of victims of violent deaths. The experiment group could terminate the viewing by pressing a button. The control subjects saw the same photographs for the time duration determine by the experimental group, but they could not terminate exposure. The experimental group showed much less

anxiety measured by the galvanic skin response (GSR) in response to the photography than the group that had no control over the duration of viewing (Geer and Maisel, 1972).

In another study, two groups of subjects were exposed to a loud, extremely unpleasant noise. Subjects in one group were told that they could terminate the noise by pressing a button, but they were urged not to do so unless it was absolutely necessary. Subjects in the other group had no control over the noise. None of the subjects who had a control button actually pressed it, so the noise exposure was the same for both groups. Nevertheless performance on subsequent problem –solving tasks was significantly worse for the group that has no control, indicating that they were more disturbed by the noise that the group that had the potential for control (Glass and Sibger, 1972). The belief that we can control the duration of an aversive event appears to lessen anxiety, even if the control is never exercised or the belief is erroneous.

Cognitive Evaluation

The same stressful event can be perceived quite differently by two people, depending on what the situation means to the individual. The objective facts of the situation are less important than the individual's appraisal of them. Physicians treating wounded soldiers in combat field station are often amazed at the calm and unperturbed manner with which some men react to serious injuries – injuries that would cause civilians hospital patients to plead for painkillers. For the soldiers wounds represent a reprieve from the ordeals and danger of combat. Similarly, the discomfort of childbirth is apt to be much less stressful for the woman who has been anticipating the birth of her child than for the woman who has no desire to be a mother.

An individual's perception of stressful event also involves appraising the degree of threats. Situations that are perceived as threatening to survival (for example, a diagnosis of cancer) or to the individual's worth (for example failure in a chosen occupation) impose a maximum of stress.

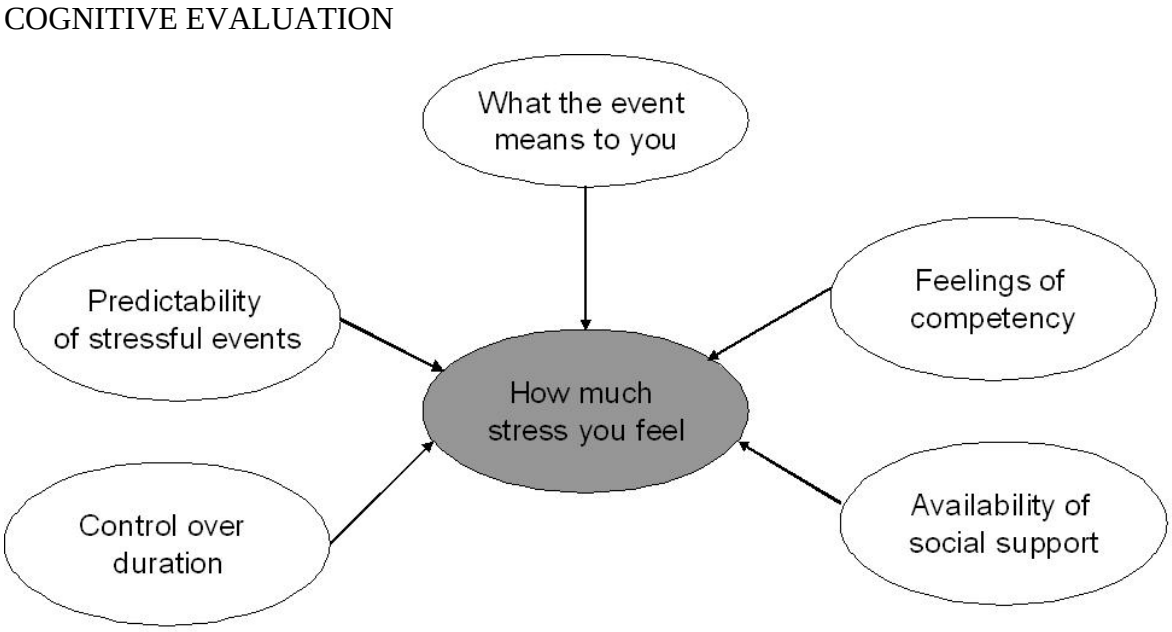


Figure 1: Cognitive evaluation during perception of stress

Feelings of Competency

A person's confidence in his or her ability to handle a stressful situation in a major factor in determining the severity of the stress. Speaking before a large audience is a traumatic event for most people, but individuals who are experienced in public speaking have confidence in their ability and feel only minimal anxiety.

Emergencies are particularly stress because our usual methods of coping do not work. Not knowing what to do can be demoralizing. People trained to deal with emergencies – such as police officers, fire fighters, or medical rescue squads - can act calmly and effectively

because they know what to do, but the person who lacks such training may feel helpless. Since we tend to fall; back on well-learned responses under stress, it is important that people who may have to deal with particular type of emergencies be taught a repertoire of responses to cope with various contingencies.

Social Support

The emotional support and concern of other people can make stress more bearable. Divorce, the death of a loved one, or a serious illness is usually more devastating if an individual must face it alone. Sometimes, however, family and friends can increase the stress. Minimizing the seriousness of the problem or giving blind assurance that "everything will be all right" may produce more anxiety than failing to offer support at all. A study of graduate students facing crucial examinations suggest that spouse who are realistically supportive ("I am worried, but I know you'll do the best you can") are more helpful than spouses who deny any possibility of failure("I am not worried; I'm sure you'll pass"). In the latter case, the student has to worry not only about failing the exam but also losing respect in the eyes of the spouse (Mechanic, 1962).

Studies indicate that people with many social ties (marriage, close friends and relatives, church memberships and other group associations) tend to live longer and be less apt to succumb to stress-related illness that people who have few social supports (Cobb, 1976; Antonovsky, 1979).

Stress is easier to tolerate when the cause of the stress is shared with others. Community disasters (floods, earthquakes, tornadoes, wars) often seem to bring out the best in people. Individual anxieties and conflicts tend to be forgotten when people are working together against a common enemy or towards a common goal. During the intensive bombing of

London in World War II, there was a marked decline in the number of people seeking help for emotional problems.

SELF ESTEEM

In psychology, self-esteem reflects a person's overall evaluation or appraisal of her or his own worth.

Self-esteem encompasses beliefs (for example, "I am competent/incompetent") and emotions (for example, triumph/despair, pride/shame). Behaviour may reflect self-esteem (for example, assertiveness/timorousness, confidence /caution).

Psychologists usually regard self-esteem as an enduring personality characteristic (trait self-esteem), though normal, short-term variations (state self-esteem) occur.

Self-esteem can apply specifically to a particular dimension (for example, "I believe I am a good writer, and feel proud of that in particular") or have global extent (for example, "I believe I am a good person, and feel proud of myself in general").

Synonyms or near-synonyms of self-esteem in the American Heritage Dictionary of the English Language include: self-worth, self-regard, self-respect, self-love (which can express overtones of self-promotion), self-integrity. Self-esteem is distinct from self-confidence and self-efficacy, which involve beliefs about ability and future performance.

History of the concept

The Oxford English Dictionary traces the use of the word "self-esteem" in English back as far as 1657. [John Milton is argued to have first coined this term.] After a career in the proto-psychological lore of phrenology in the 19th century the term

entered more mainstream psychological use in the work of the American psychologists and philosophers Lorne Park and William James in 1890.

Self-esteem has become the third most frequently occurring theme in psychological literature: as of 2003 over 25,000 articles, chapters, and books referred to the topic.

Definitions

Given a long and varied history, the term has, unsurprisingly, no less than three major types of definitions in the field, each of which has generated its own tradition of research, findings, and practical applications:

1. The original definition presents self-esteem as a ratio found by dividing one's successes in areas of life of importance to a given individual by the failures in them or one's "success / pretensions". Problems with this approach come from making self-esteem contingent upon success: this implies inherent instability because failure can occur at any moment.
2. In the mid 1960s Morris Rosenberg and social-learning theorists defined self-esteem in terms of a stable sense of personal worth or worthiness. This became the most frequently used definition for research, but involves problems of boundary-definition, making self-esteem indistinguishable from such things as narcissism or simple bragging.
3. Nathaniel Branden in 1969 briefly defined self-esteem as "…the experience of being competent to cope with the basic challenges of life and being worthy of happiness". This two-factor approach, as some have also called it, provides a

balanced definition that seems to be capable of dealing with limits of defining self-esteem primarily in terms of competence or worth alone.

Branden's (1969) description of self-esteem includes the following primary properties:

1. self-esteem as a basic human need, i.e., "…it makes an essential contribution to the life process", "…is indispensable to normal and healthy self-development, and has a value for survival."
2. self-esteem as an automatic and inevitable consequence of the sum of individuals' choices in using their consciousness
3. something experienced as a part of, or background to, all of the individuals thoughts, feelings and actions.

Implicit self-esteem refers to a person's disposition to evaluate themselves positively or negatively in a spontaneous, automatic, or unconscious manner. It contrasts with explicit self-esteem, which entails more conscious and reflective self-evaluation. Both explicit and implicit self-esteem are subtypes of self-esteem proper.

Implicit self-esteem is assessed using indirect measures of cognitive processing. These include the Name Letter Task and the Implicit Association Test. Such indirect measures are designed to reduce awareness of, or control of, the process of assessment. When used to assess implicit self-esteem, they feature stimuli designed to represent the self, such as personal pronouns (e.g., "I") or letters in one's name.

Measurement

For the purposes of empirical research, psychologists typically assess self-esteem by a self-report inventory yielding a quantitative result. They establish the validity and reliability of the questionnaire prior to its use. Researchers are becoming more interested in measures of implicit self-esteem.

Popular lore recognizes just "high" self-esteem and "low" self-esteem.

The Rosenberg Self-Esteem Scale (1965) and the Coopersmith Self-Esteem Inventory (1967/1981) feature among the most widely used systems for measuring self-esteem. The Rosenberg test, often seen as a "standard", usually uses a ten-question battery scored on a four-point response-system that requires participants to indicate their level of agreement with a series of statements about themselves. The Coopersmith Inventory uses a 50-question battery over a variety of topics and asks subjects whether they rate positive or negative characteristics of someone as similar or dissimilar to themselves.

Theories

Many early theories suggested that self-esteem is a basic human need or motivation. American psychologist Abraham Maslow, for example, included self-esteem in his hierarchy of needs. He described two different forms of esteem: the need for respect from others and the need for self-respect, or inner self-esteem. Respect from others entails recognition, acceptance, status, and appreciation, and was believed to be more fragile and easily lost than inner self-esteem. According to Maslow, without the fulfilment of the self-esteem need, individuals will be driven to seek it and unable to grow and obtain self-actualization.

Modern theories of self-esteem explore the reasons why humans are motivated to maintain a high regard for themselves. Sociometer theory maintains that self-esteem evolved to check one's level of status and acceptance in ones' social group. According to terror management theory, self esteem serves a protective function and reduces anxiety about life and death.

Quality and level of self-esteem

Level and quality of self-esteem, though correlated, remain distinct. Level-wise, one can exhibit high but fragile self-esteem (as in narcissism) or low but stable self-esteem (as in humility). However, investigators can indirectly assess the quality of self-esteem in several ways:

1. in terms of its constancy over time (stability)
2. in terms of its independence of meeting particular conditions (non-contingency)
3. in terms of its ingrained nature at a basic psychological level (implicitness or automatized).

Self-esteem, grades and relationships

From the late 1970s to the early 1990s many Americans assumed as a matter of course that students' self-esteem acted as a critical factor in the grades that they earn in school, in their relationships with their peers, and in their later success in life. Given this assumption, some

American groups created programs which aimed to increase the self-esteem of students. Until the 1990s little peer-reviewed and controlled research took place on this topic.

Ruggiero (2000) observes that he concept of self-improvement has undergone dramatic change since 1911, when Ambrose Bierce mockingly defined self-esteem as "an erroneous appeasement." Good and bad character is now known as "personality differences". Rights have replaced responsibilities. The research on ego centrism and ethnocentrism that informed discussion of human growth and development in the mid-20th century is ignored; indeed, the terms themselves are considered politically incorrect. A revolution has taken place in the vocabulary of self. Words that imply responsibility or accountability — self-criticism, self-denial, self-discipline, self-control, self-effacement, self-mastery, self-reproach, and self-sacrifice — are no longer in fashion. The language most in favour is that which exalts the self — self-expression, self-assertion, self-indulgence, self-realization, self-approval, self-acceptance, self-love, and the ubiquitous self-esteem.

Peer-reviewed research undertaken since then has not validated previous assumptions. Recent research indicates that inflating students' self-esteem in and of itself has no positive effect on grades. One study has shown that inflating self-esteem by itself can actually decrease grades.

High self-esteem correlates highly with self-reported happiness. However, it is not clear which, if either necessarily leads to the other. Additionally, self-esteem has been found to be related to forgiveness in close relationships, in that people with high self-esteem will be more forgiving than people with low self-esteem.

The relationship involving self-esteem and academic results does not signify that high self-esteem contributes to high academic results. It simply means that high self- esteem may be accomplished due to high academic performance.

Contingencies of self-worth

Contingencies of self-worth comprise those qualities a person believes he or she must have in order to class as a person of value; proponents claim the contingencies as the core of self-esteem. In the field of social psychology, Jennifer Crocker has carried out major research on the topic of contingencies of self-worth. She says that her research "explores what it is that people believe they need to be or do to have value and worth as a person, and the consequences of those beliefs". She claims that people pursue self-esteem by trying to prove that they have worth and value, and this pursuit affects "the satisfaction of the fundamental human needs for learning, relationships, autonomy, self-regulation, and mental and physical health" (Crocker, 2007). Crocker argues that this pursuit of self-worth affects not only the individual, but everyone around the person as well.

According to the "Contingencies of Self-Worth model" (Crocker & Wolfe, 2001) people differ in their bases of self-esteem. Their beliefs — beliefs about what they think they need to do or who they need to "be" in order to class as a person of worth — form these bases. Crocker and her colleagues (2001) identified seven "domains" in which people frequently derive their self-worth:

1. Virtue
2. God's love

3. Support of family
4. Academic competence
5. Physical attractiveness
6. Gaining others' approval
7. Outdoing others in competition

Individuals who base their self-worth in a specific domain (such as, for example, academic success) leave themselves much more vulnerable to having their self-esteem threatened when negative events happen to them within that domain (such as when they fail a test at school). A 2003 study by Crocker found that students who based their contingency of self-worth on academic criteria had a greater likelihood of experiencing lower-state self-esteem, greater negative affect, and negative self-evaluative thoughts when they did not perform well on academic tasks, when they received poor grades, or when graduate schools rejected them (Crocker, Karpinski, Quinn, & Chase, 2003; Crocker, Sommers, & Luhtanen, 2002).

Crocker and her colleagues (2003) have constructed the "Contingencies of Self-Worth Scale", which measures the seven domains mentioned above that previous research had hypothesized as providing important internal and external sources of self-esteem. Crocker argues that the domains on which people base self-worth play a greater role than whether self-worth is actually contingent or not. Contingencies of self-worth can function internally, externally, or somewhere in between. Some research has shown that external contingencies of self-worth, such as physical appearance and academic success, correlate negatively to well-being, even promoting depression and eating-disorders (Jambekar, Quinn, & Crocker, 2001). Other work has found internal contingencies, on the other hand, unrelated or even positively related to well-being (Sargent, Crocker, & Luhtanen, 2006).

Research by Crocker and her colleagues also suggests that contingencies of self-worth have self-regulatory properties (Crocker, Luhtanen, Cooper, & Bouvrette, 2003). Crocker et al. define successful self-regulation as “the willingness to exert effort toward one’s most important goals, while taking setbacks and failures as opportunities to learn, identify weaknesses and address them, and develop new strategies toward achieving those goals” (Crocker, Brook, & Niiya, 2006). Since many individuals strive for a feeling of value, it makes sense that those people would experience special motivation to succeed and actively to avoid failure in the domains on which they base their own self-worth. Accordingly, successful self-regulation can prove difficult for people aiming to maintain and enhance their self-esteem, because they would have to actually embrace failure or criticism as a learning opportunity, rather than avoid it. Instead, when a task which individuals see as fundamental to their self-worth proves difficult and failure seems probable, contingencies of self-worth lead to stress, feelings of pressure, and a loss of intrinsic motivation. In these cases, highly contingent people may withdraw from the situation. On the other hand, the positive emotional affect following success in a domain of contingency may become addictive for the highly contingent individual (Baumeister & Vohs, 2001). Over time, these people may require even greater successes to achieve the same satisfaction or emotional “high”. Therefore, the goal to succeed can become a relentless quest for these individuals (Crocker & Nuer, 2004).

Researchers such as Crocker believe that people confuse the boosts to self-esteem resulting from successes with true human needs, such as learning, mutually supportive relationships, autonomy, and safety (Crocker & Nuer, 2004; Crocker & Park, 2004; Deci & Ryan, 2000). Crocker claims that people do not seek "self-esteem", but basic human needs, and that the

contingencies on which they base their self-esteem have more importance than the level of self-esteem itself.

This elaborate discussion on rehabilitation would be incomplete if the role of the pediatric psychologist is not dealt with. The psychologist's role in Attention Deficit Hyperactivity Disorder is multiphasic. Initially aiding the diagnosis, the psychologists role involves indepth case history taking and formal psychological assessment. Parnetal and care-giver counselling is the next task. The psychologist's role during follow-up is vital, to provide clinicians and parents facets of the improvement in the rehabilitation program of the child with Attention Deficit Hyperactivity Disorder.

NEED FOR THE STUDY

The awareness of Attention Deficit Hyperactivity Disorder has been gaining momentum in the Indian setting over the past decade. Paediatricians, paramedics, parents and teachers alike have begun to realize that the 'naughty, uncontrollable, truant' child may actually have a developmental difficulty. There is a lack of data and evidence on the 'hyperactive' child in the Indian setting. This study aims to obtain a profile and explore various clinical and psychological factors relating to children with Attention Deficit Hyperactivity Disorder.

Also, a child's growth and development depends heavily on the different aspects of his/her environment. Parents have an irreplaceable influence on their child's growing years. Rehabilitation programs for children with disabilities focus primarily on the management

of the child's difficulty. There is little or no emphasis on the parent, who constitutes an important part of the child's environment. This study explores factors relating to parental quality of life, stress and self esteem, thus aiming to provide clinical and other health care professionals guidelines as to manage the whole family unit, while treating Attention Deficit Hyperactivity Disorder, ultimately focusing on the provision of a healthy environment for the child.

SIGNIFICANCE OF THE STUDY

In the Indian setting, the management for Attention Deficit Hyperactivity Disorder has always focused on pharmacological management and partly behaviour therapy. Focus on parents, the primary caregivers has been minimal. This study attempts to bring to light the various facets affected with regard to parents' emotional health, thus paving the way for a wholesome management program for Attention Deficit Hyperactivity Disorder.

The study also purports to identify the various clinical factors related to Attention Deficit Hyperactivity Disorder, which helps to understand the nature of Attention Deficit Hyperactivity Disorder in the Indian setting.

CHAPTER II

REVIEW OF LITERATURE

Review of related literature throws light on the well established antecedents in the line of the present study. It also facilitates the identification of issues that remain ambiguous and those that require probing, especially in relation to the Indian setting. The investigator has found it necessary to seek previous research findings in related areas pertaining to this study and has reviewed them under the following heads:

2.1 DEVELOPMENTAL ISSUES RELATING TO ATTENTION DEFICIT HYPERACTIVITY DISORDER

Still (1902) wished to address the issue of immorality that was presented as significantly too advanced for visibly deranged or mentally incapacitated children. Immorality in the normal child, at least the child who defied categories like ‘‘retarded,’’ was argued to be symptomatic of some larger medical issue. Some of these symptoms included: ‘‘(1) passionateness, (2) spitefulness-cruelty; (3) jealousy; (4) lawlessness; (5) dishonesty; [and]

(6) wanton mischieviousness-destructiveness;''. For Still, these behaviours represented some degree of personal agency on behalf of those children who displayed them. These were not children who, due to being too stupid to understand the moral codes of society, acted out against those codes. These children perhaps had a clear understanding of the contents of the law, and wilfully chose to disregard it. Nameless to modern medicine, these children were too intelligent to be categorized under the established nomenclature of idiocy, and too young to be understood as ''criminal minds.'' These were the ''other children'' who needed to be more specifically understood through medical examination. Still raises the question of whether or not these children represented an entirely new form of idiocy or imbecility.

Strecker (1929) reported an example of some misconduct of the motor type as follows: A boy, aged 10, who had acute encephalitis at the age of 7, was described as being overactive, constantly in motion, roaming about the streets at night, wandering about the house at night, whistling and singing; once he dashed up to an infant sister's crib and swung the baby about by the heels. In the severe studied type, one witnessed such deviations as stealing, forgery, deliberate lying to gain an end, moral lapses and running away, carefully planned and with a definite objective. Strecker painted two very distinct pictures of this type of child. On one hand, such children were apparently driven by impulses that fell outside of conscious thought or reason. On the other hand, these children demonstrated certain malice in the things they did; a neurological defect or lesion provided a source of gratification for defying conventional behaviour.

Rapoport et al (1974) conducted a double-blind outpatient study, comparing imipramine hydrochloride, methylphenidate hydrochloride, and placebo treatments of 76 hyperactive grade-school boys. In addition, the pre-drug behavioural evaluation is examined in detail to provide guidelines for clinics examining these children. Base line clinic evaluations showed the usefulness of the psychologist's global estimates of attention and behaviour disorder, as these ratings predicted teacher rating of classroom behaviour better than did psychiatric playroom observations. Parent four-day diaries of activity and family interaction also predicted teacher ratings and reflected response to stimulant medication. Although the global judgments of psychiatrists, psychologist, and the paediatrician indicated the superiority of both drugs to a placebo, all measures favoured the stimulant drug. The significance of these findings may be limited, however, by the dose of imipramine hydrochloride that was lower than in use elsewhere.

Conrad's work (1975) claims that the discovery of hyperactivity, or hyperkinesis can be attributed to the interplay between three social factors: ''(1) the pharmaceutical revolution, (2) trends in the medical profession, and (3) government action'' Conrad's pharmaceutical revolution analysis points the finger at the company responsible for the synthesis and marketing of Ritalin, Ciba Geneva, which in the 1960s, addressed a large-scale advertising campaign to the medical and educational sectors alike. His examination of medical trends, though slightly unclear, generally refers to the increased interpretation of behavioural problems as biochemical or organic in origin. The government action side of Conrad's analysis directs attention towards government agencies, in this case the US Public Health Service, who were responsible for formally labelling hyperkinesis as ''minimal brain dysfunction.'' By discussing the role of this government agency, Conrad is describing the

power of a public institution to contribute to medicalization through decreeing a unified diagnosis.

In *Identifying Hyperactive Children* (1976), a book claimed to be the ‘‘first empirical analysis of the process of medicalization’’, Conrad examines the process by which medical professionals problematize childhood deviance. Conrad’s position rests upon an interest in the growing sphere of medical practice and its encroachment upon social life. What is significant, however, is the expansion of the sphere where medicine now functions as an agent of social control. In the wake of a general humanitarian trend, the success and prestige of modern medicine, the increasing acceptance of deterministic social and medical concepts, the technological growth of the twentieth century and the diminution of religion as a viable institution of control, more and more deviant behaviour has come into the province of medicine.

Brown (1980) identified the best treatment approach for treating impulsivity in hyperactive children. The treatment approaches investigated were two psycho-educational procedures. These approaches were examined in two groups of hyperactive children: (1) children receiving stimulant drug therapy and (2) children not receiving stimulant drug therapy. The results indicated that the use of psycho-educational treatment approaches are of value in altering the impulsive responses of hyperactive children. Consistent with the findings in follow-up studies of hyperactive children (suggesting that hyperactivity diminishes at adolescence) is the present finding that there is a developmental trend away from impulsivity in hyperactive children.

Zentall et al (1986) observe that when children are rated for hyperactivity, scores have been reported to decline on the second rating, especially when the time between ratings is short. They suggested that this "practice effect" can be attributed to statistical regression towards the mean, although evidence from their study does not support this claim. Reanalysis of earlier data indicates that statistical regression can account for some reduction in the ratings of children classified initially as hyperactive, but regression effects cannot explain the overall decline in mean rating found in both studies. It is concluded that the possibility of regression effects should not be ignored when re-evaluating a subgroup of individuals, but in the case of multiple hyperactivity ratings, practice effects appear to be real...

Anderson et al (1987) observed that children with Attention Deficit Hyperactivity Disorder may also experience difficulty in reading, mathematics, and written communication.

Barkley et al (1990) report that children with attention deficit disorder with hyperactivity (ADD+H; N = 48) were compared with those without hyperactivity (ADD-H; N = 42), as well as with learning disabled and control children, on an extensive battery of interviews, behaviour ratings, tests, and direct observations. ADD+H children had more externalizing and internalizing symptoms by parent and teacher report; were more off task during vigilance testing; and had more substance abuse, ADD+H, and aggression among their relatives than did the other groups. ADD-H children were more day-dreamy and lethargic by teacher report, more impaired in perceptual-motor speed, and had more anxiety disorders among their relatives than did ADD+H children. Results indicate that these two

types of ADD may be separate, distinct childhood disorders than subtypes of a common attention deficit.

Zametkin (1990) investigated the cause of childhood hyperactivity (attention deficit-hyperactivity disorder) is unknown. He investigated the hypothesis that cerebral glucose metabolism might differ between normal adults (controls) and adults with histories of hyperactivity in childhood who continued to have symptoms. Each patient was also the biologic parent of a hyperactive child. None of the adults had ever been treated with stimulant medication. To measure cerebral glucose metabolism, they administered 148 to 185 MBq (4 to 5 mCi) of [18F] fluoro-2-deoxy-D-glucose intravenously to 50 normal adults and 25 hyperactive adults while they performed an auditory-attention task. Images were obtained for 30 minutes with a Scanditronix positron-emission tomography with a resolution of 5 to 6 mm. Whole-brain and regional rates of glucose metabolism were measured with computer assistance by two trained research assistants, working independently, who were blinded to the subjects' status (control or hyperactive). Global cerebral glucose metabolism was 8.1 percent lower in the adults with hyperactivity than in the normal controls (mean +/- SD, 9.05 +/- 1.20 mg per minute per 100 g vs. 9.85 +/- 1.68 mg per minute per 100 g; P = 0.034). In the adults with hyperactivity, glucose metabolism was significantly reduced, as compared with the values for the controls, in 30 of 60 specific regions of the brain (P less than 0.05). Among the regions of the brain with the greatest reductions in glucose metabolism were the promoter cortex and the superior prefrontal cortex. When the seven women with hyperactivity or the six patients with learning disabilities were omitted from the analysis, the results were similar. Glucose metabolism,

both global and regional, was reduced in adults who had been hyperactive since childhood. The largest reductions were in the pre-motor cortex and the superior prefrontal cortex--areas earlier shown to be involved in the control of attention and motor activity

Du Paul (1991) described Attention deficit-hyperactivity disorder (ADHD) as a common problem among school-aged children wherein a student exhibits significant difficulties with attention span, impulse control and activity level. Since children with Attention Deficit Hyperactivity Disorder often display these symptoms on a chronic basis resulting in impaired behaviour control and academic productivity, the classroom environment must be modified to enhance their adjustment. Several contingency management procedures for teacher use were briefly discussed in his paper including token reinforcement programs, contingency contracting, response cost, time-out from positive reinforcement and home-based contingency management programs. When used in conjunction with other treatment modalities (e.g. stimulant medication, parent training in behaviour modification), these classroom intervention strategies often lead to significant improvements in on-task behaviour, work completion, behavioural control and accuracy on academic assignments.

Ricco et al (1993) reported that the conceptualization of attention deficit disorder (ADD) in the Diagnostic and Statistical Manual (DSM) of the American Psychiatric Association (1968, 1980, and 1987) has changed over time. Concurrent with shifts in conceptualization and changes in diagnostic nomenclature, research related to the neurological basis of ADD has taken a variety of theoretical approaches .One can study attentional mechanisms from a neuroanatomical, neurochemical, or neurophysiological perspective. The neuroanatomical

approach focuses on the location of brain areas that sub-serve those systems thought to mediate the regulation of attention and inhibit motor activity. The neurochemical approach addresses the role of specific neurotransmitters that facilitate communication among the neuronal circuits implicated in this disorder. The neurophysiological perspective attempts to explain the dynamic interaction between the neurochemical and anatomical components that together form a functional system. Professionals who work with these children should have some understanding of these models, as well as the neurocognitive correlates

Barkley (1997) observed that children with Attention Deficit Hyperactivity Disorder typically exhibit behaviour that is classified into two main categories: poor sustained attention and hyperactivity-impulsiveness. As a result, three subtypes of the disorder have been proposed by the American Psychiatric Association in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV): predominantly inattentive, predominantly hyperactive-impulsive, and combined types

Satterfield and Schell (1997) conducted a prospective study of 6-12-year-old clinic-referred boys with Attention Deficit Hyperactivity Disorder, 80% of whom exhibited conduct problems in childhood. Parent, but not teacher, childhood ratings of lying, stealing, and an antisocial composite factor predicted both juvenile and adult criminality. However, neither parent nor teacher ratings of fighting or hyperactivity predicted arrest history at either time. The absence of childhood conduct problems virtually guaranteed that a participant would not be a juvenile or adult offender; and even a single conduct problem in childhood (lying or stealing) was sufficient to increase risk for adolescent and adult criminality. These

findings suggest that childhood conduct problems are powerful mediators of later antisocial activity in hyperactive children.

Peters et.al. (1997) studied current knowledge about early plasticity and children's responsiveness to environmental modifications as well as the theoretical nature of current nosological systems necessitate alternative models to explain the phenomena of childhood behavioural and emotional disturbances. Evolutionary biology provides one such framework. It organizes data from the behavioural and cognitive sciences and parallels similar efforts in other areas of medicine and biology. Through an evolutionary biological lens, some mental disorders are better viewed as an adaptive response to early pathogenic environments and/or reflect the optimization of brain function to some environments at the cost of poorer response to the demands of other environments. As an example, the authors examine attention-deficit/hyperactivity disorder (ADHD) in relation to evolutionary theories of psychology and biology and clarify the potentially adaptive nature of characteristics of inattention, impulsivity, and motoric hyperactivity, depending on the nature of child's environments. Reframing Attention Deficit Hyperactivity Disorder characteristics according to evolutionary theory has important treatment implications for clinicians and offers researchers opportunities for novel scientific discoveries.

Barkley (1998) states that Attention Deficit Hyperactivity Disorder (ADHD) is a neurological condition that involves problems with inattention and hyperactivity-impulsivity that is developmentally inconsistent with the age of the child. We are now learning that Attention Deficit Hyperactivity Disorder is not a disorder of attention, as had

long been assumed. Rather, it is a function of developmental failure in the brain circuitry that monitors inhibition and self-control. This loss of self-regulation impairs other important brain functions crucial for maintaining attention, including the ability to defer immediate rewards for later gain.

Roeyers et al (1998) used retrospective parental reports to attempt to highlight differences between pervasive developmental disorder- PDD (autistic spectrum disorder- ASD) and Attention Deficit Hyperactivity Disorder in early childhood. The former group more frequently showed symptoms matching the core ASD characteristics, such as a lack of response to social approaches, poor peer interaction, and a lack of symbolic play. Motor tics, behaviour problems, and anxiety were also more frequently observed. The latter group were more likely to have shown signs of distress, such as loud crying in the early days, hyperactive behaviour, and reckless behaviour. Concerns about the developmental progress of the PDD children were evoked significantly earlier than concerns about the children with Attention Deficit Hyperactivity Disorder; although marked differences in behaviour (greater hyperactivity among the Attention Deficit Hyperactivity Disorder group) during the period between 7 and 12 months of age tended to lessen as the PDD children gradually increased their activity level.

Njiokitjien et al (1998) reported that the attentional component of cognitive functioning in children might be viewed from several interrelated angles that nearly all point to right hemisphere (RH) neural circuits, subserving nonverbal attention. Neuropsychological aspects indicative of RH brain dysfunction are one aspect, studied here. Among children

with learning disabilities (LD) we distinguish between LD with emphasis on nonverbal cognitive deficits and LD with verbal dysfunction. They approached this dichotomy by studying the extremes of these two LD categories (89 ss) with respect to attention deficit disorder with (Attention Deficit Hyperactivity Disorder) or without hyperactivity (ADD). We examined 44 children with at least average verbal IQ (VIQ > or = 95) and lower performance IQ (PIQ at least 25 points lower than VIQ), i.e. the nonverbal group, and 45 children with at least average performance IQ (PIQ > or = 95) and lower verbal IQ (VIQ at least 25 points lower than PIQ). The percentage of AD(H)D among the nonverbal LD group was more than twice as high as among the verbal LD group. Although a convincing right hemisphere (RH) syndrome could not be shown on a neurological basis in most subjects of the non-verbal LD group, a large body of evidence points on the one hand to RH dysfunction associated with nonverbal LD and on the other hand to an association between RH dysfunction and ADD. However, on clinical grounds, discussed here, we consider ADD and low visuospatial cognition, being the most important component of low PIQ, as dissociated functions, largely subserved by the RH.

Tirosh et al (1998) aimed to delineate the prevalence and behavioural patterns of' children with attention deficit and language problems as compared to children with attention-deficit hyperactivity disorder (ADHD) only. Out of a cohort of 3208 children 6 to 11 years old, 5.2% were identified as having a primary Attention Deficit Hyperactivity Disorder. A teacher's behavioural questionnaire, paediatric interview and assessment, IQ, attention tests and language were employed. A 45% rate of language problems was identified. This co-morbidity is more prevalent among girls (P = .02). Sequencing and short term memory was

significantly related to attention deficit and language problems, but the attention scores were not. Language performance was the best predictor of group assignment and was superior to IQ in that regard. Correlation analysis revealed a different behavioural pattern for the two groups. It appears that a significant proportion of children with Attention Deficit Hyperactivity Disorder have a language co morbidity not reflected by IQ assessments; therefore, language tests should be considered as part of their routine assessment. Children with attention-deficit and language problems appear to have a different neuro-cognitive pattern underlying their problems as compared with their peers with Attention Deficit Hyperactivity Disorder only.

Cherland et al (1999) examined the rate of psychotic and mood-congruent psychotic side effects of stimulant medications in children treated for attention-deficit hyperactivity disorder (ADHD). A chart review was completed of all children diagnosed with Attention Deficit Hyperactivity Disorder in an outpatient clinic from January 1989 to March 1995. Over 5 years, 192 children were diagnosed with Attention Deficit Hyperactivity Disorder. Ninety-eight children received treatment at the clinic with stimulants. Six children developed psychotic or mood-congruent psychotic symptoms during treatment. Children on medication were followed for an average of 1 year and 9 months. Awareness of the potential for psychotic side effects from stimulant medications is important when prescribing for children. A large prospective study would be useful to predict the frequency and classification of the side effects in children.

Farone (2000) report that twin studies show the heritability of Attention Deficit Hyperactivity Disorder to be about 0.80, indicating that the effect of genes is substantial.

These genetic epidemiological studies have motivated molecular genetic studies of Attention Deficit Hyperactivity Disorder that have produced intriguing but conflicting results (Faraone and Biederman, 1998). Researchers have focused on genes in dopamine pathways because animal models, theoretical considerations, and the effectiveness of stimulant treatment implicate dopaminergic dysfunction in the pathophysiology of the disorder. Two genes that have been intensively studied are the dopamine transporter gene (DAT) and the dopamine D4 receptor gene (DRD4). Some studies of these genes strongly suggest that they influence susceptibility to Attention Deficit Hyperactivity Disorder. There are, however, several negative studies for each gene. The inconsistent results from molecular genetic studies could mean that rather than being a unitary disorder, Attention Deficit Hyperactivity Disorder comprises several disorders having different genetic and nongenetic etiologies.

Sprich et al (2000), using an adoption study design, addressed the issue of genetics in attention-deficit hyperactivity disorder (ADHD). This study examined the rates of Attention Deficit Hyperactivity Disorder and associated disorders in the first-degree adoptive relatives of 25 adopted probands with Attention Deficit Hyperactivity Disorder and compared them with those of the first-degree biological relatives of 101 nonadopted probands with Attention Deficit Hyperactivity Disorder and 50 nonadopted, non-ADHD control probands. Six percent of the adoptive parents of adopted Attention Deficit Hyperactivity Disorder probands had Attention Deficit Hyperactivity Disorder compared with 18% of the biological parents of nonadopted Attention Deficit Hyperactivity Disorder probands and 3% of the biological parents of the control probands. Results of this study

lend support to the hypothesis that Attention Deficit Hyperactivity Disorder has a genetic component.

Rofalovich (2001) in his article examines the medical discourse that formed the foundations of what mental health professionals today call Attention Deficit Hyperactivity Disorder (ADHD). The article examines literature from two medical discussions: 1) the discussion of ‘‘imbecility’’ and ‘‘idiocy’’ in the late 19th and early 20th centuries in Western Europe and in the United States; and 2) the diagnosis of encephalitis lethargica in children during the 1920s. The diagnosis of encephalitis lethargica was heavily influenced by the previous discussion of imbecility and occupied a seminal place in the history of medicalizing child behaviour. It served as a specific disease category for kids who demonstrated unconventional behaviour in a variety of social contexts. It will be argued that the discussion of encephalitis lethargica began a research modality in psychiatry which sought to find neurological bases for childhood deviance, typified by the contemporary discussion of Attention Deficit Hyperactivity Disorder. He noted that Attention Deficit Hyperactivity Disorder (ADHD) has known a variety of names during the 20th century. Some of these include Encephalitis Lethargica (sequelae thereof), Minimal Brain Damage, Minimal Cerebral Palsy, Mild Retardation, Minimal Brain Dysfunction, Hyperkinesis, Atypical Ego Development, Attention Deficit Disorder (ADD), and Attention Deficit Hyperactivity Disorder.

Juul et al (2001) examined various pre-, peri-, and neonatal factors in autistic participants and in pervasive developmental disorder-not otherwise specified (PDD-NOS) participants

and to compare the incidence of each factor to that of the normal population. Seventy-four participants (66 males, 8 females) were diagnosed with autism at 2.5 through 4 years of age using the most accurate and up-to-date methods, including the Diagnostic and Statistical Manual of Mental Disorders and the Autism Diagnostic Interview-Revised. At age 5, all participants were re-evaluated using the Diagnostic and Statistical Manual of Mental Disorders, the Autism Diagnostic Interview-Revised, the Childhood Autism Rating Scale, and the Autism Diagnostic Observation Schedule-Revised, resulting in 61 autistic and 13 PDD-NOS participants. Twenty-eight pre-, peri-, and neonatal factors were examined in these 2 groups using both medical records and parental interviews. Incidences were compared with those of the US population as reported in the Report of Final Natality Statistics, 1995. This grand scale population group was used to closely approximate comparison to a normal, unbiased population. Results were analyzed using the binomial probability test, with a P value of <.05, constituting a significant difference in incidence. A Bonferroni correction was applied to the data to adjust for the number of factors investigated. Although most of the factors showed comparable incidences between the index and control groups, several factors showed statistically significant differences. Following the Bonferroni correction, the autism group was found to have a significantly higher incidence of uterine bleeding, a lower incidence of maternal vaginal infection, and less maternal use of contraceptives during conception when compared with the general population. Similarly, the PDD-NOS group showed a higher incidence of hyperbilirubinemia when compared with the general population. The results of this study support previous findings suggesting a consistent association of unfavourable events in pregnancy, delivery, and the neonatal phase and the pervasive developmental disorders.

However, interpretation of the meaningfulness of these results is difficult, as the specific complications that carried the highest risk of autism and PDD-NOS represented various forms of pathologic processes with no presently apparent unifying feature. Additional studies are needed to corroborate and strengthen these associations, as well as to determine the possibility of an underlying unifying pathological process. This study's analysis of obstetric and neonatal complications in combination with the use of participants diagnosed at an early age provides some interesting concepts to consider. Perhaps future research will confirm certain pre-, peri-, and neonatal associations that could be used to generate a high-risk historical profile with which to use in conjunction with currently employed diagnostic tools. This may, in turn, help to determine the reliability of a diagnosis of autism in younger children, leading to earlier intervention and assistance for an improved outcome in long-term functionality and quality of life.

Rafalovich (2002) presents a discourse analysis of two historical inquiries into what clinicians today call attention deficit hyperactivity disorder (ADHD). Of primary concern in this regard are psychodynamic perspectives towards Attention Deficit Hyperactivity Disorder symptoms, championed by psychoanalysts and psychologists, and neurological perspectives towards Attention Deficit Hyperactivity Disorder, which continue to favour a purely physiological approach to understanding the disorder. Those within the psychodynamic camp are inclined to view Attention Deficit Hyperactivity Disorder as an interactional difficulty between self and social environment - a condition best remedied by psychotherapy. Those within the neurological camp see Attention Deficit Hyperactivity Disorder as a specific brain process, whose effective treatment depends upon adequate

psychopharmacology. This essay argues that both psychodynamic and neurological perspectives towards Attention Deficit Hyperactivity Disorder have strategized to legitimate one perspective through the expulsion of the other. Within the current era of Attention Deficit Hyperactivity Disorder nomenclature and treatment it is clear that neurological perspectives dominate the debate. However, neurological perspectives continue to be haunted by a considerable amount of scepticism, both nationally and internationally. Because of this it would be difficult to assert that neurological perspectives, though winning the "legitimation race" in contemporary understandings of Attention Deficit Hyperactivity Disorder, are entirely monolithic sources of Attention Deficit Hyperactivity Disorder knowledge.

Overtoom et al (2002) stated that the purpose of their study was to investigate and identify abnormal brain activity, as revealed by event-related potentials (ERPs) concurring with deficient inhibitory control in children with attention-deficit/hyper-activity disorder (ADHD). Performance and ERPs from 16 children with Attention Deficit Hyperactivity Disorder and 16 control subjects were compared in the stop-signal paradigm. The Attention Deficit Hyperactivity Disorder children showed a lower inhibition percentage and their (estimated) response time to the stop signal was disproportionally longer compared to the slowing of reaction times to primary-task stimuli. In normal control subjects, fronto-central positivity (100– 400 msec) after the onset of the stop-signal was larger in case of successful inhibition, relative to failed inhibition; this was less so in Attention Deficit Hyperactivity Disorder children. A late positive wave (500 –700 msec), maximal at Oz on failed inhibition trials, and possibly related to error-detection, was smaller in Attention Deficit Hyperactivity Disorder children. These results point to abnormalities in brain processes

involved in motor inhibition and error-detection in Attention Deficit Hyperactivity Disorder children.

Connor (2002) reported that the clinical use of stimulant medications for 3- to 6-year-old preschool children who meet diagnostic criteria for attention deficit hyperactivity disorder (ADHD) is becoming more common. A systematic computerized literature search extending back to 1970 identified nine controlled studies of stimulant treatment and two controlled trials of stimulant side effects in preschool Attention Deficit Hyperactivity Disorder children. Treatment benefits are reported for eight of nine (89%) controlled stimulant trials involving a total of 206 preschool subjects. In comparison with school-aged Attention Deficit Hyperactivity Disorder youth, there may be a greater variability of stimulant response in Attention Deficit Hyperactivity Disorder preschoolers. Domains assessing cognition, interpersonal interactions, and hyperactive-impulsive behaviour are noted to improve on drugs relative to placebos. Side effects in this age range are generally reported as mild. Attention Deficit Hyperactivity Disorder preschool children may experience slightly more and different types of stimulant-induced side effects compared with older children. High rates of behaviour reported as stimulant side effects are found for children receiving a placebo, necessitating a baseline evaluation for medication side effects before stimulants are initiated. Despite the lack of research assessing stimulant effects on the very young and developing brain and the need for more controlled medication trials in this age range, this review of the extant literature finds stimulants to meet evidence based criteria as beneficial and safe for carefully diagnosed Attention Deficit Hyperactivity Disorder preschool children aged 3 years and older.

Chan (2002) said that the use of complementary and alternative medicine (CAM) in paediatrics has become widespread. Parents of young children with developmental and behavioural problems such as attention-deficit hyperactivity disorder (ADHD) are particularly drawn to CAM interventions to avoid or decrease use of psychotropic medications. The author reviews the epidemiology of CAM use for Attention Deficit Hyperactivity Disorder, describes a conceptual model of CAM, discusses a variety of commonly used therapies for Attention Deficit Hyperactivity Disorder, and introduces a systematic, pragmatic approach to discussing CAM therapy use with parents. Index terms: complementary and alternative medicine, attention-deficit hyperactivity disorder. For many parents and clinicians, choosing an acceptable therapy for the young child with Attention Deficit Hyperactivity Disorder is very difficult. First, clinicians have generally avoided prescribing stimulants except as a last resort for very young children, although in recent years the use of psychotropic medications for preschoolers has increased dramatically. Unlike evidence demonstrating the benefits of stimulant therapy for school-aged children, data supporting the effectiveness of stimulants in children under 6 years of age are sparse. Second, parents often are concerned about giving their child a "mind-altering" drug without knowing how long the child will need to be treated and what long-term side effects there might be. Understandably, then, parents may search for what they consider to be more "natural" therapies, hoping either to lessen the need for stimulant therapy (i.e., as adjunctive or "complementary" therapy) or to avoid stimulants altogether (i.e., as "alternative" therapy). Thus, it is important for clinicians caring for children with Attention Deficit Hyperactivity Disorder to be familiar with complementary and alternative medicine (CAM) and its role in Attention Deficit Hyperactivity Disorder.

Mahone et al (2002) compared children with Attention-Deficit Hyperactivity Disorder (ADHD) and controls on a selected set of clinical measures of executive function (EF). A total of 92 children (51 Attention Deficit Hyperactivity Disorder, 41 control), ages 6-16, completed measures chosen from a larger neuropsychological battery to illustrate diverse components of the EF construct (planning, inhibitory control, response preparation, memory search). The selected measures were moderately correlated with one another, and moderately correlated with IQ. After controlling for age, sex, presence of learning disability (LD), Attention Deficit Hyperactivity Disorder, and IQ test version, Full Scale IQ was significantly related to four of the five selected EF measures. A second analysis showed group differences on the EF measures at different IQ levels. After co-varying for age, there was a significant multivariate effect for IQ level (average, high average, superior) and a significant multivariate interaction between group (Attention Deficit Hyperactivity Disorder vs. control) and IQ level. Three of the five selected EF measures showed significant univariate group effects (controls performing better than Attention Deficit Hyperactivity Disorder) at the average IQ level; however, there were no significant group differences between children with Attention Deficit Hyperactivity Disorder and controls at high average or superior IQ levels. These results suggest that clinical measures of EF may differ among children with Attention Deficit Hyperactivity Disorder and controls at average IQ levels, but there is poorer discriminatory power for these measures among children with above average IQ.

Malhi and Singhi (2003) report that Attention deficit hyperactivity disorder (ADHD) is one of the most commonly diagnosed behaviour disorder of childhood. In recent years, increasing number of preschoolers appear to be manifesting the core symptoms of

Attention Deficit Hyperactivity Disorder. Diagnosis of Attention Deficit Hyperactivity Disorder in very young children is difficult as high activity level, impulsivity and short attention span are to some extent age appropriate characteristics of normal pre-school children. Concerns both about over-diagnosis and under-diagnosis have been expressed in the literature. Management emphasizing parental counselling, behaviour management strategies and appropriate pharmacotherapy was recommended.

Fuchs et al (2003) have suggested that neurofeedback may be efficient in treating attention-deficit / hyperactivity disorder (ADHD). They compared the effects of a 3-month electroenecephalographic feedback program providing reinforcement contingent on the production of cortical sensorimotor rhythm (12–15 Hz) and beta1 activity (15–18 Hz) with stimulant medication. Participants were N = 34 children aged 8–12 years, 22 of which were assigned to the neurofeedback group and 12 to the methylphenidate group according to their parents' preference. Both neurofeedback and methylphenidate were associated with improvements on all subscales of the Test of Variables of Attention, and on the speed and accuracy measures of the d2 Attention Endurance Test. Furthermore, behaviours related to the disorder were rated as significantly reduced in both groups by both teachers and parents on the IOWA-Conners Behavior Rating Scale. These findings suggest that neurofeedback was efficient in improving some of the behavioural concomitants of Attention Deficit Hyperactivity Disorder in children whose parents favoured a non pharmacological treatment.

Mahone et al (2003) report that reviews involving the Wechsler Scales for children suggest that Full Scale IQ scores on the Wechsler Intelligence Scale for Children, Third Edition,

average 5 to 6 points lower than scores on the second edition of the scale with the differences distributed disproportionately over subtests, i.e., with larger discrepancies found within the Performance Scale. Changes on the revised subtests of the WISC-III Performance Scale may place children with Attention Deficit Hyperactivity Disorder at a disadvantage compared to their performance on analogous WISC-R subtests. They examined IQ test performance in 122 unmedicated children with Attention Deficit Hyperactivity Disorder (61 given the WISC-R, 61 given the WISC-III), and 46 children from a healthy, comparison group (23 given the WISC-R, 23 given the WISC-III). The Attention Deficit Hyperactivity Disorder and comparison group samples were matched for sex and for Verbal IQ between WISC-R and WISC-III. Children with Attention Deficit Hyperactivity Disorder had significantly lower Performance IQ on WISC-III compared to the WISC-R, with the Picture Arrangement subtest showing the most significant difference. In contrast, there were no significant differences between the WISC-R and WISC-III cohorts on Performance IQ or any Performance subtests among the comparison group. These findings highlight the importance of examining the comparability of ability test revisions among clinical and non-clinical populations, and will be especially salient when the WISC-III is revised.

Kuntis et al (2004) investigated the aetiology of this association in a large population-based sample of 5-year-old twins. The twins were individually assessed on an IQ test, and data on Attention Deficit Hyperactivity Disorder symptoms were obtained from mother interviews and teacher ratings. Confirming previous studies, the phenotypic correlation between Attention Deficit Hyperactivity Disorder symptom scores and IQ was -0.3 and, in a categorical analysis, children with a Diagnostic and Statistical Manual of Mental Disorders

(DSM-IV) Attention Deficit Hyperactivity Disorder research diagnosis obtained IQ scores nine points lower, on average, than comparison children. They show here that the co-occurrence of Attention Deficit Hyperactivity Disorder and lower IQ has genetic origins: 86% of the association between Attention Deficit Hyperactivity Disorder symptom scores and IQ, and 100% of the association between Attention Deficit Hyperactivity Disorder diagnosis and IQ, was accounted for by genetic influences that are shared by Attention Deficit Hyperactivity Disorder and IQ. Some candidate genes for Attention Deficit Hyperactivity Disorder could also contribute to variation in IQ or vice versa.

Hirshberg et al (2005) noted that Electroencephalogram biofeedback (EBF), repetitive transcranial magnetic stimulation (rTMS), and vagal nerve stimulation (VNS) are emerging interventions that attempt to directly impact brain function through neurostimulation and neurofeedback mechanisms. They provide a brief overview of each of these techniques, summarizes the relevant research findings, and examines the implications of this research for practice standards based on the guidelines for recommending evidence based treatments as developed by the American Academy of Child and Adolescent Psychiatry for attention deficit hyperactivity disorder (ADHD). EBF meets the "Clinical Guidelines" standard for Attention Deficit Hyperactivity Disorder, seizure disorders, anxiety, depression, and traumatic brain injury. VNS meets this same standard for treatment of refractory epilepsy and meets the lower "Options" standard for several other disorders. rTMS meets the standard for "Clinical Guidelines" for bipolar disorder, unipolar disorder, and schizophrenia.

Monastra (2005) observes that during the past three decades, electroencephalographic (EEG) biofeedback has emerged as a nonpharmacologic treatment for attention-deficit/hyperactivity disorder (ADHD). This intervention was derived from operant conditioning studies that demonstrated capacity for neurophysiologic training in humans and other mammals and targets atypical patterns of cortical activation that have been identified consistently in neuroimaging and quantitative EEG studies of patients diagnosed with Attention Deficit Hyperactivity Disorder. His article presents the rationale for EEG biofeedback and examines the empirical support for this treatment using efficacy guidelines established by the Association for Applied Psychophysiology and Biofeedback and the International Society for Neuronal Regulation. Based on these guidelines, EEG biofeedback is considered to be "probably efficacious" for the treatment of Attention Deficit Hyperactivity Disorder and merits consideration as a treatment for patients who are stimulant "nonresponders." Although research findings published to date indicate positive clinical response in approximately 75% of patients treated in controlled group studies, additional randomized, controlled trials are needed to provide a better estimate of the robustness of this treatment.

Wolraich et al (2005) observe that Attention-deficit/hyperactivity disorder ADHD) is the most common mental disorder in childhood, and primary care clinicians provide a major component of the care for children with Attention Deficit Hyperactivity Disorder. However, because of limited available evidence, the American Academy of Paediatrics guidelines did not include adolescents and young adults. Contrary to previous beliefs, it has become clear that, in most cases, Attention Deficit Hyperactivity Disorder does not resolve

once children enter puberty. This article reviewed the current evidence about the diagnosis and treatment of adolescents and young adults with Attention Deficit Hyperactivity Disorder and describes how the information informs practice. It describes some of the unique characteristics observed among adolescents, as well as how the core symptoms change with maturity. The diagnostic process is discussed, as well as approaches to the care of adolescents to improve adherences. Both psychosocial and pharmacologic interventions are reviewed, and there is a discussion of these patients' transition into young adulthood. The article also indicates that research is needed to identify the unique adolescent characteristics of Attention Deficit Hyperactivity Disorder and effective psychosocial and pharmacologic treatments.

Mathers (2006) reports some outcomes from an exploratory study that compares children diagnosed with Attention Deficit Hyperactivity Disorder and without language impairment with typically developing children for aspects of language use. Discourse analysis based on a systemic functional linguistics approach is applied to spoken and written samples from three different text types that are supplied by 11 children diagnosed with Attention Deficit Hyperactivity Disorder and 11 typically developing children. Comparisons of multiple variables most often show differences in use between the groups. Closer examination of these differences shows that relative to the controls, the Attention Deficit Hyperactivity Disorder group uses fewer strategies of textual organization and more avoidance, tangential, and unrelated meanings and more abandoned utterances and spelling and punctuation errors. Clinical implications suggest that careful linguistic analysis of spoken and written language of children with Attention Deficit Hyperactivity Disorder cannot only

identify the linguistic resources they use within everyday contexts but may also indicate areas where intervention may be beneficial.

Mc Coy (2007) says children with attention deficit hyperactivity disorder (ADHD) showed sustained improvement but were still at increased risk of behavioural problems in the years after treatment. During the 14-month controlled treatment period, children with Attention Deficit Hyperactivity Disorder were assigned to receive usual community care or one of three treatments: medication alone, medication plus behavioural therapy, or behavioural therapy only. Ratings from both family members and teachers favoured the combination treatment, and careful medication management was more successful than medication provided through usual community care sources.

Elia et al (2007) reported that Attention Deficit Hyperactivity disorder (ADHD) is highly heritable. Confirmed association has been reported for several candidate genes, including DAT1, DRD4, SNAP-25, DRD5, 5HTT, HTR1B, and DBH; however, these confer relatively small risk. Family-based linkage studies have identified a number of chromosomal regions containing potential Attention Deficit Hyperactivity Disorder predisposing loci, some overlapping in two or more studies, including 5p, 6q, 7p, 11q, 12q, and 17p. New large-scale studies that apply recent technological advances to perform high-density genotyping of the entire genome, in combination with information on the haplotype structure of the human genome, now allow testing of single-nucleotide polymorphism association with disease phenotype without any a priori hypothesis. They may contribute further to our understanding of the genetic factors involved in Attention Deficit

Hyperactivity Disorder. The heterogeneous complex Attention Deficit Hyperactivity Disorder phenotype, as well as epigenetic factors may be contributing to the challenge of genetic studies. Samples that include limited age ranges may have better success at uncovering genes whose expression is limited to specific developmental stages.

Nuovo et al (2007) studied the specific cognitive and adaptive skills of persons dually diagnosed with mental retardation (MR) and comorbid pathologies, as schizophrenia, personality and mood disorders, pervasive developmental disorders, epilepsy and Attention Deficit Hyperactivity Disorder. The sample was composed of 182 subjects, diagnosed as mild or moderate MR level, age range from 6 years 8 months to 50 years 2 months, mean age 17.1 (standard deviation 7.9). All the subjects were inpatients in a specialized structure for the diagnosis and the treatment of MR. The instruments of the study were Wechsler Intelligence Scale (WAIS-R or WISC-R according to the chronological age of subjects) and Vineland Adaptive Behaviour Scale (VABS). Results confirm that comorbidity is a factor differentiating among mentally retarded subjects. Both verbal processes requiring memory retrieval and visuo-spatial processes are involved as differentiating features. Attention Deficit Hyperactivity Disorder strongly increases the impairment of cognitive skills, while behavioural disorders are less damaging in MR performance. In adult samples, the differentiating role of comorbid syndromes in MR individuals is reduced for cognitive skills, and limited to some basic verbal abilities, more impaired in mood disorder, less in schizophrenic disorder. The areas of adaptation and socialization, motor and daily living skills, are impaired more in generalized development disturbances than in comorbid schizophrenic and personality and mood disorders. An accurate psychological assessment

of dual diagnoses is useful in detecting the specific underlying processes differentiating the comorbid syndromes, and in planning an appropriate rehabilitative treatment.

Antshel and Nastasi (2008) investigated an aspect of metacognition, metamemory (knowledge and awareness of one's memory) across time in preschool children with Attention Deficit Hyperactivity Disorder (n = 31) and a sample of age, sex, socioeconomic and IQ-matched typically developing children (n = 31). Only children with stable Attention Deficit Hyperactivity Disorder diagnoses were included. Participants were assessed on a variety of cognitive and parent report measures. Longitudinal results indicated that the preschool children with Attention Deficit Hyperactivity Disorder and typically developing children had similar intellectual capacities. In addition, at age 4, children with Attention Deficit Hyperactivity Disorder and typically developing children had comparable metamemory skills. Nevertheless, one year later, when control participants made strong gains in metamemory development, children with Attention Deficit Hyperactivity Disorder began to lag behind. It is therefore crucial that metamemory difficulties in children with Attention Deficit Hyperactivity Disorder are detected as soon as they appear so that they can be fully assessed and remediation programs put in place in the school and home.

Jespen et al (2008) aimed to characterize the relationship between IQ and attention deficits in children with Attention Deficit Hyperactivity Disorder and to estimate the inattention-related mean influence on IQ when children are tested before stimulant drug treatment has been initiated. Studies of various methodologies were reviewed. Correlation studies show

mostly weak associations between IQ scores and attention deficits. Meta-analyses report the average short-term stimulant treatment effect on IQ in children with Attention Deficit Hyperactivity Disorder to be 2 to 7 IQ points. The associations between IQ and attention deficits in Attention Deficit Hyperactivity Disorder are generally modest, with the mean influence on IQ probably amounting to 2 to 5 IQ points. This may serve as a benchmark when clinicians interpret the validity of IQ in this clinical population.

Hurtig et al (2008) examined the co-morbidity of Attention Deficit Hyperactivity Disorder in association with family environment and the severity of Attention Deficit Hyperactivity Disorder. A screening for Attention Deficit Hyperactivity Disorder symptoms was conducted among adolescents in the Northern Finland 1986 Birth Cohort (N = 6622). A sample of those adolescents (n = 457), aged 16-18 years, with and without Attention Deficit Hyperactivity Disorder symptoms was assessed with a diagnostic interview (Kiddie-SADS-PL) and Attention Deficit Hyperactivity Disorder and co-morbid disorders were studied in association with the family characteristics and the number of Attention Deficit Hyperactivity Disorder symptoms. Adolescents with Attention Deficit Hyperactivity Disorder had more commonly conduct disorder ($P < 0.001$), oppositional defiant disorder ($P < 0.001$), substance abuse ($P < 0.001$) and mild depression ($P < 0.001$) than adolescents without Attention Deficit Hyperactivity Disorder. Adolescents with Attention Deficit Hyperactivity Disorder and co-morbid disorders had more Attention Deficit Hyperactivity Disorder symptoms ($P < 0.001$) than those with Attention Deficit Hyperactivity Disorder alone. Compared to adolescents with Attention Deficit Hyperactivity Disorder alone those with Attention Deficit Hyperactivity Disorder and co-

morbidity lived significantly more commonly in non-intact families, in low-income families, with mothers who were dissatisfied with life and with parents who showed little interest in their adolescents' activities. Adolescents who develop externalizing disorders co-morbid to Attention Deficit Hyperactivity Disorder seem to suffer from a severe form of Attention Deficit Hyperactivity Disorder and live in family environments that may not provide sufficient support for optimal development of an adolescent with Attention Deficit Hyperactivity Disorder.

McGillivray and Baker (2008) state that Attention Deficit Hyperactivity Disorder and learning disabilities (LD) frequently coexist and there are indications that co-morbidity may increase the risk of psychopathology. The current study examined the gender distribution and frequency of co-morbidity and its impact on the prevalence of symptoms of anxiety, depression, and aggression in a clinic sample of 80 adults with Attention Deficit Hyperactivity Disorder, aged 18 to 58 years. More individuals were diagnosed with Attention Deficit Hyperactivity Disorder+LD than Attention Deficit Hyperactivity Disorder only, with no difference in this distribution according to gender. A factorial multivariate analysis of variance indicated that females with Attention Deficit Hyperactivity Disorder+LD displayed more cognitive depression than females with Attention Deficit Hyperactivity Disorder only and than males with Attention Deficit Hyperactivity Disorder+LD and Attention Deficit Hyperactivity Disorder only. However, individuals with Attention Deficit Hyperactivity Disorder only and individuals with Attention Deficit Hyperactivity Disorder+LD did not differ on overall anxiety, depression or aggression. Likewise, males and females did not differ on measures of psychopathology. This study

lays the foundation for continued research into the characteristics and co-morbidities of adults with Attention Deficit Hyperactivity Disorder.

REVIEW REPORT

The research studies quoted above explore factors relating to the various developmental issues of Attention Deficit Hyperactivity Disorder. The factors researched include the symptoms and manifestation of Attention Deficit Hyperactivity Disorder, drug evaluation, psycho-education, assessment, and the types of Attention Deficit Hyperactivity Disorder, co-morbid features associated with Attention Deficit Hyperactivity Disorder, causes and aspects of cognitive functioning in Attention Deficit Hyperactivity Disorder. Review of literature reveals a lacuna in Indian studies relating to Attention Deficit Hyperactivity Disorder.

2.2 **PARENTAL ASPECTS IN ATTENTION DEFICIT HYPERACTIVITY DISORDER**

Fischer (1990) presents a critical review of research concerning the stress of parenting a child with attention deficit hyperactivity disorder (ADHD). Four lines of research have been pursued. First, studies demonstrate increased stress reported by parents of hyperactive children. Second, studies of parental psychopathology suggest that for some parents such disturbance is independent of the child's pathology and reflects a genetic substrate for the same and related disorders. Third, Attention Deficit Hyperactivity Disorder is associated with increased parental marital discord. Fourth, research regarding parent-child interaction patterns suggests a child-to-adult direction of effect more than the reverse.

Anastopoulos et al (1992) observe that prior research has shown that parenting stress levels can be quite high among families of children with attention deficit hyperactivity disorder (ADHD). This study investigated the degree to which such stress was related not only to the child's Attention Deficit Hyperactivity Disorder, but also to various other child parent, and family-environment circumstances. Multimethod assessments were conducted on 104 clinic-referred children with Attention Deficit Hyperactivity Disorder. Data collected from these subjects were entered into hierarchical multiple-regression analyses, utilizing the Parenting Stress Index as the criterion

Baker (1994) observes that parenting stress experiences in families who have children with Attention-deficit Hyperactivity Disorder (ADHD) are receiving increased attention in the research literature on Attention Deficit Hyperactivity Disorder. In studies to date, evaluations of parenting stress have relied almost exclusively on maternal reports. This study compared reports of parenting stress between mothers and fathers in 20 sets of parents of children with Attention Deficit Hyperactivity Disorder. Results showed little difference between maternal and paternal reports of parenting stress in such families. Child behaviour, socioeconomic status, and years married contributed more to parenting stress than did parent gender.

Baker and McCall (1995) observe that parenting a child with Attention Deficit Hyperactivity Disorder can challenge parenting resources and coping. Increasingly,

researchers are examining the relationship between the behaviour of the child with Attention Deficit Hyperactivity Disorder and family functioning. While studies have shown increased parenting stress in parents of children with Attention Deficit Hyperactivity Disorder, these studies have compared children with Attention Deficit Hyperactivity Disorder to non-disabled children. This study compares reports of parenting stress among mothers of children with Attention Deficit Hyperactivity Disorder, mothers of children with learning disabilities and mothers of non-referred children. Results showed that parenting stress was highest for mothers of children with Attention Deficit Hyperactivity Disorder. Increased parenting stress was associated with child characteristics and, in particular, with externalizing behaviour problems.

Mukerjee et al. (1995) aimed at examining anxiety and self-esteem in children with Specific Developmental Disorders of Scholastic Skills (SDDSS). A purposive sample of 40 children between the ages of 8-13 years, attending English medium schools, with IQs above 80 were taken. Of these, 20 children fulfilling the ICD-10 criteria for SDDSS, were taken from a Child and Adolescent Mental Health Unit, and compared to 20 non-SDDSS children drawn from nearby schools. Both groups were assessed on: (1) A semi-structured interview schedule (2) Malin's Intelligence Scale for Indian Children (MISIC) (3) NIMHANS Index for Specific Learning Disabilities (4) State-Trait Anxiety Inventory for Children and (5) Culture-Free Self-Esteem Inventory for Children. The obtained data was analysed using descriptive statistics, parametric and non-parametric tests. Findings revealed a significant difference in self-esteem of children with and without SDDSS. Particularly, low parental, academic and general self-esteem were seen in SDDSS children ($p < 0.01$).

The SDDSS children also had significantly higher state anxiety ($p < 0.01$), but did not differ significantly on trait anxiety scores. Moreover, parental self-esteem was found to be significantly related to state and trait anxiety in SDDSS children. The findings were discussed in terms of their importance in planning intervention for the SDDSS children, both in the clinic and school settings.

Danforth (1998) studied the effects of parent training, using parameters established in the Behavior Management Flow Chart, on mother behaviour and on the disruptive behaviour of eight children who emitted behaviour consistent with the diagnoses of both Oppositional Defiant Disorder and Attention-Deficit Hyperactivity Disorder were evaluated. There are important differences between the Behaviour Management Flow Chart and well-known parent-training programs that are based on the Hanf model. Parent training was conducted within a multiple baseline design across children. Direct observation of mother and child behaviour, phone interviews, and standardized rating scales showed that training improved parenting behaviour, reduced maternal stress, and reduced oppositional child behaviour. A 6-month follow-up revealed that parenting and child behaviour remained stable. The results are comparable with prior research on behavioural parent training for families that have children with oppositional/hyperactive behaviour.

Jensen et al (1998) investigated causal attributions parents made regarding their children's best and worst behaviour while the children were taking methylphenidate (MPH) for Attention-Deficit Hyperactivity Disorder (ADHD). Twenty-six parents were surveyed each

week for six weeks using the Parent Attribution Scale-Revised. This scale measures parents' attributions of the causes for their children's behaviour when taking MPH to treat symptoms of Attention Deficit Hyperactivity Disorder. When attributing causes for best behaviour, the parents rated their children's effort most often followed by their own effort and the positive medication effects. When attributing causes for worst behaviour, the parents rated their children's lack of effort most often followed by inadequate medication effects and their own lack of effort. Their study suggests that parents rate effort most often when making attributions for their children's best and worst behaviour. When making attributions for best behaviour only, parents saw no difference between their own efforts and the effects of medication. When making attributions for worst behaviour only, parents were more likely to blame their children's lack of effort and the ineffectiveness of medication more often than their own lack of effort.

Angold (1998) indicated that 10.7% of parents in the general population perceived burden resulting from their children’s psychiatric symptomatology. Significant predictors of perceived burden were levels of child symptomatology and impairment and parental mental health problems. Children’s depressive and anxiety disorders were associated with less burden than other diagnosis. The effect of child disorder severity on specialty mental health services use appeared to be mediated by the level of burden induced. Substantial levels of parental burden resulted from child psychiatric disorders and were a major reason for specialist mental health service use.

Manns et al. (1999) determined the relation between quality of life, handicap, fitness and physical activity for persons with spinal cord injury. There was no relation between the subjective quality of life scores and physical activity in either group.

Wells et al (2000) conducted an empirical analysis on parenting and family stress treatment outcomes in Attention Deficit Hyperactivity Disorder. The four groups included intensive multi-faceted behaviour therapy alone, carefully titrated and monitored medication management strategy alone, a well integrated combination of the two and a community comparison group. Results showed that the three treatments did not differ significantly from each other with regard to parenting behaviour and family stress.

Artal (2000) studied the quality of life among stroke survivors evaluated one year after stroke. Functional status and depression were identified as predictors of quality of life. Patients independent in their activities of daily living suffered from a deterioration of psychosocial dimension.

Teplin et al. (2000) in an assessment of stress in mothers of children with severe breath-holding spells concluded that mothers showed an altered perception of themselves and questioned their competence as parents. The findings suggest that mothers of children are at risk for developing dysfunctional parenting behaviours and their children are at risk for developing behaviour problems.

Harrison et al. (2000) studied stress levels of grandparents raising children with behavioural disorders versus levels of parents raising children with behaviour disorders. Results of this study indicate that parents exhibit higher levels of stress relative to grandparents.

Barkley et al (2001) compare two family therapies were using teens with attention-deficit/hyperactivity disorder. Ninety-seven families were assigned to either 18 sessions of problem-solving communication training (PSCT) alone or behaviour management training (BMT) for 9 sessions followed by PSCT for 9 sessions (BMT/PSCT). Both treatments demonstrated significant improvement in ratings of parent-teen conflicts at the midpoint but did not differ. By post treatment, both produced improvement on ratings and observations but did not differ. Significantly more families dropped out of PSCT alone than out of BMT/PSCT. At most, 23% of families showed reliable change either by midpoint or by post treatment, with no differences between therapies. Yet 31-70% of families were normalized. Group-level change and normalization rates support treatment efficacy, whereas indices of reliable change are less impressive.

McCleary (2002) observed that Attention deficit hyperactivity disorder (ADHD) and disruptive behaviour disorders are among the most common reasons for referrals of adolescents to mental health services. Attention Deficit Hyperactivity Disorder is associated with significant morbidity in terms of social functioning and adjustment of both adolescents and their parents. Social workers serving adolescents in any setting are likely to encounter clients with Attention Deficit Hyperactivity Disorder and provide some form of

psychosocial treatment for these adolescents and their families. However, practice with this population has not been well-addressed in the social work literature. The question addressed is how theories and research on parenting stress inform social work practice with parents of adolescents with Attention Deficit Hyperactivity Disorder.

Monastra et al (2002) studied the participation of one hundred children, ages 6–19, who were diagnosed with attention-deficit/hyperactivity disorder (ADHD), either inattentive or combined types, examining the effects of Ritalin, EEG biofeedback, and parenting style on the primary symptoms of Attention Deficit Hyperactivity Disorder. All of the patients participated in a 1-year, multimodal, outpatient program that included Ritalin, parent counselling, and academic support at school (either a 504 Plan or an IEP). Fifty-one of the participants also received EEG biofeedback therapy. Post treatment assessments were conducted both with and without stimulant therapy. Significant improvement was noted on the Test of Variables of Attention and the Attention Deficit Disorders Evaluation Scale when participants were tested while using Ritalin. However, only those who had received EEG biofeedback sustained these gains when tested without Ritalin. The results of a Quantitative Electroencephalographic Scanning Process revealed significant reduction in cortical slowing only in patients who had received EEG biofeedback. Behavioural measures indicated that parenting style exerted a significant moderating effect on the expression of behavioural symptoms at home but not at school.

Sulch (2002) concluded that better quality of life in patients receiving conventional multidisciplinary care may be attributable to improved social functioning and greater attention to higher function and caregiver needs during rehabilitation.

Currier (2004) says that behaviour modification and medication have been proven to be the most effective interventions for children with Attention Deficit Hyperactivity Disorder. For these treatments to be effective, utilization of mental health care services as well as compliance with treatment recommendations is necessary. There has been shown lower care utilization among minorities for the treatment of behavioural disorders. In addition, lack of adherence among these populations to Attention Deficit Hyperactivity Disorder treatment is not explained by Socio Economic Status, parenting stress, or family coping. An alternative explanation may be parental knowledge of Attention Deficit Hyperactivity Disorder and opinions of commonly used treatments. The present investigation examined the effect of a brief knowledge intervention aimed at increasing knowledge of Attention Deficit Hyperactivity Disorder on treatment acceptability of commonly utilized treatments for Attention Deficit Hyperactivity Disorder in a low SES, minority population seeking initial services at a multidisciplinary behaviour clinic for Attention Deficit Hyperactivity Disorder. Participants included 48 female guardians. They completed a demographic questionnaire, the Conners' Parent Rating Scale-Revised: Long Form (CPRS-R:L), six Treatment Evaluation Inventory – Short Forms (TEI-SF), and an Attention-Deficit/Hyperactivity Disorder Knowledge Survey (AKOS-R). Upon their next visit to the clinic, participants were randomly assigned to one of two groups. One group received an educational video intervention while the other group watched a control video. Following

the videos, all participants again completed six TEI-SF's and the AKOS-R. Results revealed that parent ratings of their child's behaviour did not correlate with treatment acceptability ratings. Baseline knowledge was low and increased significantly for the experimental group when compared to the control group demonstrating good treatment integrity, $F(1, 45) = 29.37$, $p = .01$. A significant negative correlation was identified between changes in knowledge as assessed by the AKOS-R and the changes in the TEI-SF diet iv intervention ($r = -.43$, $p = .01$, $r2 = .19$). Change in knowledge accounted for 18% of the change in treatment acceptability of the diet intervention ($R2 = .18$). Changes in knowledge scores did not otherwise relate to changes in treatment acceptability ratings. Overall, it appears that adding a parental educational component to the treatment of children with Attention Deficit Hyperactivity Disorder will not lead to increased acceptability of empirically supported treatments with this population.

Tracy et al (2005) assessed the effectiveness of a targeted 9-week parent stress management program (PSM) on the parenting stress, mood, family functioning, parenting style, locus of control, and perceived social support of parents of children diagnosed with DSM-IV Attention Deficit Hyperactivity Disorder. Sixty-three parents from 42 families were randomly assigned to 1 of 2 conditions: immediate treatment or wait-list control. Results of the randomized control trial showed that for mothers, completion of the PSM program was accompanied by significant reductions in parent-domain parenting stress together with significant improvements in parenting style (verbosity, laxness, over-reactivity). For fathers, completion of the program was associated with a reduction in verbosity only. Anonymously completed consumer satisfaction questionnaires demonstrated a high degree of satisfaction with the PSM program.

Cocoran (2006) observed that given high rates of attention-deficit/hyperactivity disorder (ADHD) diagnosed in children, knowledge of effective treatment is crucial. To this end, a meta-analysis of parent-involved psychosocial treatment was undertaken to determine its effect on a number of outcomes salient to children with Attention Deficit Hyperactivity Disorder. Sixteen studies met the criteria for the meta-analysis. Findings indicated that the impact of treatment on Attention Deficit Hyperactivity Disorder was low compared to comparison and/or control conditions, whereas child-internalizing symptoms and academic problems were better affected by family involvement. Teachers reported the highest effect sizes followed by parents themselves. Although parent involvement might be important for affecting the internalizing symptoms and academic problems that plague children with Attention Deficit Hyperactivity Disorder, Attention Deficit Hyperactivity Disorder and externalizing symptoms might be better targeted by other interventions.

Stein (2006) reported results of a large national survey indicate that families of children with attention-deficit hyperactivity disorder show very high levels of stress, compared with families of children with other special health care needs.

Mactavish et.al. (2007) reports results drawn from phase one of a larger, multi-year study, the purpose was to highlight the perspectives of family caregivers (i.e., biological and adoptive parents, and adult siblings) of individuals with intellectual disability on the meaning of Quality Of Life (QOL) and the influence of vacation behaviour in its

construction. Data collection was done via focus groups, while a grounded theory approach was employed as the analytical framework. For the participants in this study, personal health and basic need fulfilment were foundational elements, with QOL being a much broader and encompassing concept that integrates meaningful and enriching social connections with friends and family, and perceived control, freedom and independence. Financial resources, quality respite, and health and impairment concerns specific to the family member with a disability also were key factors that had the capacity to facilitate or constrain life quality. Respite and health/impairment issues also demonstrate how caregivers' personal perspectives about QOL often meld with concerns affecting other family members-hence blurring the distinction between individual and family conceptions of life quality. Revealed as unique to this research and population group, are the complex features of family vacations that involve a child with intellectual disability (e.g., "outsiders" on vacations), which illustrate how typical and atypical costs and benefits of vacationing are magnified.

Kollins (2007) suggested that they have long recognized that a diagnosis of Attention Deficit Hyperactivity Disorder results in significant impairments in a variety of domains of daily functioning. It may be somewhat surprising, then, that the assessment of QOL as an endpoint for clinical trials is a relatively new phenomenon. In any case, we have clear evidence that the assessment of Attention Deficit Hyperactivity Disorder symptoms alone in the context of treatment planning and monitoring, while quick and easy, is probably not sufficient to produce optimal clinical gains. Clinicians should strive to develop individualized treatment goals for their Attention Deficit Hyperactivity Disorder patients, which include target behaviours and a straightforward way to measure them. By addressing

the individual treatment needs of Attention Deficit Hyperactivity Disorder patients, the probability of success is improved, which is likely to lead to better overall treatment adherence and overall reductions in impairment. As noted, several resources are available for developing individualized treatment plans that adhere to these recommendations.

West et al (2008) aimed to identify levels of depression in mothers of children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) and to determine whether maternal depressive severity varied according to the child's Attention Deficit Hyperactivity Disorder subtype. Data was obtained using the self-administered Beck Depression Inventory (BDI) which was completed and returned by 80 mothers from a randomly selected clinical sample. Mothers of Attention Deficit Hyperactivity Disorder Combined Type children self-report significantly higher levels of depressive severity than mothers of Attention Deficit Hyperactivity Disorder Predominantly Inattentive Type children. Furthermore, mothers of more than one Attention Deficit Hyperactivity Disorder child report significantly higher levels of depression than mothers of a single Attention Deficit Hyperactivity Disorder child. The results suggest that there may be serious maternal health consequences associated with parenting a child (or children) with Attention Deficit Hyperactivity Disorder, particularly for mothers of Attention Deficit Hyperactivity Disorder Combined Type children or mothers of more than one Attention Deficit Hyperactivity Disorder child. Furthermore, the differences between mothers' BDI scores according to their child's Attention Deficit Hyperactivity Disorder subtype suggests that depression in mothers of Attention Deficit Hyperactivity Disorder children is not a homogeneous entity and that future intervention strategies may need to be adapted accordingly.

Lowe et al (2008) state that Attention deficit hyperactivity disorder (ADHD) is a condition typically arising in childhood, which untreated, can have consequences reaching into adolescence and beyond. Effective pharmacological treatment is available and has become widespread in the West. Outcomes for both the child with Attention Deficit Hyperactivity Disorder and the parent may be influenced by the nature of interaction between them. The authors of this article aim to review published research examining the interaction between parents and their children with Attention Deficit Hyperactivity Disorder. A PubMed search was conducted of studies written in English between 2000 and 2007 with the keywords Attention Deficit Hyperactivity Disorder and parenting. Child Attention Deficit Hyperactivity Disorder elicits high levels of parental stress and maladaptive parenting. The presence of parental psychopathology is common and influences the parent's response to the child's Attention Deficit Hyperactivity Disorder symptoms. Optimizing parent—child interaction and parental psychiatric status may improve outcomes for both parent and child.

REVIEW REPORT

The above studies explore various factors relating to parents and the families of children with Attention Deficit Hyperactivity Disorder. These issues involve parental stress, parental psychopathology, parental-child interaction, parental/family disharmony and parental training. Gender differences between fathers and mothers relating to stress has also been studied. It was noted that studies relating to the quality of life of patients was available. There is a lacuna in studies relating to the quality of life of caregivers.

After evaluating the above findings, it was constructed by the investigator that as a lacuna existed in Indian research with regard to the various factors associated with Attention Deficit Hyperactivity Disorder, further investigation would throw light on the various

clinical, psychological and social aspects of Attention Deficit Hyperactivity Disorder in Indian children. Also, the study of parental quality of life, stress and self-esteem was considered appropriate for further enhancement in the comprehensive management of Attention Deficit Hyperactivity Disorder in the Indian setting.

CHAPTER III

METHODOLOGY

The investigator carried out the enquiry on ‘Clinical, Psychological and Social aspects of Attention Deficit Hyperactivity Disorder in Children’ through systematic observations and procedures by adopting the following methodology:

3.1 AIM

To study the various clinical, psychological and social factors associated with Attention Deficit Hyperactivity Disorder.

3.2 STATEMENT OF THE PROBLEM

i. In what specific areas is the quality of life, stress and self esteem of parents whose children have Attention Deficit Hyperactivity Disorder affected?

ii. Whether there is an influence on parental quality of life, stress and self esteem in relation to the type of Attention Deficit Hyperactivity Disorder, co-morbid features, family structure, age, birth order, gender of the child, whether or not the child is on a management program?

iii. Is there a difference in the way fathers and mothers respond to this developmental disorder?

3.3 OBJECTIVES OF THE STUDY

i. To obtain details with regard to family history, birth history, clinical history, educational and developmental history of children with Attention Deficit Hyperactivity Disorder.

ii. To obtain a cognitive profile of children with Attention Deficit Hyperactivity Disorder, including Intelligence Quotient (IQ), Memory, Comprehension, Form Perception, Abstract Reasoning and Visuo-Motor Functions.

iii. To study the presence of co-morbid disorders such as learning disability, autistic features, tendency to be slow learners and mental retardation.

iv. To study the various factors associated with Attention Deficit Hyperactivity Disorder based on the type of Attention Deficit Hyperactivity Disorder, gender and age of the child.

v. To examine the symptoms and other maladaptive behaviours associated with Attention Deficit Hyperactivity Disorder, its intensity and occurrence in relation to the type of Attention Deficit Hyperactivity Disorder, age and gender of the child.

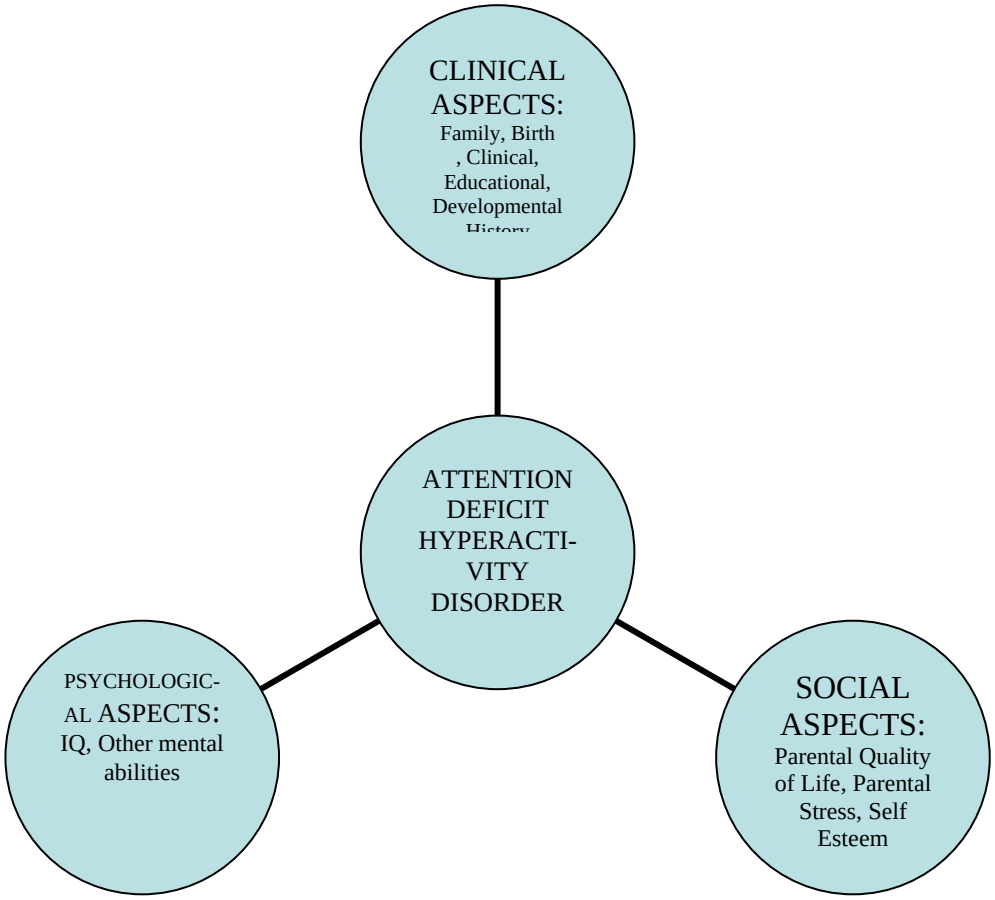
vi. To study the social aspects of Attention Deficit Hyperactivity Disorder including parental Quality of Life, Parenting Stress and Self Esteem.

vii. To determine the difference among parental domains in relation to the types of Attention Deficit Hyperactivity Disorder, co-morbid factors like learning difficulty, autistic features and mental retardation, the gender, age and birth order of the child, the family structure and parental disharmony.

viii. To determine the difference among parental domains with regard to whether or not the child is on a management program.

ix. To determine if there is a relationship among the various parental domains studied.

Figure 2: A **schematic representation** of the clinical, psychological and social aspects of Attention Deficit Hyperactivity Disorder is shown below:



3.4 HYPOTHESES OF THE STUDY

1. i There will be a significant difference in the IQ (Intelligence Quotient) of children with Attention Deficit Hyperactivity Disorder in relation to the type of Attention Deficit Hyperactivity Disorder, namely Combined type, Hyperactive type and Inattentive type.

   ii. There will be a significant difference in the PIQ (Performance Intelligence Quotient) of children with Attention Deficit Hyperactivity Disorder in relation to the type of Attention Deficit Hyperactivity Disorder, namely Combined type, Hyperactive type and Inattentive type.

   iii. There will be a significant difference between the IQ and PIQ of children with Attention Deficit Hyperactivity Disorder.

iv. There will be a significant relationship between IQ and PIQ of children with Attention Deficit Hyperactivity Diosrder.

2. There will be a significant difference in the intensity of symptoms in children based on the type of Attention Deficit Hyperactivity Disorder.

3. There will be a significant difference in the intensity of maladaptive behaviours in children based on the type of Attention Deficit Hyperactivity Disorder.

4. There will be a significant relationship among IQ, Symptom Intensity and Maladaptive behaviours in children based on the type of Attention Deficit Hyperactivity Disorder.

5. There will be a significant difference in the symptom intensity for children with Attention Deficit Hyperactivity Disorder based on the type of family.

6. There will be a significant difference in the maladaptive behaviours in children with Attention Deficit Hyperactivity Disorder based on the type of family.

7.

    i. There will be a significant difference in the symptom intensity of children with Attention Deficit Hyperactivity Disorder when mothers are working in comparison to non- working mothers.

    ii. There will be a significant relationship in the maladaptive behaviours in children with Attention Deficit Hyperactivity Disorder when mothers are working in comparison to non- working mothers.

8. There will be a significant association between the symptom intensity and maladaptive behaviours in children with Attention Deficit Hyperactivity Disorder and the presence of parental disharmony.

9.a

i. There will be a significant association among various social factors such as Quality of Life, Parental Stress and Self Esteem experienced by fathers whose children have Attention Deficit Hyperactivity Disorder.

ii. There will be a significant association among the various social factors such as Quality of Life, Parental Stress and Self Esteem experienced by mothers whose children have Attention Deficit Hyperactivity Disorder.

9. b

There will be a significant association between fathers' and mothers' whose children have Attention Deficit Hyperactivity Disorder based on

a. Overall Quality of life
b. Health
c. Physical Aspects
d. Psychological Aspects
e. Social Relationships
f. Environmental Aspects
g. Depression
h. Total Quality of Life
i. Parental Stress
j. Positive themes of parenting
k. Negative themes of parenting
l. Self esteem

10. There will be a significant difference between fathers and mothers whose children have Attention Deficit Hyperactivity Disorder based on

a. Overall Quality of Life
b. Health
c. Physical Aspects
d. Psychological Aspects
e. Social Relationships
f. Environmental Aspects
g. Depression
h. Total Quality of Life
i. Parental Stress
j. Positive themes of parenting
k. Negative themes of parenting
l. Self esteem

11.

i. There will be a significant difference in the various domains of Quality of Life of fathers of children with Attention Deficit Hyperactivity Disorder based on
    a. Type of Attention Deficit Hyperactivity Disorder
    b. Age of the child
    c. Birth Order
    d. Gender of the child
    e. Whether the child is on a management program
ii. There will be a significant difference in the various domains of Quality of Life of mothers of children with Attention Deficit Hyperactivity Disorder based on
    a. Type of Attention Deficit Hyperactivity Disorder
    b. Age of the child
    c. Birth Order
    d. Gender of the child
    e. Whether the child is on a management program

12.

i. There will be a significant difference in the various domains of Parental Stress of fathers of children with Attention Deficit Hyperactivity Disorder based on
    a. Type of Attention Deficit Hyperactivity Disorder
    b. Age of the child
    c. Birth Order
    d. Gender of the child
    e. Whether the child is on a management program

ii. There will be a significant difference in the various domains of Parental Stress of mothers of children with Attention Deficit Hyperactivity Disorder based on
    a. Type of Attention Deficit Hyperactivity Disorder
    b. Age of the child
    c. Birth Order
    d. Gender of the child
    e. Whether the child is on a management program

13.

i. There will be a significant difference in the Self Esteem of fathers of children with Attention Deficit Hyperactivity Disorder based on
    a. Type of Attention Deficit Hyperactivity Disorder
    b. Age of the child
    c. Birth Order
    d. Gender of the child
    e. Whether the child is on a management program

ii. There will be a significant difference in the Self Esteem of mothers of children with Attention Deficit Hyperactivity Disorder based on
    a. Type of Attention Deficit Hyperactivity Disorder
    b. Age of the child
    c. Birth Order

d. Gender of the child
e. Whether the child is on a management program

14.

There will be a significant difference in the quality of life, parental stress and self esteem of parents in relation to the presence of co-morbid features in children with Attention Deficit Hyperactivity Disorder.

3.5 OPERATIONAL DEFINITIONS

i. Attention Deficit Hyperactivity Disorder

In this study, Attention Deficit Hyperactivity Disorder is diagnosed according to DSM-IV criteria.

DSM IV Criteria for Diagnosis of

Attention Deficit Hyperactivity Disorder

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:
        a. Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
        b. Often has difficulty sustaining attention in tasks or play activities
        c. Often does not seem to listen when spoken to directly
        d. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure to understand instructions)
        e. Often has difficulty organizing tasks and activities
        f. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as school work or homework)
        g. Often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
        h. Is often easily distracted by extraneous stimuli

i. 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

c. **Hyperactivity**

d. Often fidgets with hands or feet or squirms in seat

e. Often leaves seat in classroom or in other situations in which remaining seated is expected

f. 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)

g. Often has difficulty playing or engaging in leisure activities quietly

h. Is often "on the go" or often acts as if "driven by a motor"

i. Often talks excessively

Impulsivity

j. Often blurts out answers before questions have been completed

k. Often has difficulty awaiting turn

l. Often interrupts or intrudes on others (e.g. butts into conversations or games)

B. Some hyperactive, impulsive or inattentive symptoms that caused impairment were present before 7 years of age

C. Some impairment from the symptoms is present in two or more settings (e.g., at 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 other psychotic disorder, and are not better accounted for by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, personality disorder.)

ii. Quality of Life

'Quality of life is defined as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns'.

-WHOQOL group (1994)

iii. Parental Stress

Experience of stress in the process of parenting is considered parental stress.

iv. Self Esteem

Morris Rosenberg (1965) and social-learning theorists defined self-esteem in terms of a stable sense of personal worth or worthiness.

3.6 RESEARCH DESIGN

The design is predisposed to be a causal comparative study and is descriptive in nature. This purports to investigate the clinical, psychological and social aspects of Attention Deficit Hyperactivity Disorder. Survey method and Psychological assessment were used to serve the purpose of data collection.

3.7 SAMPLING PROCEDURE

The sample selected for the present study were children with Attention Deficit Hyperactivity Disorder and their parents residing in TamilNadu (India), using purposive sampling technique. Attention Deficit Hyperactivity Disorder involves a persistent pattern of inattention and/or hyperactivity that is more frequent and severe than is typically observed in individuals at a comparable level of development. The DSM-IV provides health care professionals criteria for the diagnosis of Attention Deficit Hyperactivity Disorder. Diagnosis of children with Attention Deficit Hyperactivity Disorder was carried out by a clinical neurosychologist, paediatrician and psychiatrist based on the guideline

provided in the DSM-IV. This involved a detailed case history and observation on the child. Parents and care givers were the informants. All consecutive cases diagnosed with Attention Deficit Hyperactivity Disorder were included in the sample.

Children with Attention Deficit Hyperactivity Disorder who were on a management program including medication, speech therapy, occupational therapy, special education and remedial coaching were also assessed and their parents interviewed. All consecutive cases of children on the management program were included in the sample.

3.8 TOOLS USED FOR THE STUDY

The survey method, including interview and questionnaire methods were adopted to elicit data from the parents whose children had Attention Deficit Hyperactivity Disorder. These methods of data collection are quite popular particularly in cases of large enquiries. In the structured interview, details regarding the birth history, developmental history, educational history, family history and clinical history were obtained from the parents.

The questionnaires used in this study consisted of three segments:

i. WORLD HEALTH ORGANIZATION QUALITY OF LIFE QUESTIONNAIRE (WHOQOL-BREF)

The World Health Organization Quality of Life (WHOQOL) instruments have been devised to assess individuals' perception of the quality of life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.

The WHOQOL-100 was developed simultaneously in 15 field centres around the world. The important aspects of quality of life and ways of asking about quality of life were

drafted on the basis of statements made by patients with a range of diseases, by well people and by health professionals in a variety of cultures. The instrument was rigorously tested to assess its validity and reliability in each of the field centres. As its name suggests, the full WHOQOL-100 is a detailed instrument consisting of 100 items for respondents to answer. It has been field-tested at 37 sites and exists in 29 language versions

Background and Development

The WHOQOL-BREF was developed from the WHOQOL-100 at the same time as the WHOQOL-100. Like the WHOQOL-100 it consists of 24 facets grouped into four domains related to quality of life (Physical Health, Psychological, Social Relationships, and Environment) as well as one facet on overall quality of life and general health. One item from each facet, which best explains a large portion of the variance, was selected for inclusion in the WHOQOL-BREF. Two items were selected from the overall quality of life facet for a total of 26 items. In addition to data from the original 15 field centres used for development of the WHOQOL-100, five additional centres were also included. The WHOQOL-BREF can be used in particular cultural settings, but at the same time results are comparable across cultures. The WHOQOL-BREF is now available in over 20 different languages, including Tamil, Hindi and Kannada.

Psychometric Properties- Reliability and Validity

The WHOQOL Group completed field-testing the 26-item short version -the WHOQOL-BREF - in 23 countries. Using the data from these field trials, the Group also examined the short version's psychometric properties. Analyses of internal consistency and test-retest

reliability, discriminant validity, construct validity and confirmatory factors were carried out using data from a sample of more than 11,000 respondents drawn from the general population and from primary care settings serving patients with physical and mental disorders. They showed that the instrument has excellent psychometric properties.

These results indicate that the WHOQOL-BREF provides a cross-culturally valid assessment of the quality of life as reflected by four domains: physical, psychological, social and environmental. Moreover, it permits direct comparison with data obtained with WHOQOL-100.

Reliability was good for each of the four domains (Cronbach alpha 0.66 to 0.84). Domain scores calculated using the WHOQOL-BREF were very similar to scores calculated from the WHOQOL-100 with correlation between the two measures of 0.89 to 0.95. The WHOQOL-BREF has the same ability as the WHOQOL-100 to discriminate between healthy and sick individuals. Over a two to eight week period, test-retest reliability for the four domains was generally high (0.66 to 0.87). As with the WHOQOL-100, factor analysis confirmed the comparative fit of the 4-domain model to the global quality of life. The Physical Health domain loads most heavily on the global quality of life measure while the Social Relationships domain loads the least.

Structure

The structure of the WHOQOL reflects the issues that scientific experts and lay people in each of the field centres felt were important to quality of life. The six broad domains of quality of life are:

1. Physical health
2. Psychological

3. Level of independence
4. Social relationships
5. Environment
6. Spirituality/religion/personal beliefs.

Within these domains are a total of 24 facets, each with four items. A further four general items covering subjective overall quality of life and health make up the total of 100 items in the assessment. All items are rated on a five-point scale.

The WHOQOL-BREF contains two of the general items from overall quality of life and health, and one item from each of the remaining 24 facets included in the WHOQOL-100. In the current WHOQOL-BREF, therefore, these domains have been merged, leaving four major domains: physical; psychological; social relationships; and environment.

Administration

The WHOQOL-BREF can be self-administered. However, an interviewer who reads out the questions can assist respondents who may have difficulties, such as the elderly, severely ill or illiterate. The WHOQOL instruments focus on individuals' own views of their well being. The core WHOQOL instruments can assess quality of life in a variety of situations and population groups. In addition, modules are being developed to allow more detailed assessments of specific populations (e.g. cancer patients, refugees, the elderly and those with certain diseases, such as HIV/AIDS).

Scoring the WHOQOL instruments

The WHOQOL-100 produces scores relating to particular facets of quality of life (e.g. positive feelings, social support, financial resources), scores relating to larger domains (e.g. physical, psychological, social relationships) and a score relating to overall quality of life and general health. The WHOQOL-BREF produces domain scores, but not individual facet scores. Each response is rated on a five-point scale. Obtained scores can range between 26 and 130. Higher scores indicate a higher quality of life.

Uses of the WHOQOL-BREF

- In clinical practice the WHOQOL instruments may be used with other forms of assessment, giving valuable information that can help the practitioner to make the best choices in patient care. In addition, they may be used to measure change in quality of life over the course of treatment.
- Improving the doctor-patient relationship: The physician's increased understanding of how disease affects a patient's quality of life will change and improve the interaction between patient and doctor.
- In assessing the effectiveness and relative merits of different treatments: The WHOQOL instruments can form part of the evaluation of treatments. For example, chemotherapy for cancer may prolong a person's life, but may only do so at considerable cost to the quality of that life. The use of the WHOQOL instruments to look at changes in the person's wellbeing over the course of treatment can give a much fuller picture.

- In health services evaluation: In the periodic review of the completeness and quality of medical services, the patients' concerns are of importance. The instruments provide an invaluable supplementary appraisal of health care services, by yielding a measure of the relationship between the health care service and patients' quality of life, and also by directly presenting a measure of patients' perception of the quality and availability of health care.
- In research: The WHOQOL instruments provide new insights into the nature of disease by assessing how disease impairs the subjective wellbeing of a person across a whole range of areas.
- In policy-making: When health providers implement new policies, the effect of policy changes on the quality of life of people in contact with health services must be evaluated. The WHOQOL instruments allow such monitoring of policy changes.

ii. PARENTAL STRESS SCALE

Judy.O.Berry developed the Parental Stress Scale in 1997.

Authors and Background.

Judy O. Berry is a professor of psychology specializing in developmental and family psychology. Her research centres on parental stress in dual-earner families and in families that includes a child with disabilities or chronic illness, and she developed (with Warren Jones) the Parental Stress Scale. She has received a number of advocacy awards for her work with children and families, including the Tarbel Achievement Award and the Medicine Wheel Award. She is the author (with Michael Hardman) of 'Lifespan Perspectives of Family and Disability'.

Structure of the Scale

The Parental Stress Scale is a self-report scale that contains 18 items representing pleasure or positive themes of parenthood (emotional benefits, self-enrichment, personal development) and negative components (demands on resources, opportunity costs and restrictions). The scale is intended to be used for the assessment of parental stress for both mothers and fathers and for parents of children with and without clinical problems.

Administration and Scoring

The Parental Stress Scale is a self-administered questionnaire. Respondents are asked to agree or disagree with items in terms of their typical relationship with their child or children and to rate each item on a five-point scale: strongly disagree (1), disagree (2), undecided (3), agree (4), and strongly agree (5). The 8 positive items are reverse scored so that possible scores on the scale can range between 18-90. Higher scores on the scale indicate greater stress.

Psychometric Properties- Reliability and Validity

The Parental Stress Scale demonstrated satisfactory levels of internal reliability (.83), and test-retest reliability (.81). The scale demonstrated satisfactory convergent validity with various measures of stress, emotion, and role satisfaction, including perceived stress, work/family stress, loneliness, anxiety, guilt, marital satisfaction, marital commitment, job satisfaction, and social support. Discriminant analyses demonstrated the ability of the scale to discriminate between parents of typically developing children and parents of children with both developmental and behavioural problems.

iii. ROSENBERG'S SELF ESTEEM SCALE

The Rosenberg Self-Esteem Scale (RSE; Rosenberg 1965) is an attempt to achieve a uni-dimensional measure of global self-esteem. It was designed to be a Gutman scale, which means that the RSE items were to represent a continuum of self-worth statements ranging from statements that are endorsed even by individuals with low self-esteem to statements that are endorsed only by persons with high self-esteem. Rosenberg (1965) scored his 10-question scale that was presented with four response choices, ranging from Astrongly agree to strongly disagree, as a six-item Guttman scale. The first item included questions 1 through 3 and received a positive score if two or three of its questions were answered positively. Questions 4 and 5 and questions 9 and 10 were aggregated into two other items that were scored positively, if both questions in the item had positive answers. Questions 6 through 8 counted individually formed the final three items. For the negatively worded RSE questions, responses that expressed disagreement and, hence, were consistent with high self-esteem, were considered positive or endorsed. Rosenberg (1965) demonstrated that his scale was a Guttman scale by obtaining high enough reproducibility and scalability coefficients.

Multiple studies have been conducted to investigate the validity and reliability of the RSE. Their results are summarized in table 3. Whereas some studies have shown that the scale is a valid and reliable unidimensional measure of self-esteem, others have found that the RSE is comprised of two factors. Goldsmith (1986) suggested that the RSE factor structure depends on age and other characteristics of the sample. It is notable that the studies presented in the table match Goldsmith's hypothesis. Investigations that used high school or college students supported the scales unidimensionality (Silbert and Tippett 1965;

Crandal 1973; McCarthy and Hoge 1982), or obtained factors that were interdependent and had similar patterns of correlates (Rosenberg 1979; Hagborg 1993). In contrast, analyses completed with adults identified two meaningful and, sometimes, independent dimensions of personality (Kaplan and Pokorny 1969; Shahani et al 1990). The identified dimensions were mostly defined by negatively worded vs. Positively worded RSE items and were called self-derogation and self enhancement (Shahani et al. 1990).

Not all studies that employed the RSE have used Guttman scaling to obtain a self esteem score. Many researchers have preferred to calculate the scale=s total score by summing subjects= responses across all ten TSE questions (Kaplan and Pokormy 1969; McCarthy and Hose 1982; Shahani et al 1990; Hagborg 1993). Further, the investigators have differed in the number of points that they have included in the response scale for each questions. For example, McCarthy and Hoge (1982), similarly to Rosenberg, used a 4-point scale, whereas Shahani et al. (1990) employed a 6-point scale.

Background:

This scale contains ten items that can be used to assess global self-esteem (Rosenberg, 1965). A six item version of the scale is also available which has been shown to have good internal consistency with African American Adolescents (McCreary et al., 1996).

Developer(s):

Morris Rosenberg

Reliability:

Internal consistency: Cronbach alpha (English version) = 0.78 Cronbach alpha (Spanish version) = 0.77 (Lorenzo-Hernandez and Ouellette, 1998)

Detailed Psychological Analysis was carried out for the children with Attention Deficit Hyperactivity Disorder. The tools used included:

iv. BINET KAMAT INTELLIGENCE SCALE

Terman's first revision of the scale originally devised by Binet and Simon was published in 1916, and constituted a pioneering effort to apply the methods of precision which were being developed into a new science of psychology to the measurement of intellectual abilities. This revision of the Binet-Simon scale incorporate the features that characterize scales of the Binet type- that is the use of age standards, the kinds of mental functions brought to play and the concept of measurement as a 'general intelligence', which functions as mental adaptability to new problems. The use of this scale both for research and clinical diagnostic purposes formed the broad experimental basis for later revisions. In 1937, the most extensive and comprehensive of Stanford revisions was published by Terman and Merrill. This second revision of the scale, following upon years of experience in the practical use of intelligence tests, incorporated the results of a ten year research and standardization project. The third revision of the scale was in 1960. This version was adapted to the Indian setting and standardized by V.V.Kamat.

The Binet Kamat Test of intelligence for measuring general mental ability is an age scale that can be used for a wide age range: starting from 3 years to 22 years. The test consist of items at each age level which include vocabulary, language development, comprehension, sentence building, similarities and differences, analogies sentence repetition, auditory perception, social reasoning and visuo-motor co-ordination ability. It is useful to evaluate

the basal age- the ability to pass all the test items at the particular age and the terminal age - the inability to pass any of the items on a particular age level. The mental age and the IQ are useful in understanding the cognitive ability of the child. The Binet Kamat Test of Intelligence - the Hindi version can be used for children well versed with the Hindi language.

v. SEGUIN FORM BOARD TEST

Seguin (1907) is acknowledged to have developed one of the first non-verbal tests of cognitive ability- the Seguin Form Board test. The Seguin Form Board test and the many modifications of the original instrument requires examinees to place geometric pieces into cut-outs of the same shape and size. The child is required to carry out this task over three trials. The mental age of the child is obtained from the available norms and the Performance Intelligence Quotient (PIQ) is calculated.

vi. THE VISUAL MOTOR GESTALT TEST

The Bender Gestalt Test, or the Bender Visual Motor Gestalt Test, is a psychological assessment instrument used to evaluate visual-motor functioning and visual perception skills in both children and adults. Scores on the test are used to identify possible organic brain damage and the degree of maturation of the nervous system. The Bender Gestalt was developed by psychiatrist Lauretta Bender in1938 to assess the maturation and development in children.

Purpose

The Bender Gestalt Test is used to evaluate visual maturity, visual motor integration skills, style of responding, reaction to frustration, ability to correct mistakes, planning and organizational skills, and motivation. Copying figures requires fine motor skills, the ability to discriminate between visual stimuli, the capacity to integrate visual skills with motor skills, and the ability to shift attention from the original design to what is being drawn.

Precautions

The Bender Gestalt Test should not be administered to an individual with severe visual impairment unless his or her vision has been adequately corrected with eyeglasses.

Additionally, the test should not be given to an examinee with a severe motor impairment, as the impairment would affect his or her ability to draw the geometric figures correctly. The test scores might thereby be distorted.

The Bender Gestalt Test has been criticized for being used to assess problems with organic factors in the brain. This criticism stems from the lack of specific signs on the Bender Gestalt Test that are definitively associated with brain injury, mental retardation, and other physiological disorders. Therefore, when making a diagnosis of brain injury, the Bender Gestalt Test should never be used in isolation. When making a diagnosis, results from the Bender Gestalt Test should be used in conjunction with other medical, developmental, educational, psychological, and neuropsychological information.

Finally, psychometric testing requires administration and evaluation by a clinically trained examiner. If a scoring system is used, the examiner should carefully evaluate its reliability and validity, as well as the normative sample being used. A normative sample is a group

within a population who takes a test and represents the larger population. This group's scores on a test are then be used to create "norms" with which the scores of test takers are compared.

Description

The Bender Gestalt Test is an individually administered pencil and paper test used to make a diagnosis of brain injury. There are nine geometric figures drawn in black. These figures are presented to the examinee one at a time; then, the examinee is asked to copy the figure on a blank sheet of paper. Examinees are allowed to erase, but cannot use any mechanical aids (such as rulers). The popularity of this test among clinicians is most likely the short amount of time it takes to administer and score. The average amount of time to complete the test is five to ten minutes.

The Bender Gestalt Test lends itself to several variations in administration. One method requires that the examinee view each card for five seconds, after which the card is removed. The examinee draws the figure from memory. Another variation involves having the examinee draw the figures by following the standard procedure. The examinee is then given a clean sheet of paper and asked to draw as many figures as he or she can recall. Last, the test is given to a group, rather than to an individual (i.e., standard administration). It should be noted that these variations were not part of the original test.

Results

A scoring system does not have to be used to interpret performance on the Bender Gestalt Test; however, there are several reliable and valid scoring systems available. Many of the

available scoring systems focus on specific difficulties experienced by the test taker. These difficulties may indicate poor visual-motor abilities that include:

- Angular difficulty: This includes increasing, decreasing, distorting, or omitting an angle in a figure.
- Bizarre doodling: This involves adding peculiar components to the drawing that have no relationship to the original Bender Gestalt figure.
- Closure difficulty: This occurs when the examinee has difficulty closing open spaces on a figure, or connecting various parts of the figure. This results in a gap in the copied figure.
- Cohesion: This involves drawing a part of a figure larger or smaller than shown on the original figure and out of proportion with the rest of the figure. This error may also include drawing a figure or part of a figure significantly out of proportion with other figures that have been drawn.
- Collision: This involves crowding the designs or allowing the end of one design to overlap or touch a part of another design.
- Contamination: This occurs when a previous figure, or part of a figure, influences the examinee in adequate completion of the current figure. For example, an examinee may combine two different Bender Gestalt figures.
- Fragmentation: This involves destroying part of the figure by not completing or breaking up the figures in ways that entirely lose the original design.
- Impotence: This occurs when the examinee draws a figure inaccurately and seems to recognize the error, then, he or she makes several unsuccessful attempts to improve the drawing.

- Irregular line quality or lack of motor coordination: This involves drawing rough lines, particularly when the examinee shows a tremor motion, during the drawing of the figure.
- Line extension: This involves adding or extending a part of the copied figure that was not on the original figure.
- Omission: This involves failing to adequately connect the parts of a figure or reproducing only parts of a figure.
- Overlapping difficulty: This includes problems in drawing portions of the figures that overlap, simplifying the drawing at the point that it overlaps, sketching or redrawing the overlapping portions, or otherwise distorting the figure at the point at which it overlaps.
- Perseveration: This includes increasing, prolonging, or continuing the number of units in a figure. For example, an examinee may draw significantly more dots or circles than shown on the original figure.
- Retrogression: This involves substituting more primitive figures for the original design—for example, substituting solid lines or loops for circles, dashes for dots, dots for circles, circles for dots, or filling in circles. There must be evidence that the examinee is capable of drawing more mature figures.
- Rotation: This involves rotating a figure or part of a figure by 45° or more. This error is also scored when the examinee rotates the stimulus card that is being copied.
- Scribbling: This involves drawing primitive lines that have no relationship to the original Bender Gestalt figure.

- Simplification: This involves replacing a part of the figure with a more simplified figure. This error is not due to maturation. Drawings that are primitive in terms of maturation would be categorized under "Retrogression."
- Superimposition of design: This involves drawing one or more of the figures on top of each other.
- Workover: This involves reinforcing, increased pressure, or overworking a line or lines in a whole or part of a figure.

Additionally, observing the examinee's behaviour while drawing the figures can provide the examiner with an informal evaluation and data that can supplement the formal evaluation of the examinee's visual and perceptual functioning. For example, if an examinee takes a large amount of time to complete the geometric figures, it may suggest a slow, methodical approach to tasks, compulsive tendencies, or depressive symptoms. If an examinee rapidly completes the test, this could indicate an impulsive style.

vii. VINELAND ADAPTIVE BEHAVIOUR SCALE

The development of the Vineland Adaptive Behaviour Scales relied heavily upon the following definition, as well as historic trends in the conceptualization and measurement of adaptive behaviour. Adaptive behaviour was defined as the performance of the daily activities required for personal and social sufficiency. The potent principles inherent include

- Adaptive behaviour is age related.
- Adaptive behaviour is defined by standards or expectations of other people and
- Adaptable behaviour is defined by typical performance, not ability.

The Vineland Social Maturity Scale (Doll, 1935, 1965) is a venerable instrument widely used in a variety of settings and many of its characteristics have been retained in the Vineland Adaptive Behaviour Scales. The Survey form of the Vineland Adaptive Behaviour Scales replaces the original Vineland Social Maturity Scale. The revised Vineland measures adaptive behaviour through administration of the scales to a respondent familiar with the daily activities of the individual being assessed. The Scale consists of five domains: Communication, Daily Living Skills, Socialization, Motor Skills and Maladaptive Behaviour Domain. In this study, only the Maladaptive Behaviour domain was administered. It consists of 36 items that are maladaptive. During the detailed interview, parents were required to provide appropriate details regarding maladaptive behaviours in children with Attention Deficit Hyperactivity Disorder.

viii. DIGITS SPAN

Digits Span appears on various forms of the Weschler Scales and there is a similar test on the Stanford Binet Intelligence Scale. It is often included as part of the mental status examination. Digit Span has two components- Digits Forward and Digits Backward. In most test uses of digit span, the components are treated as two parts of a single scale, although there is increasing evidence that the recall of digits forward is different from the recall of digits backward. Digits forward is a passive memory test (Rapaport et al, 1968) requiring only that the client recall the material heard in the same order received. As such, it comes close to a ‘pure’ test of auditory registration, with the requirement that the client be alert to receive the material but not process it.

By contrast, digits backward, requires a manipulation of the material in working memory (Banken 1985, Black 1986, Lezak 1995). The digits backward score is generally one to two numbers lower than the digits forward score. (Black and Strub 1978, Kaplan et al 1991, Lezak 1995).

Scores for digit span are frequently lower than those for other sub-tests in individuals with Attention Deficit Hyperactivity Disorder. Low scores on Digit Span are frequently accompanied by low scores on the other tests on the concentration index. There are however a number of individuals with Attention Deficit Hyperactivity Disorder who do not show the deficit in digit span. These individuals are able to muster attention for the brief period required for the task, but are unable to hold this level of alertness for longer memory demands.

3.9 PILOT STUDY

All the tools used in this study, as mentioned above, were standardized questionnaires and tests. The pilot study helped the investigator to be equipped with an understanding of the overall objective of the study. The pilot study enabled easy and convenient elicitation of information from the respective sample.

One-tenth of the sample size i.e., 20 children and their parents (20 fathers and 20 mothers) were used for the pilot study. Suitable modifications were carried out in order to place less pressure on the subjects while completing the required questionnaires. The results of the pilot study enabled the researcher to confirm reliability of the scales used for the study. The questionnaires translated into Tamil were made available to enable the respondents to answer with ease.

3.10 COLLECTION OF DATA

The data was obtained from parents and detailed psychological assessment was carried out on children with Attention Deficit Hyperactivity Disorder from August 2006 to May 2008. The data was collected at the Kanchi Kamakoti CHILDS Trust Hospital in the city of Chennai, TamilNadu, India. All consecutive cases that fulfilled the DSM-IV criteria were included in the study. After initial rapport building and orientation, a detailed case history including a structured interview was conducted to obtain the clinical factors from the parents. They were then administered the questionnaires with appropriate instructions. The investigator was present throughout the time of filling the questionnaires to clarify their doubts. There was no time limit for completing the questionnaires. The questionnaires were administered over two sessions in order to make it less monotonous and tiring for the respondents. A psychological assessment of the child's cognitive functions was then carried out over two sessions. The child's IQ, Visuomotor functions and presence of Specific Learning Difficulty were assessed.

3.11 PROCESSING AND ANALYSES OF DATA

The data collected was coded and analyzed. The statistics used for the study were descriptive and inferential statistics. The statistics used included:

i. Frequency Distributions in the form of one-way, two-way and multi-way tables and graphs.
ii. Tests such as Chi Square, binomial, t-test, F-test, post-hoc and

iii. Analyses such as Analyses of Variance, correlation, Factor, Cluster and Discriminant Analysis.

CHAPTER IV

RESULTS AND DISCUSSION

This chapter deals with the outcome of the data analyses and the interpretation of results. The results are presented in the following sequence:

4.1 General profile of children with Attention Deficit Hyperactivity Disorder and their parents

4.2 Clinical factors of children with Attention Deficit Hyperactivity Disorder

4.3 Psychological factors of children with Attention Deficit Hyperactivity Disorder

4.4 Social factors relating to children with Attention Deficit Hyperactivity Disorder

a. Family structure
b. Working mothers
c. Parental disharmony
d. Socialization
e. Relationship among parental domains
f. Parental Quality of Life
g. Parental Stress
h. Parental Self Esteem
i. Parental Aspects and Co-morbid features
j. Cluster Analysis
k. Factor Analysis
l. Discriminant Analysis

4.1 GENERAL PROFILE OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER AND THEIR PARENTS

A sample of two hundred and two (202) children with Attention Deficit Hyperactivity Disorder and their parents were chosen for the present study. One hundred and seventy two (172) fathers and two hundred (200) mothers were available to complete the questionnaires. Details with regard to age, education, siblings and other relevant information were collected and are presented in the following tables.

i. TYPE OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

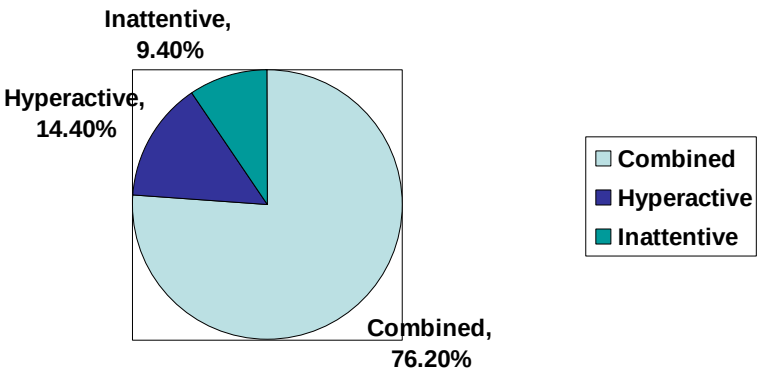
Table 1

Types of Attention Deficit Hyperactivity Disorder in children

	Type	
	N	%
Combined	154	76.2
Hyperactive	29	14.4
Inattentive	19	9.4
Total	202	100.0

76.2% of children studied were diagnosed as having the combined type of Attention Deficit Hyperactivity Disorder, 14.4% belonged to the Hyperactive type and 9.4% belonged to the Inattentive type.

Figure 3: Types of Attention Deficit Hyperactivity Disorder



ii. GENDER

Table 2

Gender of children with Attention Deficit Hyperactivity Disorder

	Gender	
	N	%
Female	49	24.3
Male	153	75.7
Total	202	100.0

It is noted that out of the children with Attention Deficit Hyperactivity Disorder studied, 75.7% were males and 24.3% were females.

Figure 4: Gender of children with
Attention Deficit Hyperactivity Disorder

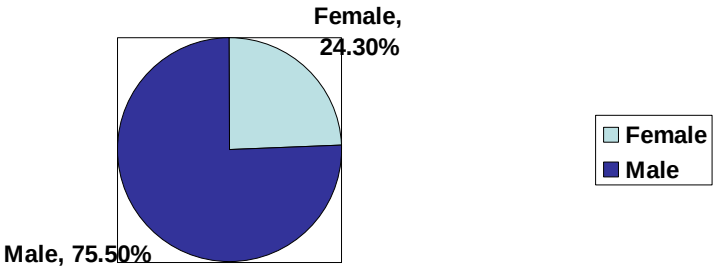


Table 3

Types of Attention Deficit Hyperactivity Disorder based on the gender of children

	Type					
	Combined		Hyperactive		Inattentive	
Gender	N	%	N	%	N	%
Female	34	22.1	6	20.7	9	47.4
Male	120	77.9	23	79.3	10	52.6
Total	154	100.0	29	100.0	19	100.0

Of the children diagnosed with Attention Deficit Hyperactivity Disorder Type- Hyperactivity, 79.3% were males and 20.7% females. In Attention Deficit Hyperactivity Disorder Type- Inattentive, 52.6% were males and 47.4% were females. In the Attention Deficit Hyperactivity Disorder Type- Combined, it was observed that 77.9% of children were males and 22.1% were females.

iii. AGE

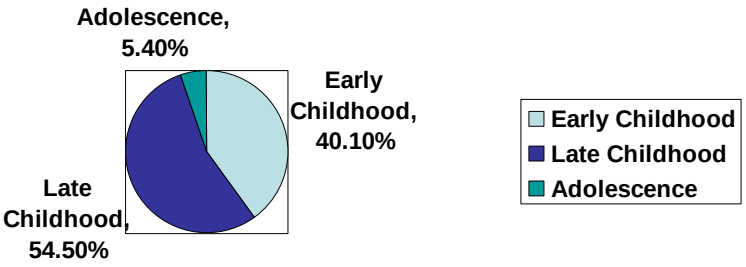
Table 4

Age of children with Attention Deficit Hyperactivity Disorder

	Age	
	N	%
Early Childhood	81	40.1
Late Childhood	110	54.5
Adolescence	11	5.4
Total	202	100.0

Of the 202 children assessed, 40.1% belonged to the category- early childhood (up to 6 years), 54.5% belonged to late childhood (7 to 12 years) and 5.4% were adolescents. The mean age of children studied was 6.67 years.

Figure 5: Age of children with Attention Deficit Hyperactivity Disorder



iv. PARENTS-EDUCATION

Table 5

Education of fathers of children with Attention Deficit Hyperactivity Disorder

	Father - Education	
	N	%
Higher Secondary	13	6.4
Graduate	84	41.6
Post Graduate	37	18.3
Professional	38	18.8
Not Available	30	14.9
Total	202	100.0

Table 6
Education of mothers of children with Attention Deficit Hyperactivity Disorder

	Mother – Education	
	N	%
Higher Secondary	39	19.3
Graduate	119	58.9
Post Graduate	34	16.8
Professional	8	4.0
Not Available	2	1.0
Total	202	100.0

Of the fathers involved in this study, 6.4% completed schooling, 41.6% were graduates, 18.3% were post-graduates and 18.8% were professionals. Details of 14.9% of fathers were not available due to parental separation. Of the mothers involved in this study, 19.3%

completed schooling, 58.9% were graduates, 16.8% were post-graduates, 4% were professionals. Details of 1% of mothers were not available due to parental separation.

v. PARENTS- OCCUPATION

Table 7

Occupation of fathers of children with Attention Deficit Hyperactivity Disorder

	Father - Occupation	
	N	%
Business	62	30.7
Engineer	22	10.9
Service	74	36.6
Others	14	6.9
Not Available	30	14.9
Total	202	100.0

Table 8
Occupation of mothers of children with Attention Deficit Hyperactivity Disorder

	Mother - Occupation	
	N	%
Homemaker	121	59.9
Service	42	20.8
Teacher	20	9.9
Business	12	5.9
Others	5	2.5
Not Available	2	1.0
Total	202	100.0

Of the fathers studied, 30.7% were businessmen, 10.9% were engineers, 36.6% were in service and 6.9% were involved in other occupations. Of the mothers, 59.9% were home-

makers, 20.8% were in service, 9.9% were teachers, 5.9% were into business and 2.5% were involved in other occupations. There was no incidence of unemployment among the parents studied.

vi. BIRTH ORDER

Table 9
Birth order of children with Attention Deficit Hyperactivity Disorder

	Birth Order	
	N	%
1 of twins	1	.5
2 of twins	1	.5
First	32	15.8
Only child	142	70.3
Second	25	12.4
Second twin	1	.5
Total	202	100.0

69.8% of the children studied were single/only children, 15.8% were first born, 12.4% were second born and 2% were twins.

vii. SIBLINGS

Table 10

Age of siblings of children with Attention Deficit Hyperactivity Disorder

	Siblings - Age	
	N	%
< 5 Years	21	10.4
5 - 10 Yrs	19	9.4
10-15 Yrs	14	6.9

15 and More	7	3.5
No siblings	141	69.8
Total	202	100.0

Table 11
Education of children with Attention Deficit Hyperactivity Disorder

	Siblings - Class	
	N	%
Infant	10	5.0
Primary	33	16.3
High School	14	6.9
Higher Secondary	4	2.0
No siblings	141	69.8
Total	202	100.0

Of the children studied, 69.8% were single children. 10.4% had siblings less than 5 years of age, 9.4% had siblings between 5 and 10 years, 6.9% had siblings 10 to 15 years of age and 3.5% had siblings older than 15 years.

DISCUSSION

It was interesting to note that the maximum number of children studied (76.2%) were diagnosed with Attention Deficit Hyperactivity Disorder- Combined type, with features of both hyperactivity and inattention. This is in contrast to the study on the prevalence of Attention Deficit Hyperactivity Disorder in a paediatric setting by Malhi et al (1998) which estimated 50% of children diagnosed to be Attention Deficit Hyperactivity Disorder- Hyperactive type, while 35% were Attention Deficit Hyperactivity Disorder- Inattentive type and only 15% were Attention Deficit Hyperactivity Disorder- Combined type. In

contrast, Attention Deficit Hyperactivity Disorder- Combined type was the most diagnosed sub-type (53.8%) in a study in Pakistan by Qureshi et al in 2003.

With regard to gender, Attention Deficit Hyperactivity Disorder was more common among boys than girls. According to Gratz et al (2005), Attention Deficit Hyperactivity Disorder was 2.3 times more common in boys than girls. He also noted that gender does not interact with correlates for Attention Deficit Hyperactivity Disorder overall, but it may play a role in sub-types. In this study, it was noted that within Attention Deficit Hyperactivity Disorder-Inattentive type, the proportion of manifestation of inattention symptoms between boys and girls was not significant. Attention Deficit Hyperactivity Disorder- Inattentive type was diagnosed commonly in both boys and girls.

The average age of children in this study was 6.67 years, indicating that the diagnosis of Attention Deficit Hyperactivity Disorder at this age is most frequent. This may be attributed to the fact that in the Indian setting, a child would have been exposed to the formal education system and at this stage may develop difficulty coping with the regime. This may be factor for the most referrals during this stage.

There was no significant factor noted with regard to parental education and occupation in this study. Although Kennedy (2000), of the Division of Human Development and Disability, National Center on Birth Defects and Developmental Disabilities, said that Attention Deficit Hyperactivity Disorder diagnosis was significantly more often in families with incomes below the poverty threshold than in families with incomes at or above the poverty threshold, Attention Deficit Hyperactivity Disorder was diagnosed across all strata of society in this study.

Rommelse et al., (2008) observed that the occurrence of Attention Deficit Hyperactivity Disorder was not related to birth order. It was interesting to note in this study that 69.8% of children studied were single children.

4.2 CLINICAL FACTORS OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

This includes prenatal, peri-natal and post-natal factors. It should be noted that three children observed in this study were adopted. Details regarding maternal pregnancy and other neonatal factors were not available for two of the three adopted children.

i. MATERNAL AGE

Table 12

Maternal age at delivery for children with Attention Deficit Hyperactivity Disorder

	Age at Delivery	
	N	%
< 25 Years	93	46.5
25-30 Years	98	49.0
> 30 Years	9	4.5
Total	200	100.0

At the time of delivery, 4.5% of mothers were below 25 years of age, 49% of mothers between 25 to 30 years and 4.5% of mothers were above 30 years of age.

ii. CONSANGUINITY

Table 13

Consanguinity in parents of children with Attention Deficit Hyperactivity Disorder

	Consanguinity	
	N	%
Yes	53	26.2
No	149	73.8
Total	202	100.0

With regard to consanguinity, in marriage, 73.8% of couples were non-consanguineous, while consanguinity was seen in 26.2% of couples.

iii. PARENTAL HISTORY OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

Table 14

Parental history of Attention Deficit Hyperactivity Disorder

	Father - History		Mother - History	
	N	%	N	%
Yes	5	2.9	2	1.0
No	166	97.1	198	99.0
Total	171	100.0	200	100.0

Around 2.9% of fathers and 1% of mothers reported features /symptoms of Attention Deficit Hyperactivity Disorder in their childhood.

iv. SIBLING HISTORY OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

Table 15

Difficulty in siblings of children with Attention Deficit Hyperactivity Disorder

	Siblings - Any Difficulty	
	N	%
No difficulty	50	24.8
ADHD+SLD	3	1.5
SLD	8	4.0
No Siblings	141	69.8
Total	202	100.0

1.5% of siblings of the children with Attention Deficit Hyperactivity Disorder had similar features with the co-morbid feature of Specific Learning Difficulty. Around 4% of siblings had only features of Specific Learning Difficulty, while 24.8% of the siblings had no difficulty. It is noted that 69.8% of children did not have children.

v. RELATIVES WITH HISTORY OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

Table 16

Relatives with history of Attention Deficit Hyperactivity Disorder

	Relatives with Difficulty	
	N	%
Yes	12	5.9
No	190	94.1
Total	202	100.0

5.9% of children with Attention Deficit Hyperactivity Disorder reported that relatives of the first and second degree had similar symptoms. 94.1% of relatives were symptom free.

vi. CONCEPTION

Table 17

Conception of children with Attention Deficit Hyperactivity Disorder

	Conception	
	N	%
Adopted	3	1.5
IVF	5	2.5
Natural	194	96.0
Total	202	100.0

96% of the children studied were conceived naturally, 2.5% by the process of in-vitro fertilization and 1.5% were adopted.

vii. MATERNAL HEALTH

Table 18

Maternal health conditions during gestation

	Health	
	N	%
Thyroid	27	13.4
Hypertension	19	9.4
Diabetes	15	7.4
No Difficulty	141	69.8
Total	202	100.0

During gestation, 69.8% of mothers experienced no difficulty, 13.4% had thyroid, 9.4% had hypertension and 7.4% had gestational diabetes.

viii. MATERNAL STRESS

Table 19

Stress experienced by mothers during gestation

	Personal Factors	
	N	%
Not Available	2	1.0
Emotional Trauma	72	35.6
No Difficulty	128	63.4
Total	202	100.0

64.4% of mothers had no emotional difficulty during gestation, while 35.6% experienced varying degrees of emotional trauma.

ix. MULTIPLE GESTATION

Table 20

Multiple gestation of children with Attention Deficit Hyperactivity Disorder

	Multiple Gestation	
	N	%
Yes	4	2.0
No	196	98.0
Total	200	100.0

Of the children studied, 2% were twins.

x. TERM OF DELIVERY

Table 21

Term of delivery of children with Attention Deficit Hyperactivity Disorder

	Term of Delivery	
	N	%
Not Available	1	.5
Full term	195	96.5
Post term	3	1.5
Pre term	3	1.5
Total	202	100.0

1.5% of children studied were pre term and 1.5% of children post term. The gestational period of 96.5% of children studied was full term.

xi. TYPE OF DELIVERY

Table 22

Type of delivery of children with Attention Deficit Hyperactivity Disorder

	Type of Delivery	
	N	%
Not Available	1	.5
C-Section	120	59.4
Normal	81	40.1
Total	202	100.0

40.1% of mothers experienced normal delivery while 59.4% of the children studied were delivered via C-section.

xii. BIRTH CRY

Table 23

Birth cry in children with Attention Deficit Hyperactivity Disorder

	Birth Cry	
	N	%
Not Available	2	1.0
Delayed	13	6.4
Immediate	187	92.6
Total	202	100.0

The birth cry of 92.6% of children was immediate, while 6.4% of children had delayed birth cry.

xiii. BIRTH WEIGHT

Table 24

Birth Weight of children with Attention Deficit Hyperactivity Disorder

	Mean	SD
Birth Weight	2.90	.37

The average birth weight of children studied was 2.90 kilograms.

xiv. POST NATAL FACTORS

Table 25

Post Natal factors in children with Attention Deficit Hyperactivity Disorder

	Yes		No		Total	
	N	%	N	%	N	%
Convulsions	36	17.8	166	82.2	202	100.0
Asphyxia	12	6.0	189	94.0	201	100.0
Illnesses	6	3.0	196	97.0	202	100.0
Hospitalization	6	3.0	196	97.0	202	100.0
Child Abuse	1	.5	201	99.5	202	100.0

It was noted that that 17.8% of children studied had at least one or more episodes of convulsions mostly febrile in mature. 6% had a history of birth asphyxia, 3% reported previous episodes of childhood illnesses, and 3% had a history of hospitalization. Child abuse was reported in 0.5% of children studied.

xv. IMMUNIZATION

Table 26

Immunization in children with Attention Deficit Hyperactivity Disorder

	Immunization	
	N	%
Up to age	202	100.0
Total	202	100.0

All children studied were immunized up to age.

xvi. MILESTONES

Table 27

Achievement of milestones in children with Attention Deficit Hyperactivity Disorder

	Milestone- Motor		Milestone- Speech	
	N	%	N	%
Mild delay	37	18.3	75	37.1
Moderate delay	1	.5	26	12.9
Normal	164	81.2	92	45.5
Severe delay	0	.0	9	4.5
Total	202	100.0	202	100.0

Figure 6: Achievement of Motor Milestones in children with Attention Deficit Hyperactivity Disorder

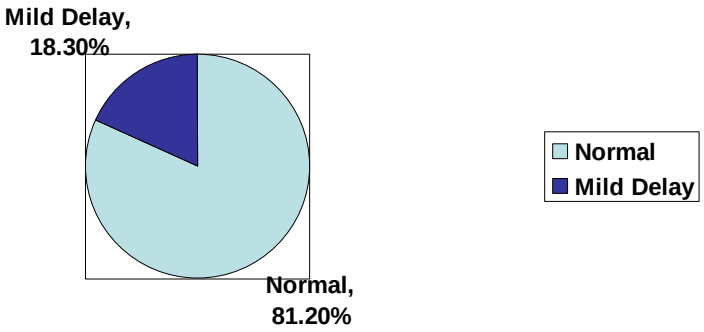


Figure 7: Achievement of Speech in children with Attention Deficit Hyperactivity Disorder

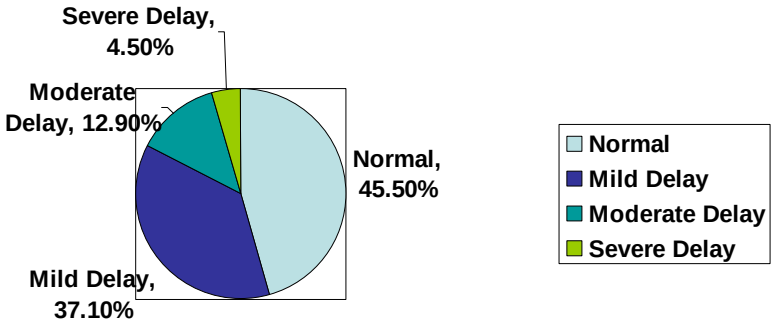


Table 28

Milestone Achievement based on the type of Attention Deficit Hyperactivity Disorder

	Combined				Hyperactive				Inattentive			
	Milestone-Motor		Milestone-Speech		Milestone-Motor		Milestone-Speech		Milestone-Motor		Milestone-Speech	
	N	%	N	%	N	%	N	%	N	%	N	%
Mild delay	28	18.2	57	37.0	6	20.7	13	44.8	3	15.8	5	26.3
Moderate delay	1	.6	22	14.3	0	.0	3	10.3	0	.0	1	5.3
Normal	125	81.2	69	44.8	23	79.3	12	41.4	16	84.2	11	57.9
Severe delay	0	.0	6	3.9	0	.0	1	3.4	0	.0	2	10.5
Total	154	100.0	154	100.0	29	100.0	29	100.0	19	100.0	19	100.0

If the achievement of a milestone was delayed by six months, the investigator recorded it as a mild delay. A delay of six months to one year was recorded as a moderate delay and a delay of more than a year was recorded as a severe delay. It was noted that the motor milestones were achieved at the appropriate age for 81.2% of children studied. Mild delay in achieving motor milestones was observed in 18.3% of children and a moderate delay in 0.5% of children. It is seen that speech was delayed in 37.1% of children studied. 12.9% of children had a moderate speech delay and 4.5% of children had a severe speech delay. 45.5% of children studied spoke at the appropriate age. With regard to the types of Attention Deficit Hyperactivity Disorder, it was noted that most children achieved motor milestones at the appropriate time, but a significant delay in speech is noted across all three types of Attention Deficit Hyperactivity Disorder.

DISCUSSION

Buitelaar (2008) reported that pregnancy and delivery complications increase the risk for Attention Deficit Hyperactivity Disorder. It was reported that the specific complications implicated included toxamemia, poor maternal health, maternal age, long duration of labour, foetal distress and low birth weight. In this study, the investigator observed that around 30% of children had a history of distress on the above mentioned domains, thus increasing their risk of developing Attention Deficit Hyperactivity Disorder.

Mukhopadhyay (2006) and Bener et al (2008) reported that consanguinity had no impact on Attention Deficit Hyperactivity Disorder. It was noted by the investigator in this study that the parents of the maximum number of children with Attention Deficit Hyperactivity Disorder had a non-consanguineous marriage.

Goos et al (2007) suggested heightened paternal transmission relative to maternal transmission in Attention Deficit Hyperactivity Disorder that is suggestive of the involvement of sex chromosomes or sex specific or hormonal factors. In the current study, this is noted in about 4% of the children studied.

Pliszka(2007) suggested that siblings of Attention Deficit Hyperactivity Disorder children have particular difficulties and are a particular risk for psychological impairment, depression, drug abuse and language difficulties. This is noted in 5.5% of siblings in the present.

Furaone (1994) reported that the second degree relatives of Attention Deficit Hyperactivity Disorder probands were at increased risk for Attention Deficit Hyperactivity Disorder compared with second degree relatives of the normal control proband. This study helped in the clarification of the mechanism of familial transmission of Attention Deficit Hyperactivity Disorder and is seen in nearly 6% of children observed in the current study.

Rodriguez et al (2004) reported that prenatal exposure to maternal stress was independently associated with later symptoms of Attention Deficit Hyperactivity Disorder, particularly for boys. This is seen in around 36% of children in the current study, whose mothers reported experiencing varying degrees of stress during gestation.

Ornoy et al (1993) reported that Attention Deficit Hyperactivity Disorder is associated with speech delay and suggested that speech delay may be an early clinical sign of Attention Deficit Hyperactivity Disorder as seen in 80% of their sample. In the current study around 54.3% of children experienced speech delay and this may be attributed to the risk of developing Attention Deficit Hyperactivity Disorder.

Barkley et al (1990) observed that the onset of major motor milestones may not be definitely delayed for children with Attention Deficit Hyperactivity Disorder as a group, as may as 52% of such children compared to up to 35% of typical children are characterized as having poor motor coordination. As observed the achievement of motor milestones was normal in 81.2% of children in this study, indicating that only speech delay is frequently a precursor for Attention Deficit Hyperactivity Disorder.

Enriquez et al (2007) suggest that the increasing number of vaccines given to children may play an important role in the increasing incidence of Attention Deficit Hyperactivity Disorder. It is noted that all children in this study were immunized up to age.

Therefore, the etiology of Attention Deficit Hyperactivity Disorder encompasses genetic and environmental factors. Pre, peri and post natal stressors are environmental factors that play an important role in its etiology. Zappitelli (2001) reports that children with Attention Deficit Hyperactivity Disorder show higher percentages of pre, peri and post natal insult when compared to unaffected children. In this study, early risk factors include poor maternal health, maternal stress and speech delay. It is therefore critical to reduce potential stressors in pregnant women and observe early clinical signs in children during their development.

4.3 PSYCHOLOGICAL FACTORS OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

i. HANDEDNESS

Table 29

Handedness in children with Attention Deficit Hyperactivity Disorder

	Handedness	
	N	%
Ambi	39	19.3
Left	10	5.0
Right	153	75.7
Total	202	100.0

Table 30

Forced change in handedness in children with Attention Deficit Hyperactivity Disorder

	Forced Change	
	N	%
Yes	103	51.0
No	99	49.0
Total	202	100.0

75.7% of children in this study were reported to be right-handed, 5% left-handed and 19.3% ambidextrous. It was interesting to note that a history of forced change in handedness was noted in 51% of right handed children.

ii. DIFFICULTIES IN ACADEMICS

Table 31

Difficulties in academics for children with Attention Deficit Hyperactivity Disorder

	Difficulties with academics	
	N	%
Yes	129	63.9
No	73	36.1
Total	202	100.0

63.9% of children in this study reported difficulties with academic related activities.

iii. CO-MORBID FEATURES

Table 32

Co-morbid features in children with Attention Deficit Hyperactivity Disorder

	Yes		No		Total	
	N	%	N	%	N	%
ADHD	202	100.0	0	.0	202	100.0
SLD	107	53.0	95	47.0	202	100.0
Autistic Features	21	10.4	181	89.6	202	100.0
Slow Learner	25	12.4	177	87.6	202	100.0
Mental Retardation	10	5.0	192	95.0	202	100.0

Figure 8: Co-morbid Features in children with Attention Deficit Hyperactivity Disorder

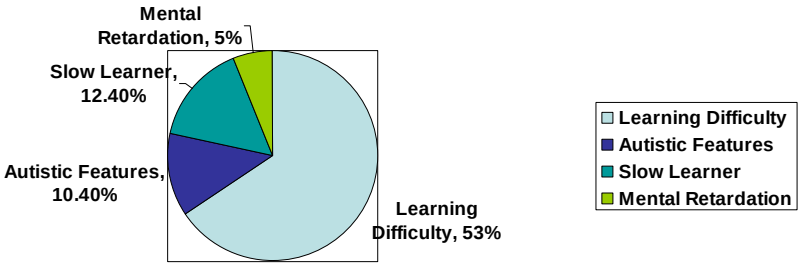


Table 33

Co-morbid features in association with Attention Deficit Hyperactivity Disorder

	Problems	
	N	%
ADHD & SLD	90	44.6
ADHD alone	59	29.2
ADHD & Autistic features	19	9.4
ADHD, SLD & Slow learner	16	7.9
ADHD & Mental Retardation	8	4.0
ADHD & Slow learner	7	3.5
ADHD, Autistic, & Slow Learner	1	.5
ADHD, Autistic & Mental Retardataion	2	1
Total	202	100.0

The most common feature associated with Attention Deficit Hyperactivity Disorder was Specific Learning Difficulty, presenting in 53% of children studied. Autistic features were reported in 10.4%, mental retardation in 5% and 12.4% were slow learners. It is also

observed that only 29.2% of children studied were diagnosed with ‘pure’ Attention Deficit Hyperactivity Disorder. One or more co-morbid features were reported in nearly 70.8% of the children studied. A combination of Attention Deficit Hyperactivity Disorder with Specific Learning Difficulty was the most commonly reported condition, presented in about 44.6% of children in this study.

iv. IQ and PIQ

Table 34

Mean IQ and PIQ of children with Attention Deficit Hyperactivity Disorder

	Mean	SD
IQ	92	21
PIQ	101	22

Table 35

Classification of IQ of children with Attention Deficit Hyperactivity Disorder

	Classification	
	N	%
Above avg	24	11.9
Average high	40	19.8
Average low	62	30.7
Borderline	40	19.8
Mid MR	18	8.9
Moderate MR	4	2.0
Severe MR	3	1.5
Superior	11	5.4
Total	202	100.0

Table 36

IQ and PIQ based of the types of Attention Deficit Hyperactivity Disorder

	Type					
	Hyperactive		Inattentive		Combined	
	Mean	SD	Mean	SD	Mean	SD
IQ	97	24	85	19	92	21
PIQ	105	20	96	19	102	20

Table 37

Comparison of IQ and PIQ based on the types of

Attention Deficit Hyperactivity Disorder

Oneway - ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
IQ	Between Groups	1547.838	2	773.919	1.779	.171
	Within Groups	86570.756	199	435.029		
	Total	88118.594	201			
PIQ	Between Groups	943.169	2	471.585	1.207	.301
	Within Groups	77755.212	199	390.730		
	Total	78698.381	201			

Table 38

Association of IQ and PIQ in children with Attention Deficit Hyperactivity Disorder

Correlations

		IQ	PIQ
IQ	Pearson Correlation	1	.927(**)
	Sig. (2-tailed)	.	.000
	N	202	202

PIQ	Pearson Correlation	.927(**)	1
	Sig. (2-tailed)	.000	.
	N	202	202
** Correlation is significant at the 0.01 level (2-tailed).			

The mean IQ of children in this study was 92, being in the average low range. This factor is noted in the classification table also. With regard to the types of Attention Deficit Hyperactivity Disorder, it is seen that the group of children with Attention Deficit Hyperactivity Disorder- Hyperactive type had the highest mean IQ (97), while the group of children with Attention Deficit Hyperactivity Disorder-Inattentive type had the lowest mean IQ (85). There was no significant difference between groups with regard to IQ.

The above findings lead to the inference that **hypothesis 1 i** 'There will be a significant difference in the IQ of children with Attention Deficit Hyperactivity Disorder in relation to the type of Attention Deficit Hyperactivity Disorder, namely Combined type, Hyperactive type and Inattentive type' is not confirmed.

The mean PIQ of children with Attention Deficit Hyperactivity Disorder in this study was 101, being in the average high range. With regard to the types of Attention Deficit Hyperactivity Disorder, it is seen that children with hyperactive and combined types had PIQ in the average high range (105 and 102 respectively) while children of the inattentive type had PIQ in the average low range (96). There was no significant difference between groups with regard to PIQ.

The above findings lead to the inference that **hypothesis 1 ii** 'There will be a significant difference in the PIQ of children with Attention Deficit Hyperactivity Disorder in

relation to the type of Attention Deficit Hyperactivity Disorder, namely Combined type, Hyperactive type and Inattentive type' is not confirmed.

A significant difference was noted between the IQ and PIQ scores of children with Attention Deficit Hyperactivity Disorder. Performance Intelligence in children with Attention Deficit Hyperactivity Disorder was better than the Verbal Intelligence Quotient. Also, a significant relationship was seen between the IQ and PIQ scores of children in this study. The above findings lead to the inference that **hypotheses 1 iii and iv "**There will be a significant difference between the IQ and PIQ of children with Attention Deficit Hyperactivity Disorder" and " There will be a significant relationship between IQ and PIQ of children with Attention Deficit Hyperactivity Disorder." are confirmed.

ANECDOTE

Master M.S., a right handed boy, aged 9 years 6 months was referred for features of restlessness and distractibility. His father was a businessman and his mother was a home maker. He hailed from a nuclear family and was an only child. His parents reported that he coped adequately with activities of daily living and social situations. He excelled in sports, and had average scholastic performance. They reported that he was restless, talkative and easily distractible. On psychological assessment, his Verbal IQ was 97- his intellectual functioning being in the average low range. His Performance IQ was 126- being in the above average range. A discrepancy was noted between his verbal and performance IQ. He was diagnosed to exhibit features of Attention Deficit Hyperactivity Disorder.

v. ATTENTION AND CONCENTRATION

Table 39

Digits forward and backward in children with

Attention Deficit Hyperactivity Disorder based on the age of children

	Early Childhood								Late Childhood								Adolescence			
	Female				Male				Female				Male				Male			
	Digits Forward		Digits Backward		Digits Forward		Digits Backward		Digits Forward		Digits Backward		Digits Forward		Digits Backward		Digits Forward		Digits Backward	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
0	7	33.3	17	85.0	12	20.0	54	90.0	1	3.6	13	46.4	0	.0	29	35.4	0	.0	0	.0
2	5	23.8	0	.0	4	6.7	1	1.7	0	.0	2	7.1	1	1.2	2	2.4	0	.0	1	9.1
3	5	23.8	3	15.0	19	31.7	3	5.0	2	7.1	10	35.7	4	4.9	31	37.8	0	.0	2	18.2
4	1	4.8	0	.0	19	31.7	0	.0	11	39.3	2	7.1	18	22.0	11	13.4	0	.0	6	54.5
5	3	14.3	0	.0	5	8.3	0	.0	9	32.1	1	3.6	30	36.6	9	11.0	6	54.5	2	18.2
6	0	.0	0	.0	1	1.7	0	.0	5	17.9	0	.0	27	32.9	0	.0	3	27.3	0	.0
7	0	.0	0	.0	0	.0	0	.0	0	.0	0	.0	2	2.4	0	.0	2	18.2	0	.0
9	0	.0	0	.0	0	.0	2	3.3	0	.0	0	.0	0	.0	0	.0	0	.0	0	.0
Total	21	100.0	20	100.0	60	100.0	60	100.0	28	100.0	28	100.0	82	100.0	82	100.0	11	100.0	11	100.0

Table 40

Digits forward and backward based on the type of

Attention Deficit Hyperactivity Disorder

	Combined				Hyperactive				Inattentive			
	Digits Forward		Digits Backward		Digits Forward		Digits Backward		Digits Forward		Digits Backward	
	N	%	N	%	N	%	N	%	N	%	N	%
0	15	9.7	85	55.6	3	10.3	18	62.1	2	10.5	10	52.6
2	7	4.5	2	1.3	1	3.4	1	3.4	2	10.5	3	15.8
3	23	14.9	37	24.2	5	17.2	7	24.1	2	10.5	5	26.3
4	37	24.0	15	9.8	9	31.0	3	10.3	3	15.8	1	5.3
5	40	26.0	12	7.8	6	20.7	0	.0	7	36.8	0	.0
6	28	18.2	0	.0	5	17.2	0	.0	3	15.8	0	.0

7	4	2.6	0	.0	0	.0	0	.0	0	.0	0	.0
9	0	.0	2	1.3	0	.0	0	.0	0	.0	0	.0
Total	154	100.0	153	100.0	29	100.0	29	100.0	19	100.0	19	100.0

Attention and Concentration in children with Attention Deficit Hyperactivity Disorder was studied using digits forward and backward. When observed with regard to age, it was seen that, during early childhood, boys had an average of 4 digits forward and 3 digits backward and girls had an average of 3 digits forward and 3 digits backward. During late childhood, boys had an average of 5 digits forward and 3 digits backward and girls had an average of 4 digits forward and 3 digits backward. During adolescence, boys had an average of 5 digits forward and 4 digits backward. These scores seem appropriate for age. With regard to the types of Attention Deficit Hyperactivity Disorder, children with the combined type had an average of 5 digits forward and 3 digits backward, children with the hyperactive type had an average of 4 digits forward and 3 digits backward and children with inattentive type had and average of 5 digits forward and 3 digits backward. No significant differences were observed.

vi. VISUOMOTOR DISTURBANCE

Table 41

Visuomotor disturbance in children with Attention Deficit Hyperactivity Disorder

	Visuomotor Disturbance	
	N	%
Mild	48	23.8
Moderate	51	25.2
NAP	81	40.1
Severe	22	10.9
Total	202	100.0

It was noted that most children with Attention Deficit Hyperactivity Disorder, had mild to moderate disturbance in the visuomotor gestalt function.

vii. SYMPTOMS CHECKLIST

Table 42

Symptoms in children with Attention Deficit Hyperactivity Disorder

	Yes		No		Total	
	N	%	N	%	N	%
Fails to give close attention to details	139	68.8	63	31.2	202	100.0
Makes careless mistakes	149	73.8	53	26.2	202	100.0
Has difficulty in sustaining attention	166	82.2	36	17.8	202	100.0
Does not seem to listen when spoken directly	134	66.3	68	33.7	202	100.0
Does not follow instructions	142	70.3	60	29.7	202	100.0
Fails to finish the work assigned	122	60.4	80	39.6	202	100.0
Has difficulty in organizing tasks and activities	110	54.5	92	45.5	202	100.0
Avoids activities that require sustained mental efforts	111	55.0	91	45.0	202	100.0
Often loses things	115	56.9	87	43.1	202	100.0
Often distracted by extraneous stimuli	132	65.3	70	34.7	202	100.0
Often forgetful in daily activities	102	50.5	100	49.5	202	100.0
Fidgets with hands or feet	145	71.8	57	28.2	202	100.0
Squirms on seat	147	72.8	55	27.2	202	100.0
Leaves seat when expected to be seated	147	72.8	55	27.2	202	100.0
Runs or climbs excessively	139	68.8	63	31.2	202	100.0
Has difficulty playing/engaging in leisure time activities	119	58.9	83	41.1	202	100.0
Often on the go	123	60.9	79	39.1	202	100.0
Talks excessively	110	54.5	92	45.5	202	100.0
Blurts answer before questions are completed	99	49.0	103	51.0	202	100.0
Has difficulty in waiting turn	129	63.9	73	36.1	202	100.0
Interrupt/intrudes on others	112	55.4	90	44.6	202	100.0

The DSM Checklist and Maladaptive Behaviour checklist results are converted into scores by converting Yes to each one of the categories a score of 1 and 0 to No. All the 21 items

of DSM and 36 items of the MBC are converted into percentage scores. Presence of 14 items (Yes found in 15 items) in the DSM checklist is equivalent to (15/21)*100 = 66.67 percent

Table 43
Symptom Checklist scores in children with Attention Deficit Hyperactivity Disorder

	Mean	SD
DSM -Symptom Checklist Scores	63.46	23.79

Table 44

Symptom Checklist scores based on the type of

Attention Deficit Hyperactivity Disorder

	Combined		Hyperactive		Inattentive	
	Mean	SD	Mean	SD	Mean	SD
DSM –Symptom Checklist Scores	68.27	23.02	52.71	22.22	40.85	11.15

Table 45

Comparison of symptom checklist scores based on the type of

Attention Deficit Hyperactivity Disorder

ANOVA						
		Sum of Squares	Df	Mean Square	F	Sig.
DSM -Symptom Checklist Scores	Between Groups	16632.663	2	8316.331	17.040	.000*
	Within Groups	97118.712	199	488.034		
	Total	113751.375	201			
*- Significant						

The most frequent symptoms reported by parents with regard to children with Attention Deficit Hyperactivity Disorder include having difficulty sustaining attention, making

careless mistakes, and difficulty remaining seated. The mean converted score for the children studied was 63.46, indicating that most symptoms on the DSM-IV were observed by parents. With regard to the types of Attention Deficit Hyperactivity Disorder, the most number of symptoms were reported in children with the combined type and fewer symptoms in children with the hyperactive and inattentive types. A significant difference is noted between groups with regard to the intensity and frequency of DSM-IV symptoms as reported by parents.

In this context, it is statistically evident that **hypothesis 2 '**There will be a significant difference in the intensity of symptoms in children based on the type of Attention Deficit Hyperactivity Disorder' is confirmed.

viii. MALADAPTIVE BEHAVIOURS

Table 46

Maladaptive behaviours in children with Attention Deficit Hyperactivity Disorder

	Yes		No		Total	
	N	%	N	%	N	%
Sucks thumbs or fingers	28	13.9	174	86.1	202	100.0
Overly dependent	16	7.9	186	92.1	202	100.0
Withdraws	16	7.9	186	92.1	202	100.0
Wets bed	110	54.5	92	45.5	202	100.0
Exhibits eating disturbance	1	.5	201	99.5	202	100.0
Exhibits sleep disturbance	16	7.9	186	92.1	202	100.0
Bites fingernails	83	41.1	119	58.9	202	100.0
Avoids school/work	79	39.3	122	60.7	201	100.0
Exhibits extreme anxiety	5	2.5	197	97.5	202	100.0
Exhibits tics	0	.0	202	100.0	202	100.0
Cries/laughs too easily	0	.0	202	100.0	202	100.0
Has poor eye contact	16	7.9	186	92.1	202	100.0

Exhibits excessive unhappiness	6	3.0	196	97.0	202	100.0
Grinds teeth during day or night	40	19.8	162	80.2	202	100.0
Too impulsive	114	56.4	88	43.6	202	100.0
Has poor attention and concentration	182	90.1	20	9.9	202	100.0
Overly active	186	92.1	16	7.9	202	100.0
Has temper tantrum	163	80.7	39	19.3	202	100.0
Defiant or Negativistic	24	11.9	178	88.1	202	100.0
Teases or bullies	1	.5	200	99.5	201	100.0

	Yes		No		Total	
	N	%	N	%	N	%
Shows lack of concentration	3	1.5	199	98.5	202	100.0
Les, cheats, steals	2	1.0	200	99.0	202	100.0
Too physically aggressive	4	2.0	198	98.0	202	100.0
Swears in inappropriate situations	0	.0	202	100.0	202	100.0
Runs away	0	.0	202	100.0	202	100.0
Stubborn or sullen	1	.5	201	99.5	202	100.0
Truant from school or work	0	.0	202	100.0	202	100.0
Engages in inappropriate sex activities	0	.0	202	100.0	202	100.0
Excessive/Peculiar preoccupation with objects/activities	0	.0	202	100.0	202	100.0
Exhibits non sensible thoughts	0	.0	202	100.0	202	100.0
Exhibits extremely peculiar mannerisms/habits	0	.0	202	100.0	202	100.0
Displays self-injuries behaviour	0	.0	202	100.0	202	100.0
Intentionally destroys own/others' properties	0	.0	202	100.0	202	100.0
Uses bizarre speech	0	.0	202	100.0	202	100.0
Unaware of the happenings around	2	1.0	200	99.0	202	100.0
Rocks front and back while sitting	2	1.0	200	99.0	202	100.0

The DSM Checklist and Maladaptive Behaviour checklist results are converted into scores by converting Yes to each one of the categories a score of 1 and 0 to No. All the 21 items of DSM and 36 items of the MBC are converted into percentage scores. Presence of 14 items (Yes found in 15 items) in the DSM checklist is equivalent to (15/21)*100 = 66.67 percent

Table 47

Maladaptive behaviour checklist scores in children with Attention Deficit Hyperactivity Disorder

	Mean	SD
Maladaptive Behaviour Checklist - Score	15.17	6.14

Table 48

Maladaptive behaviour checklist scores based on the types of Attention Deficit Hyperactivity Disorder

	Combined		Hyperactive		Inattentive	
	Mean	SD	Mean	SD	Mean	SD
Maladaptive Behaviour Checklist - Score	16.01	5.89	14.38	5.61	9.50	6.02

Table 49

Comparison of maladaptive behaviour checklist scores based on the type of Attention Deficit Hyperactivity Disorder

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Maladaptive Behaviour Checklist - Score	Between Groups	736.203	2	368.101	10.701	.000*
	Within Groups	6776.760	197	34.400		
	Total	7512.963	199			
*- Significant						

The most frequent maladaptive behaviours observed in children with Attention Deficit Hyperactivity Disorder included, being overly active, having poor attention and concentration and having temper tantrums. Bed wetting, nail biting and avoiding school work were other maladaptive behaviours frequently reported. A significant difference with

regard to the occurrence of maladaptive behaviours is observed between groups. The intensity of maladaptive behaviours seem to be greater in children with Attention Deficit Hyperactivity Disorder- Combined and Hyperactive types, while compared to children with Attention Deficit Hyperactivity Disorder- Inattentive type.

Therefore it is evident that **hypothesis 3** 'There will be a significant difference in the intensity of maladaptive behaviours in children based on the type of Attention Deficit Hyperactivity Disorder' is confirmed.

ix. IQ, SYMPTOM INTENSITY AND MALADAPTIVE BEHAVIOURS- A RELATIONSHIP

Table 50

Relationship among IQ, symptom intensity and maladaptive behaviours in children based on the type of Attention Deficit Hyperactivity Disorder

Correlations					
Type			IQ	DSM - Symptom Checklist Scores	Maladaptive Behaviour Checklist – Score
Combined	IQ	Pearson Correlation	1	.131	-.365(**)
		Sig. (2-tailed)	.	.106	.000
		N	154	154	153
	DSM -Symptom Checklist Scores	Pearson Correlation	.131	1	-.369(**)
		Sig. (2-tailed)	.106	.	.000
		N	154	154	153
	Maladaptive Behaviour	Pearson Correlation	-.365(**)	-.369(**)	1

	Checklist - Score	Sig. (2-tailed)	.000	.000	.
		N	153	153	153
Hyperactive	IQ	Pearson Correlation	1	-.235	-.722(**)
		Sig. (2-tailed)	.	.221	.000
		N	29	29	28
	DSM -Symptom Checklist Scores	Pearson Correlation	-.235	1	.297
		Sig. (2-tailed)	.221	.	.125
		N	29	29	28
	Maladaptive Behaviour Checklist - Score	Pearson Correlation	-.722(**)	.297	1
		Sig. (2-tailed)	.000	.125	.
		N	28	28	28
Inattentive	IQ	Pearson Correlation	1	-.810(**)	-.538(*)
		Sig. (2-tailed)	.	.000	.017
		N	19	19	19
	DSM -Symptom Checklist Scores	Pearson Correlation	-.810(**)	1	.420
		Sig. (2-tailed)	.000	.	.073
		N	19	19	19
	Maladaptive Behaviour Checklist - Score	Pearson Correlation	-.538(*)	.420	1
		Sig. (2-tailed)	.017	.073	.
		N	19	19	19
** Correlation is significant at the 0.01 level (2-tailed).					
* Correlation is significant at the 0.05 level (2-tailed).					

It is observed that in children with Attention Deficit Hyperactivity Disorder- Combined type, IQ and symptom intensity and maladaptive behaviours are associated with each other and a negative correlation is seen. A similar observation is seen in children with Attention Deficit Hyperactivity Disorder- Inattentive type. In children with Attention Deficit Hyperactivity Disorder-Hyperactive type, a negative association is seen between IQ and maladaptive behaviours. There is no association between IQ and symptom intensity. A negative correlation is observed, indicating that lower the IQ greater the maladaptive behaviours.

The above statistical evidence partially confirms **hypothesis 4** 'There will a significant relationship among IQ, Symptom Intensity and Maladaptive behaviours in children based on the type of Attention Deficit Hyperactivity Disorder.'

x. SIBLING RIVALRY

Table 51

Sibling rivalry in children with Attention Deficit Hyperactivity Disorder

	Sibling Rivalry	
	N	%
Yes	24	11.9
No	177	88.1
Total	201	100.0

Sibling rivalry was reported in 11.9% of children studied. It should be noted that 69.8% of children in this study were single children.

ANECDOTE

Master S.K., a right-handed boy, aged eight years, was referred for features of difficulty sustaining attention and restlessness. He hailed from a nuclear family. His father was in

government service and his mother was a teacher. He had a younger brother aged three years. His parents reported that he was continually restless and had a tendency to meddle with things. He also had difficulty concentrating, especially in academic situations. He had frequent temper tantrums. He also had difficulty adjusting with his younger sibling, resulting in frequent 'fights'. Parents reported that he had difficulty sharing his toys with his brother and continually demanded his mother's attention. His psychological assessment revealed an IQ of 96- his intellectual functioning being in the average low range. He was diagnosed to have Attention Deficit Hyperactivity Disorder. A feature of sibling rivalry also exists.

xi. MANAGEMENT PROGRAM FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER

Table 52

Management programs for children with Attention Deficit Hyperactivity Disorder

		Yes		No		Total	
First Consultation		N	%	N	%	N	%
Yes	Medication	0	.0	144	100.0	144	10 ‘;.0
	Speech Therapy	0	.0	144	100.0	144	100.0
	Occupational Therapy	0	.0	144	100.0	144	100.0
	Remedial Coaching	0	.0	144	100.0	144	100.0
	Special Schooling	0	.0	144	100.0	144	100.0
No	Medication	45	77.6	13	22.4	58	100.0
	Speech Therapy	17	29.3	41	70.7	58	100.0
	Occupational Therapy	47	81.0	11	19.0	58	100.0
	Remedial Coaching	33	56.9	25	43.1	58	100.0
	Special Schooling	20	34.5	38	65.5	58	100.0

Table 53

Combination of management programs for children with Attention Deficit Hyperactivity Disorder

	Rehabilitation Programs.	
	N	%
Medication, Speech, & Remedial coaching	10	5.0
Medi., Occu. ther., reme., & Spl. School	8	4.0
Rem. & Spl. School	7	3.5
Med., Spee., Occu. & Spl. School	6	3.0
Occu. , Reme., & Spl. School	4	2.0
Med., Occu. & Reme.	6	3.0
Med. & Occ. The	3	1.5
Med., Occu. & Spl.	2	1.0
Med. & Rem.	8	4.0
Medication alone	2	1.0
Speech Ther. Alone	1	.5
NA	144	71.6
Total	201	100.0

58 children in this study were part of a management program for Attention Deficit Hyperactivity Disorder. Medication and Occupational therapy were commonly used in the rehabilitation program. A combination of medication, remedial coaching and speech therapy was the most frequently used combination in rehabilitation.

DISCUSSION

Rodriguez et al (2008) suggested that mixed handedness is related to and common in Attention Deficit Hyperactivity Disorder. It is noted in this study that a history of forced change in handedness (forcing a child to adapt to right handedness, when he is a natural

left-hander) is reported in more than half (51%) of children with Attention Deficit Hyperactivity Disorder. This observation may be attributed to a cultural expectation wherein, in the Indian setting use of the left hand is considered inauspicious in activities of daily living. This factor contributes to the difficulties children with Attention Deficit Hyperactivity Disorder face in relation to academic situations.

It was observed in this study that around 63.9% of children with Attention Deficit Hyperactivity Disorder had difficulty with academics as reported by Matte and Bolaski (1995), where students with Attention Deficit Hyperactivity Disorder were observed to have more difficulty with multiple academic tasks.

ANECDOTE

Master T.S, aged 6 years 9 months, was studying in Class 2 in a normal school. His father, an engineer was in government service and his mother was a home maker. They had a non-consanguineous marriage and T.S is their only child. His parents report that he was restless and had difficulty remaining seated. He also had difficulty sustaining attention as reported by the school teacher. He was orally good, but had difficulty with regard to writing tasks. He had difficulty copying from the board, was slow in writing, committed spelling errors and had poor handwriting. He also had difficulty with reading tasks. A detailed case history revealed a history of change in handedness. He initially used his left hand for pre-writing tasks, but his parents trained him to use his right hand for writing skills. He now uses his right hand for writing. His psychological assessment revealed an IQ of 101- his intellectual being in the average high range. He was diagnosed to Attention Deficit Hyperactivity Disorder with the co-morbid feature of specific learning difficulty in writing, spelling and reading.

Biderman, Newcorn and Sprich (1991) reported that co-morbidity in Attention Deficit Hyperactivity Disorder is high. They observed that 50% of children with Attention Deficit Hyperactivity Disorder have learning problems and 2% have autistic features. Similarly, it is noted in this study, that 53% of children with Attention Deficit Hyperactivity Disorder have Specific Learning Difficulty and 10.4% have autistic features. It should be mentioned that the diagnosis of autistic features is higher in the Indian setting, perhaps indicating greater rates of prevalence.

Barkley (2005) reported that studies of Attention Deficit Hyperactivity Disorder in children often find their IQ to be significantly below those of the control groups, the difference averages about 7 to 10 points. He also indicates that when efforts are not made to control for IQ, samples of children with Attention Deficit Hyperactivity Disorder differ significantly from controls, particularly demonstrating lower verbal intelligence as consistent with a theoretical model of Attention Deficit Hyperactivity Disorder. Barkley (2005) also suggests that no differences are observed with regard to the relationship between IQ and the types of Attention Deficit Hyperactivity Disorder. This is consistent with the results of this study, where there is no significant difference between groups (Attention Deficit Hyperactivity Disorder: Combined type, Inattentive type and Hyperactive type) in relation to IQ. (F: 0.171, not significant)

Brown (2000) suggested that there are a number of children with Attention Deficit Hyperactivity Disorder who do not show the deficit in Digit Span. These individuals are able to muster attention for the brief period required for the task, but are unable to hold this level of alertness for longer memory demands. This observation is similar to this study,

where no significant differences in observations were seen in the performance of digits span in children with Attention Deficit Hyperactivity Disorder.

Children with Attention Deficit Hyperactivity Disorder in this study had mild to moderate disturbance in the visuomotor gestalt function. This is consistent with the findings of Resta and Elliot (1994), who found significantly more errors for Attention Deficit Hyperactivity Disorder children on the Bender Gestalt Test.

The diagnosis of children in this study was carried out using the DSM-IV. Statistics show a significant difference in the intensity of symptoms among the three types of Attention Deficit Hyperactivity Disorder. Attention Deficit Hyperactivity Disorder- Combined type had the most reported symptoms (DSM converted score: 68.27), while Attention Deficit Hyperactivity Disorder-Inattentive type had the least reported symptoms (DSM converted score: 40.8)

Biederman et al (1995), report that nearly 50% of children had maladaptive behaviours relating to conduct disorder, Oppositional Defiant Disorder, anxiety and mood disorders. Features of the above disorders, especially, bed wetting, nail biting, avoiding school work, temper tantrums, defying authority figures were reported in children with Attention Deficit Hyperactivity Disorder in this study. It was also noted that the intensity of maladaptive behaviours was greater in children with Attention Deficit Hyperactivity Disorder-Combined type than the other two groups. The above observations create an area of doubt as to whether children with Attention Deficit Hyperactivity Disorder-Combined type have more difficulty coping with their disorder and effectively manage activities of daily living.

Findings in this study are consistent with those observations of Goldstein (2000), where he reported that rates of hyperactive-impulsive behaviour and measures of intelligence have a

negative association. It is noted in this study, that a negative correlation is seen between IQ and maladaptive behaviours (-0.305, significant at 0.01 level) and symptom intensity and maladaptive behaviours (-0.369, significant at 0.01 level). This is for Attention Deficit Hyperactivity Disorder-Combined type. In children with Attention Deficit Hyperactivity Disorder- Hyperactive type a correlation is seen between IQ and maladaptive behaviour (-0.722, significant at 0.01 level). In children with Attention Deficit Hyperactivity Disorder-Inattentive type, an association is seen between IQ, symptom intensity (-0.810, significant at 0.01 level) and maladaptive behaviour (-0.538, significant at 0.05 level).

Sibling rivalry was reported among 11.9% of children studied. Sibling rivalry during early and late childhood is considered normal in the process of development. It is noteworthy that the maximum children (69.8%) in this study were single children.

In this study, 45 children (out of 202) were part of a management program for Attention Deficit Hyperactivity Disorder. In the Indian setting a multi- modal approach is used in the rehabilitation of Attention Deficit Hyperactivity Disorder. 77.6% of children were on medication, 29.3% attended speech therapy, 81% attended occupational therapy, 56.9% remedial coaching for Specific Learning Difficulties and 34.5% special schooling, indicating that medication and occupational therapy were commonly used in the management of Attention Deficit Hyperactivity Disorder.

Thus, most observations in this study are consistent with international reports. This may curb the doubt of cultural differences with regard to the psychological profile of children with Attention Deficit Hyperactivity Disorder in the Indian setting.

4.4 SOCIAL FACTORS IN ATTENTION DEFICIT HYPERACTIVITY DISORDER

a. TYPE OF FAMILY

Table 54
Type of family of children with Attention Deficit Hyperactivity Disorder

	Type of Family	
	N	%
Joint	58	28.7
Nuclear	109	54.0
Single parent	35	17.3
Total	202	100.0

Table 55
Type of family and symptom intensity in children with Attention Deficit Hyperactivity Disorder

DSM -Symptom Checklist Scores		Mean	SD	N
Type of Family	Joint	63.71	23.85	58
	Nuclear	67.67	23.50	109
	Single parent	49.93	19.82	35

Table 56
Comparison of symptom intensity and maladaptive behaviours based on the type of family in children with Attention Deficit Hyperactivity Disorder

ANOVA – Type of Family						
		Sum of Squares	df	Mean Square	F	Sig.
DSM -Symptom Checklist Scores	Between Groups	8342.196	2	4171.098	7.875	.001*
	Within Groups	105409.180	199	529.694		
	Total	113751.375	201			
Maladaptive Behaviour Checklist – Score	Between Groups	86.788	2	43.394	1.151	.318
	Within Groups	7426.175	197	37.696		
	Total	7512.963	199			
*-Significant						

Table 57
Comparison of symptom intensity and maladaptive behaviours based on the type of family in children with Attention Deficit Hyperactivity Disorder

Multiple Comparisons Tamhane					
Dependent Variable	(I) Family structure	(J) Family structure	Mean Difference (I-J)	Std. Error	Sig.
DSM -Symptom Checklist Scores	Joint	Nuclear	-3.9605	3.74062	.667
		Single parent	13.7790(*)	4.92613	.011
	Nuclear	Joint	3.9605	3.74062	.667
		Single parent	17.7395(*)	4.47143	.000
	Single parent	Joint	-13.7790(*)	4.92613	.011
		Nuclear	-17.7395(*)	4.47143	.000
Maladaptive Behaviour Checklist - Score	Joint	Nuclear	-1.5053	1.00518	.343
		Single parent	-1.2643	1.31848	.677
	Nuclear	Joint	1.5053	1.00518	.343
		Single parent	.2410	1.19418	.996
	Single parent	Joint	1.2643	1.31848	.677
		Nuclear	-.2410	1.19418	.996
* The mean difference is significant at the .05 level.					

54% of the children in this study hailed from a nuclear family, 28.7% from a joint family setting and 17.3% of children were raised by a single parent.

Statistics show a significant difference in the intensity of symptoms with regard to family structure. It is noted that children from nuclear families were reported to have more symptoms, while single parents reported significantly fewer symptoms. The post hoc tests also shows a significant difference in the DSM-IV mean scores as reported by single

parents when compared to those reported by parents in a joint or nuclear family setting. This confirms **hypothesis 5** that states 'There will be a significant difference in the symptom intensity for children with Attention Deficit Hyperactivity Disorder based on the family structure.'

It is also noted that no significant difference was noted with regard to maladaptive behaviours based on family structure. This rejects **hypothesis 6** that states 'There will be a significant difference in the maladaptive behaviours in children with Attention Deficit Hyperactivity Disorder based on the type of family.'

b. WORKING MOTHERS

Table 58

Association between symptom intensity and maladaptive behaviours for children with Attention Deficit Hyperactivity Disorder for working and non-working mothers

T-Test

Group Statistics

	Mother working,	N	Mean	Std. Deviation	Std. Error Mean
DSM –Symptom Checklist Scores	Yes	39	64.9573	23.72132	3.79845
	No	163	63.1025	23.86439	1.86920
Maladaptive Behaviour Checklist – Score	Yes	39	15.1709	5.24908	.84053
	No	161	15.1656	6.35706	.50101

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
DSM -Symptom Checklist Scores	.417	.519	.438	57.837	.663
Maladaptive Behaviour Checklist – Score	2.019	.157	.005	67.767	.996

It is noted from the above tables that the factor of mothers working does not affect the intensity of symptoms or maladaptive behaviours in children with Attention Deficit Hyperactivity Disorder. This statistical evidence thus refutes **hypotheses 7 i and ii** ' There will be a significant difference in the symptom intensity of children with Attention Deficit Hyperactivity Disorder when mothers are working in comparison to non-working mothers' and 'There will be a significant difference in the maladaptive behaviours in children with Attention Deficit Hyperactivity Disorder when mothers are working in comparison to non-working mothers.'

c. PARENTAL DISHARMONY

Table 59
Parental disharmony in children with Attention Deficit Hyperactivity Disorder

	Parental Disharmony	
	N	%
Yes	99	49.3
No	102	50.7
Total	201	100.0

It was seen in this study that 49.3% of children had a history of parental disharmony.

Table 60
Symptom intensity in children with Attention Deficit Hyperactivity Disorder based on parental disharmony

DSM -Symptom Checklist Scores		Mean	SD	N
Parental Disharmony	Yes	59.50	22.52	99
	No	67.41	24.53	102

Table 61
Association of symptom intensity and maladaptive behaviours based on parental disharmony in children with Attention Deficit Hyperactivity Disorder

Group Statistics - Parental Disharmony					
	Parental Disharmony	N	Mean	Std. Deviation	Std. Error Mean
DSM -Symptom Checklist Scores	Yes	99	59.4998	22.52485	2.26383
	No	102	67.4136	24.52709	2.42854
Maladaptive Behaviour Checklist – Score	Yes	97	15.3494	6.27686	.63732
	No	102	14.9510	6.05616	.59965

Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
DSM -Symptom Checklist Scores		3.734	.055	-2.384	198.399	.018
Maladaptive Behaviour Checklist – Score		.131	.717	.455	195.545	.649

The above statistics indicate that there is a significant difference in the intensity of symptoms when children with Attention Deficit Hyperactivity Disorder experience parental disharmony. But there is no difference in the reported maladaptive behaviours in relation to parental disharmony. This partially confirms **hypothesis 8** which states ‘There will be a significant association between the symptom intensity and maladaptive behaviours in children with Attention Deficit Hyperactivity Disorder based on the presence of parental disharmony.’

d. SOCIALIZATION

Table 62
Socialization in children with Attention Deficit Hyperactivity Disorder

	Socialization	
	N	%
Adequate	200	99.0
Poor	2	1.0
Total	202	100.0

Adequate and appropriate socialization is observed in the majority of children in this study.

e. PARENTAL DOMAINS- CORRELATION –INTER AND INTRA

It is noted from the above data that a significant association exists among the various paternal domains investigated by the researcher. It is interesting to note that paternal quality of life has a negative association with Depression and Stress. Also, a positive correlation is noted between positive themes of parenting and self esteem. No significant correlation is seen between paternal quality of life and self esteem.

With regard to the aspects of maternal quality of life, it was seen that a negative association exists between physical aspects, psychological aspects, environmental aspects, social relationships and parental stress. There is a positive relationship between self esteem and positive themes of parenting. An association between physical aspects of a parent and stress is not seen in fathers as observed in mothers. Also negative themes in parenting of fathers are not related to environmental aspects as reported in mothers.

This partially confirms **hypothesis 9 a i and ii** that state 'There will be a significant association among the various social factors such as Quality of Life, Parental Stress and Self Esteem experienced by fathers whose children have Attention Deficit Hyperactivity Disorder' and 'There will be a significant relationship among the social factors such as Quality of Life, Parental Stress and Self Esteem experienced by mothers whose children have Attention Deficit Hyperactivity Disorder.'

Table 65

Relationship between domains of fathers and mothers of children with Attention Deficit Hyperactivity Disorder

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Father - Overall QOL & Mother – Overall QOL	143	.482	.000
Pair 2	Father - Health & Mother – Health	143	.082	.333
Pair 3	Father - Physical Aspects & Mother - Physical Aspects	143	.279	.001
Pair 4	Father - Psychological Aspects & Mother - Psychological Aspects	143	.270	.001
Pair 5	Father - Social Relationships & Mother - Social Relationships	142	.288	.001
Pair 6	Father - Environmental Aspects & Mother - Environmental Aspects	143	.234	.005
Pair 7	Father - Depression & Mother – Depression	143	.006	.939
Pair 8	Father - Total QOL & Mother - Total QOL	143	.296	.000
Pair 9	Father - Whole Scale PSS & Mother - Whole Scale PSS	143	.586	.000
Pair 10	Father - Positive Themes & Mother - Positive Themes	143	.338	.000
Pair 11	Father - Negative Themes & Mother - Negative Themes	143	.534	.000
Pair 12	Father - Self Esteem & Mother - Self Esteem	143	.242	.004

It is seen that there is a significant positive relationship between father's and mother's overall quality of life, psychological aspects, social relationships, environmental aspects, depression, parental stress, positive and negative themes of parenting and self esteem. There is no relationship between father's and mother's experience of depression. Therefore the experience of paternal and maternal stress, self-esteem and most aspects of quality of life depend on each other, but the experience of depression is an independent feature. This partially confirms **hypothesis 9 b** which states ' There will be a significant association

between fathers' and mothers' whose children have Attention Deficit Hyperactivity Disorder based on Overall Quality of life, Physical Aspects, Psychological Aspects, Social Relationships, Environmental Aspects, Depression, Total Quality of Life, Parental Stress, Positive themes of parenting, Negative themes of parenting and Self esteem '

Table 66

Association between domains of fathers and mothers in children with Attention Deficit Hyperactivity Disorder

Paired Samples Test							
		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	Father - Overall QOL - Mother - Overall QOL	.13	.619	.052	2.565	142	.011
Pair 2	Father - Health - Mother – Health	.16	1.012	.085	1.901	142	.059
Pair 3	Father - Physical Aspects - Mother - Physical Aspects	-.24	2.603	.218	-1.124	142	.263
Pair 4	Father - Psychological Aspects - Mother - Psychological Aspects	.24	2.441	.204	1.199	142	.233
Pair 5	Father - Social Relationships - Mother - Social Relationships	.83	4.365	.366	2.269	141	.025
Pair 6	Father - Environmental Aspects - Mother - Environmental Aspects	1.98	6.389	.534	3.704	142	.000
Pair 7	Father - Depression - Mother – Depression	.52	3.097	.259	2.025	142	.045
Pair 8	Father - Total QOL - Mother - Total QOL	3.21	13.210	1.105	2.906	142	.004
Pair	Father - Whole Scale PSS -	-.83	6.955	.582	-1.431	142	.155

9	Mother - Whole Scale PSS						
Pair 10	Father - Positive Themes - Mother - Positive Themes	.86	5.734	.480	1.794	142	.075
Pair 11	Father - Negative Themes - Mother - Negative Themes	-1.91	5.102	.427	-4.475	142	.000
Pair 12	Father - Self Esteem - Mother - Self Esteem	1.02	5.424	.454	2.251	142	.026

It is seen from the above table, that a significant difference exists between fathers and mothers with regard to physical aspects, social relationships, environmental aspects, depression, total quality of life, whole scale parental stress, acceptance of the developmental disorder (negative themes of parenting). Mothers seem to obtain lower scores on domains measuring quality of life aspects and higher scores relating to parental stress when compared to fathers. This partially confirms **hypothesis 10** that states 'There will be a significant difference between fathers and mothers in relation to Overall Quality of life, Physical Aspects, Psychological Aspects, Social Relationships, Environmental Aspects, Depression, Total Quality of Life, Parental Stress, Positive themes of parenting, Negative themes of parenting and Self esteem'

f. QUALITY OF LIFE

Table 67
Quality of life of fathers and mothers of children with Attention Deficit Hyperactivity Disorder

	Father		Mother	
	Mean	SD	Mean	SD
Overall QOL	3.81	.63	3.64	.59
Health	3.77	.74	3.64	.73
Physical Aspects	10.28	1.99	10.43	2.32
Psychological Aspects	10.17	1.93	10.01	2.10

Social Relationships	19.68	3.77	18.91	3.64
Environmental Aspects	38.38	4.88	36.64	5.38
Depression	3.36	2.96	2.79	.71
Total QOL	88.81	12.26	85.76	10.21

1. PARENTAL QUALITY OF LIFE BASED ON TYPE OF ADHD

Table 68

Comparison of quality of life of fathers and mothers based on the type of Attention Deficit Hyperactivity Disorder

Oneway

		Sum of Squares	df	Mean Square	F	Sig.
Father - Overall QOL	Between Groups	1.232	2	.616	1.547	.216
	Within Groups	58.124	146	.398		
	Total	59.356	148			
Father – Health	Between Groups	.334	2	.167	.303	.739
	Within Groups	80.445	146	.551		
	Total	80.779	148			
Father – Physical Aspects	Between Groups	39.661	2	19.830	5.322	.006
	Within Groups	544.058	146	3.726		
	Total	583.718	148			
Father – Psychological Aspects	Between Groups	6.564	2	3.282	.879	.417
	Within Groups	544.899	146	3.732		
	Total	551.463	148			

Father – Social Relationships	Between Groups	11.988	2	5.994	.418	.659
	Within Groups	2080.444	145	14.348		
	Total	2092.432	147			
Father – Environmental Aspects	Between Groups	16.362	2	8.181	.341	.712
	Within Groups	3506.591	146	24.018		
	Total	3522.953	148			
Father – Depression	Between Groups	36.673	2	18.336	2.119	.124
	Within Groups	1263.475	146	8.654		
	Total	1300.148	148			
Father - Total QOL	Between Groups	352.727	2	176.364	1.175	.312
	Within Groups	21910.011	146	150.069		
	Total	22262.738	148			
Mother – Overall QOL	Between Groups	.497	2	.249	.700	.498
	Within Groups	68.503	193	.355		
	Total	69.000	195			
Mother – Health	Between Groups	1.314	2	.657	1.219	.298
	Within Groups	103.967	193	.539		
	Total	105.281	195			
Mother - Physical Aspects	Between Groups	35.745	2	17.873	3.388	.036
	Within Groups	1018.255	193	5.276		
	Total	1054.000	195			
Mother – Psychological Aspects	Between Groups	9.677	2	4.838	1.099	.335

	Within Groups	849.318	193	4.401		
	Total	858.995	195			
Mother – Social Relationships	Between Groups	18.645	2	9.322	.703	.497
	Within Groups	2560.881	193	13.269		
	Total	2579.526	195			
Mother – Environmental Aspects	Between Groups	111.880	2	55.940	1.952	.145
	Within Groups	5531.120	193	28.659		
	Total	5643.000	195			
Mother – Depression	Between Groups	.498	2	.249	.491	.613
	Within Groups	97.925	193	.507		
	Total	98.423	195			
Mother - Total QOL	Between Groups	85.014	2	42.507	.405	.668
	Within Groups	20256.715	193	104.957		
	Total	20341.730	195			

Differences in parental domains were studied in relation to the three types of Attention Deficit Hyperactivity Disorder, namely Combined type, Hyperactive type and Inattentive type as diagnosed in the children in this study. It was noted that for fathers, a significant difference exists in relation to physical aspects .Fathers of children with Attention Deficit Hyperactivity Disorder- Inattentive type report a fairly better experience with regard to the physical aspects of quality of life as when compared to the other groups. The above statistical evidence therefore partially confirms **hypothesis 11 i a** that states ‘There will be a significant difference in the various domains of Quality of Life of fathers of children with

Attention Deficit Hyperactivity Disorder based on the Type of Attention Deficit Hyperactivity Disorder'.

A similar observation is made for mothers also. Mothers of children with Attention Deficit Hyperactivity Disorder- Inattentive type report better experience of quality of life in relation to physical aspects as compared to mothers whose children have Attention Deficit Hyperactivity Disorder- combined or hyperactive types. The statistical evidence thus partially confirms **hypothesis 11 ii a** that states 'There will be a significant difference in the various domains of Quality of Life of mothers of children with Attention Deficit Hyperactivity Disorder based on the Type of Attention Deficit Hyperactivity Disorder'.

2. PARENTAL QUALITY OF LIFE BASED ON AGE OF THE CHILD

Table 69

Comparison of quality of life of fathers and mothers based on the age of children with Attention Deficit Hyperactivity Disorder

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Father - Overall QOL	Between Groups	1.505	2	.753	1.899	.153
	Within Groups	57.851	146	.396		
	Total	59.356	148			
Father – Health	Between Groups	1.970	2	.985	1.825	.165
	Within Groups	78.809	146	.540		
	Total	80.779	148			
Father - Physical Aspects	Between Groups	.128	2	.064	.016	.984

	Within Groups	583.591	146	3.997		
	Total	583.718	148			
Father - Psychological Aspects	Between Groups	4.408	2	2.204	.588	.557
	Within Groups	547.055	146	3.747		
	Total	551.463	148			
Father - Social Relationships	Between Groups	18.284	2	9.142	.639	.529
	Within Groups	2074.148	145	14.304		
	Total	2092.432	147			
Father - Environmental Aspects	Between Groups	57.844	2	28.922	1.219	.299
	Within Groups	3465.109	146	23.734		
	Total	3522.953	148			
Father – Depression	Between Groups	11.064	2	5.532	.627	.536
	Within Groups	1289.084	146	8.829		
	Total	1300.148	148			
Father - Total QOL	Between Groups	143.062	2	71.531	.472	.625
	Within Groups	22119.676	146	151.505		
	Total	22262.738	148			
Mother - Overall QOL	Between Groups	.268	2	.134	.377	.687
	Within Groups	68.732	193	.356		
	Total	69.000	195			
Mother – Health	Between Groups	.018	2	.009	.016	.984
	Within Groups	105.263	193	.545		

	Total	105.281	195			
Mother - Physical Aspects	Between Groups	20.200	2	10.100	1.886	.155
	Within Groups	1033.800	193	5.356		
	Total	1054.000	195			
Mother - Psychological Aspects	Between Groups	3.485	2	1.742	.393	.676
	Within Groups	855.510	193	4.433		
	Total	858.995	195			
Mother - Social Relationships	Between Groups	24.183	2	12.091	.913	.403
	Within Groups	2555.343	193	13.240		
	Total	2579.526	195			
Mother - Environmental Aspects	Between Groups	66.450	2	33.225	1.150	.319
	Within Groups	5576.550	193	28.894		
	Total	5643.000	195			
Mother - Depression	Between Groups	.204	2	.102	.200	.819
	Within Groups	98.220	193	.509		
	Total	98.423	195			
Mother - Total QOL	Between Groups	152.136	2	76.068	.727	.485
	Within Groups	20189.594	193	104.609		
	Total	20341.730	195			

It is noted from the above table that no significant difference is seen on parental quality of life domains based on the age of the child. Thus the age of the child, whether in early childhood, late childhood or adolescence has no effect on parental quality of life. This

feature is observed for fathers as well as mothers. This evidence refutes hypothesis **11 i b** that states 'There will be a significant difference in the various domains of Quality of Life of fathers of children with Attention Deficit Hyperactivity Disorder based on the Age of the child'. **Hypothesis 11 ii b** which states ''There will be a significant difference in the various domains of Quality of Life of mothers of children with Attention Deficit Hyperactivity Disorder based on the Age of the child' is also rejected.

3. PARENTAL QUALITY OF LIFE BASED ON BIRTH ORDER OF CHILD

Table 70

Comparison of quality of life of fathers and mothers based on the birth order of children with Attention Deficit Hyperactivity Disorder

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Father - Overall QOL	Between Groups	1.562	5	.312	.773	.571
	Within Groups	57.794	143	.404		
	Total	59.356	148			
Father - Health	Between Groups	6.463	5	1.293	2.487	.034
	Within Groups	74.315	143	.520		
	Total	80.779	148			
Father - Physical Aspects	Between Groups	58.770	5	11.754	3.202	.009
	Within Groups	524.948	143	3.671		
	Total	583.718	148			

Father - Psychological Aspects	Between Groups	17.208	5	3.442	.921	.469
	Within Groups	534.255	143	3.736		
	Total	551.463	148			
Father - Social Relationships	Between Groups	45.286	4	11.322	.791	.533
	Within Groups	2047.146	143	14.316		
	Total	2092.432	147			
Father - Environmental Aspects	Between Groups	28.298	5	5.660	.232	.948
	Within Groups	3494.655	143	24.438		
	Total	3522.953	148			
Father - Depression	Between Groups	15.213	5	3.043	.339	.889
	Within Groups	1284.935	143	8.986		
	Total	1300.148	148			
Father - Total QOL	Between Groups	337.794	5	67.559	.441	.820
	Within Groups	21924.944	143	153.321		
	Total	22262.738	148			
Mother - Overall QOL	Between Groups	3.788	5	.758	2.208	.055
	Within Groups	65.212	190	.343		
	Total	69.000	195			
Mother - Health	Between Groups	.666	5	.133	.242	.943
	Within Groups	104.614	190	.551		
	Total	105.281	195			
Mother - Physical Aspects	Between Groups	59.152	5	11.830	2.259	.050

	Within Groups	994.848	190	5.236		
	Total	1054.000	195			
Mother - Psychological Aspects	Between Groups	3.046	5	.609	.135	.984
	Within Groups	855.949	190	4.505		
	Total	858.995	195			
Mother - Social Relationships	Between Groups	7.437	5	1.487	.110	.990
	Within Groups	2572.088	190	13.537		
	Total	2579.526	195			
Mother - Environmental Aspects	Between Groups	254.312	5	50.862	1.793	.116
	Within Groups	5388.688	190	28.362		
	Total	5643.000	195			
Mother - Depression	Between Groups	7.208	5	1.442	3.003	.012
	Within Groups	91.216	190	.480		
	Total	98.423	195			
Mother - Total QOL	Between Groups	194.259	5	38.852	.366	.871
	Within Groups	20147.471	190	106.039		
	Total	20341.730	195			

Differences based on the birth order of the child with regard to parental quality of life were studied. The various ordinal positions in this study were first child, second child and single child. In fathers, a significant difference between groups was seen with regard to health and physical aspects. Physical aspects seem to be more affected in fathers who have single children. This observation partially confirms **hypothesis 11 i c** that states ‘There will be a

significant difference in the various domains of Quality of Life of fathers of children with Attention Deficit Hyperactivity Disorder based on the Birth Order of the child'.

In mothers significant differences were noted on overall quality of life, physical aspects and depression. Mothers with single children seemed to have lower scores with regard to overall quality of life and physical aspects and higher scores on depression. This evidence partially confirms **hypothesis 11 ii c** that states 'There will be a significant difference in the various domains of Quality of Life of mothers of children with Attention Deficit Hyperactivity Disorder based on the Birth Order of the child'.

4. PARENTAL QUALITY OF LIFE BASED ON GENDER OF THE CHILD

Table 71

Comparison of quality of life of fathers and mothers based on the gender of children with Attention Deficit Hyperactivity Disorder

Independent Samples Test					
	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	T	df	Sig. (2-tailed)
Father - Overall QOL	4.566	.034	.552	147	.582
Father – Health	.112	.739	-.464	147	.643
Father - Physical Aspects	.454	.502	.716	147	.475
Father - Psychological Aspects	1.217	.272	-.011	147	.991
Father - Social Relationships	1.197	.276	-.801	146	.424
Father - Environmental Aspects	.696	.405	-.243	147	.808
Father – Depression	.463	.497	-.484	147	.629

Father - Total QOL	1.257	.264	.150	147	.881
Mother - Overall QOL	.218	.641	-.060	194	.952
Mother – Health	.056	.813	-.904	194	.367
Mother - Physical Aspects	.564	.454	1.214	194	.226
Mother - Psychological Aspects	.055	.814	.140	194	.889
Mother - Social Relationships	1.903	.169	.004	194	.997
Mother - Environmental Aspects	.024	.876	-2.205	194	.029
Mother – Depression	5.543	.020	-1.696	194	.091
Mother - Total QOL	.424	.516	-.863	194	.389

Significant differences based on the gender of the child were studied in relation to the various domains of quality of life. It was noted that a significant difference exists with regard to environmental aspects for fathers. It was seen that fathers whose sons had Attention Deficit Hyperactivity Disorder had more difficulty coping with various environmental aspects that fathers whose daughters had Attention Deficit Hyperactivity Disorder. This statistical observation partially accepts **hypothesis 11 i d** that states 'There will be a significant difference in the various domains of Quality of Life of fathers of children with Attention Deficit Hyperactivity Disorder based on the gender of the child'.

Mother's health, environmental aspects and depression were affected in relation to the gender of the child. A similar feature was noted, wherein mothers whose sons had Attention Deficit Hyperactivity Disorder obtained lower scores on domains measuring health and environmental aspects and higher scores on depression than mothers whose daughters had Attention Deficit Hyperactivity Disorder. This statistical evidence partially confirms **hypothesis 11 ii d** that states 'There will be a significant difference in the various

domains of Quality of Life of mothers of children with Attention Deficit Hyperactivity Disorder based on the gender of the child'.

5. PARENTAL QUALITY OF LIFE BASED ON WHETHER THE CHILD WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER IS ON A MANAGEMENT PROGRAM

Table 72

Comparison of quality of life of fathers and mothers based on whether or not the child is on a management program for Attention Deficit Hyperactivity Disorder

Independent Samples Test					
	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	T	df	Sig. (2-tailed)
Father - Overall QOL	.104	.747	.630	147	.529
Father - Health	.285	.594	-.378	147	.706
Father - Physical Aspects	2.944	.088	1.204	147	.230
Father - Psychological Aspects	1.332	.250	.171	147	.865
Father - Social Relationships	.503	.479	-1.310	146	.192
Father - Environmental Aspects	.001	.973	-2.265	147	.025
Father - Depression	.657	.419	.421	147	.675
Father - Total QOL	.000	.994	-1.275	147	.204
Mother - Overall QOL	.091	.764	.698	194	.486
Mother - Health	3.720	.055	-1.427	194	.155
Mother - Physical Aspects	.816	.368	1.454	194	.148
Mother - Psychological Aspects	1.134	.288	1.147	194	.253
Mother - Social Relationships	.199	.656	-.645	194	.520
Mother - Environmental	.369	.544	-2.684	194	.008

Aspects						
Mother - Depression		10.342	.002	-2.219	194	.028
Mother - Total QOL		.034	.855	-.965	194	.336

Parental domains were studied in relation to whether or not the child with Attention Deficit Hyperactivity Disorder was on a rehabilitation program or not. It was seen that fathers whose children were not on a rehabilitation program had lower scores on the environmental aspects of quality of life when compared to fathers who brought their children for the first consultation. This partially confirms **hypothesis 11 i e** that states 'There will be a significant difference in the various domains of Quality of Life of fathers of children with Attention Deficit Hyperactivity Disorder based on whether or not the child is on a management program.'

Mothers' environmental aspects and experience of depression were also related to whether their child was on a management program. Mothers whose children were on a management program obtained higher scores with regard to environmental aspects and lower scores on depression when compared to mothers whose children were not on a management program. This statistical evidence partially confirms **hypothesis 11 ii e** that states 'There will be a significant difference in the various domains of Quality of Life of fathers of children with Attention Deficit Hyperactivity Disorder based on whether or not the child is on a management program'

g. PARENTAL STRESS

Table 73
Parental Stress of fathers and mothers whose children have Attention Deficit Hyperactivity Disorder

	Father		Mother	
	Mean	SD	Mean	SD
Whole Scale PSS	51.44	8.18	52.73	7.04
Positive Themes	17.34	5.45	16.81	4.31
Negative Themes	33.97	5.65	36.37	4.85

1. PARENTAL STRESS BASED ON THE TYPE OF ADHD

Table 74

Comparison of parental stress of fathers and mothers based on the type of Attention Deficit Hyperactivity Disorder

Oneway

		Sum of Squares	df	Mean Square	F	Sig.
Father - Whole Scale PSS	Between Groups	320.665	2	160.332	2.444	.090
	Within Groups	9578.100	146	65.603		
	Total	9898.765	148			
Father - Positive Themes	Between Groups	334.640	2	167.320	6.007	.003
	Within Groups	4066.903	146	27.856		
	Total	4401.544	148			
Father - Negative Themes	Between Groups	4.738	2	2.369	.073	.929
	Within Groups	4717.155	146	32.309		
	Total	4721.893	148			
Mother - Whole Scale PSS	Between Groups	291.809	2	145.905	3.003	.052

	Within Groups	9378.395	193	48.593		
	Total	9670.204	195			
Mother - Positive Themes	Between Groups	148.649	2	74.324	4.130	.018
	Within Groups	3473.366	193	17.997		
	Total	3622.015	195			
Mother - Negative Themes	Between Groups	19.691	2	9.845	.416	.660
	Within Groups	4568.120	193	23.669		
	Total	4587.811	195			

The various aspects of parental stress was studied with regard to the types of Attention Deficit Hyperactivity Disorder in children, namely, Combined type, Hyperactive type and Inattentive type. It was noted from the above table that a significant difference was noted for fathers with regard to positive themes of parenting. Fathers whose children had Attention Deficit Hyperactivity Disorder- Combined type experienced lower scores with regard to positive themes of parenting when compared to fathers of the other two groups. The above statistical evidence partially confirms **hypothesis 12 i a** that states 'There will be a significant difference in the various domains of Parental Stress of fathers of children with Attention Deficit Hyperactivity Disorder based on the type of Attention Deficit Hyperactivity Disorder'.

For mothers, significant differences were noted with regard to Whole Scale Parental Stress and positive themes of parenting. It was seen that mothers whose children had Attention Deficit Hyperactivity Disorder- Combined type, has higher scores on whole scale stress and lower scores on positive themes of parenting. The above statistical evidence partially confirms **hypothesis 12 ii a** that states 'There will be a significant difference in the various

domains of Parental Stress of mothers of children with Attention Deficit Hyperactivity Disorder based on the type of Attention Deficit Hyperactivity Disorder'.

2. PARENTAL STRESS BASED ON THE AGE OF THE CHILD

Table 75

Comparison of parental stress of fathers and mothers based on the age of children with Attention Deficit Hyperactivity Disorder

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Father - Whole Scale PSS	Between Groups	136.463	2	68.232	1.020	.363
	Within Groups	9762.302	146	66.865		
	Total	9898.765	148			
Father - Positive Themes	Between Groups	31.672	2	15.836	.529	.590
	Within Groups	4369.872	146	29.931		
	Total	4401.544	148			
Father - Negative Themes	Between Groups	84.362	2	42.181	1.328	.268
	Within Groups	4637.530	146	31.764		
	Total	4721.893	148			
Mother - Whole Scale PSS	Between Groups	68.005	2	34.002	.683	.506
	Within Groups	9602.199	193	49.752		
	Total	9670.204	195			
Mother - Positive Themes	Between Groups	69.286	2	34.643	1.882	.155
	Within Groups	3552.729	193	18.408		
	Total	3622.015	195			
Mother - Negative Themes	Between Groups	26.982	2	13.491	.571	.566

	Within Groups	4560.829	193	23.631		
	Total	4587.811	195			

It is noted from the above table that no significant difference is seen on parental domains relating to parental stress, positive and negative themes of parenting based on the age of the child. Therefore, whether a child belongs to early childhood, late childhood or adolescence does not affect parental experience of stress. This is seen for fathers and mothers. This statistical evidence refutes **hypotheses 12 i b and 12 ii b** that state 'There will be a significant difference in the various domains of Parental Stress of fathers of children with Attention Deficit Hyperactivity Disorder based on the age of the child' and 'There will be a significant difference in the various domains of Parental Stress of mothers of children with Attention Deficit Hyperactivity Disorder based on the age of the child' respectively.

3. PARENTAL STRESS BASED ON THE BIRTH ORDER OF THE CHILD

Table 76

Comparison of parental stress of fathers and mothers based on the birth order of children with Attention Deficit Hyperactivity Disorder

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Father - Whole Scale PSS	Between Groups	255.279	5	51.056	.757	.582
	Within Groups	9643.486	143	67.437		
	Total	9898.765	148			
Father - Positive Themes	Between Groups	106.150	5	21.230	.707	.619
	Within Groups	4295.394	143	30.038		
	Total	4401.544	148			

Father - Negative Themes	Between Groups	100.008	5	20.002	.619	.686
	Within Groups	4621.885	143	32.321		
	Total	4721.893	148			
	Total	858.995	195			
	Total	98.423	195			
Mother - Whole Scale PSS	Between Groups	336.575	5	67.315	1.370	.237
	Within Groups	9333.629	190	49.124		
	Total	9670.204	195			
Mother - Positive Themes	Between Groups	114.391	5	22.878	1.239	.292
	Within Groups	3507.625	190	18.461		
	Total	3622.015	195			
Mother - Negative Themes	Between Groups	123.114	5	24.623	1.048	.391
	Within Groups	4464.697	190	23.498		
	Total	4587.811	195			

It is seen from the above tables that no significant difference exists with regard to parental stress, positive and negative themes of parenting based on the birth order of the child. The ordinal position namely being a first, second or single child does not affect the various domains on the stress scale. This is seen for fathers and mothers. The above statistical evidence refutes **hypotheses 12 i c and 12 ii c** that state 'There will be a significant difference in the various domains of Parental Stress of fathers of children with Attention Deficit Hyperactivity Disorder based on the birth order of the child' and 'There will be a significant difference in the various domains of Parental Stress of fathers of children with Attention Deficit Hyperactivity Disorder based on the birth order of the child' respectively.

4. PARENTAL STRESS BASED ON THE GENDER OF THE CHILD

Table 77

Comparison of parental stress of fathers and mothers based on the gender of children with Attention Deficit Hyperactivity Disorder

Independent Samples Test					
	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	T	df	Sig. (2-tailed)
Father - Whole Scale PSS	1.026	.313	1.004	147	.317
ather - Positive Themes	.241	.624	-.459	147	.647
Father - Negative Themes	.104	.747	1.790	147	.075
Mother - Whole Scale PSS	.310	.578	2.120	194	.035
Mother - Positive Themes	.003	.958	.305	194	.761
Mother - Negative Themes	.686	.409	2.069	194	.040

Significant differences among parental stress domains were studied according to the gender of the child. No significant differences were noted with regard to the scores of fathers based on gender. This statistical evidence refutes **hypothesis 12 i d** that states 'There will be a significant difference in the various domains of Parental Stress of fathers of children with Attention Deficit Hyperactivity Disorder based on the gender of the child'.

A significant difference was noted with regard to maternal whole scale parental stress and negative themes of parenting. It was noted that mothers whose sons had Attention Deficit Hyperactivity Disorder experienced greater stress and higher scores on the negative themes

of parenting than mothers whose daughters had Attention Deficit Hyperactivity Disorder. The above statistical evidence partially confirms **hypothesis 12 ii d** that states 'There will be a significant difference in the various domains of Parental Stress of mothers of children with Attention Deficit Hyperactivity Disorder based on the gender of the child'.

5. PARENTAL STRESS BASED ON WHETHER THE CHILD WITH ADHD IS ON A MANAGEMENT PRORAM

Table 78

Comparison of parental stress of fathers and mothers based on whether or not the child with Attention Deficit Hyperactivity Disorder is on a management program

Independent Samples Test					
	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	T	df	Sig. (2-tailed)
Father - Whole Scale PSS	.132	.717	.107	147	.915
Father - Positive Themes	.246	.621	.111	147	.912
Father - Negative Themes	.001	.981	-.132	147	.895
Mother - Whole Scale PSS	.007	.932	2.023	194	.044
Mother - Positive Themes	1.814	.180	1.920	194	.056
Mother - Negative Themes	.063	.803	2.001	194	.047

Differences with regard to parental experience of stress were studied based on whether or not the child with Attention Deficit Hyperactivity Disorder was on a management program. No significant differences were noted for fathers with regard to whole scale stress, positive

and negative themes of parenting. This rejects **hypothesis 12 i e** that states 'There will be a significant difference in the various domains of Parental Stress of fathers of children with Attention Deficit Hyperactivity Disorder based on whether or not the child is on a management program.'

It was seen that when children were on a management program, mothers seemed to experience relatively less stress and lower scores on the negative themes of parenting. This partially accepts **hypothesis 12 ii e** that states 'There will be a significant difference in the various domains of Parental Stress of mothers of children with Attention Deficit Hyperactivity Disorder based on whether or not the child is on a rehabilitation program'.

h. SELF ESTEEM

Table 79
Self esteem of fathers and mothers whose children have Attention Deficit Hyperactivity Disorder.

	Father		Mother	
	Mean	SD	Mean	SD
Self Esteem	28.61	4.52	28.02	4.80

1. PARENTAL SELF ESTEEM BASED ON THE TYPE OF ADHD

Table 80

Comparison of self esteem of fathers and mothers based on the type of Attention Deficit Hyperactivity Disorder

Oneway

		Sum of Squares	df	Mean Square	F	Sig.
Father - Self Esteem	Between Groups	32.573	2	16.287	.793	.454
	Within Groups	2996.850	146	20.526		

	Total	3029.423	148			
Mother - Self Esteem	Between Groups	43.636	2	21.818	.948	.389
	Within Groups	4442.282	193	23.017		
	Total	4485.918	195			

The self esteem of fathers and mothers were studied in relation to the type of Attention Deficit Hyperactivity Disorder in children, namely, Combined type, Hyperactive type and Inattentive type. It was seen from the above table that no significant differences were observed with regard to self esteem. The type of Attention Deficit Hyperactivity Disorder in children does not influence parental self esteem. This evidence refutes **hypotheses 13 i a and 13 ii a** that state 'There will be a significant difference in the Self Esteem of fathers of children with Attention Deficit Hyperactivity Disorder based on the type of Attention Deficit Hyperactivity Disorder' and 'There will be a significant difference in the Self Esteem of mothers of children with Attention Deficit Hyperactivity Disorder based on the type of Attention Deficit Hyperactivity Disorder' respectively.

2. PARENTAL SELF ESTEEM BASED ON THE AGE OF THE CHILD

Table 81

Comparison of self esteem of fathers and mothers based on the age of children with Attention Deficit Hyperactivity Disorder

ANOVA						
		Sum of Squares	Df	Mean Square	F	Sig.
	Total	4721.893	148			
Father - Self Esteem	Between Groups	28.626	2	14.313	.696	.500
	Within Groups	3000.796	146	20.553		
	Total	3029.423	148			

Mother - Self Esteem	Between Groups	.408	2	.204	.009	.991
	Within Groups	4485.510	193	23.241		
	Total	4485.918	195			

Differences in the self esteem on fathers and mothers were studied in relation to the age of children with Attention Deficit Hyperactivity Disorder. No significant difference was noted in relation to the age of the children. Parents with children belonging to early childhood, late childhood and adolescence experienced similar levels of self esteem. The above statistical evidence rejects **hypotheses 13 i b and 13 ii b** that state 'There will be a significant difference in the Self Esteem of fathers of children with Attention Deficit Hyperactivity Disorder based on the age of the child' and 'There will be a significant difference in the Self Esteem of mothers of children with Attention Deficit Hyperactivity Disorder based on the age of the child' respectively.

3. PARENTAL SELF ESTEEM BASED ON THE BIRTH ORDER OF THE CHILD

Table 82

Comparison of self esteem of fathers and mothers based on the birth order of children with Attention Deficit Hyperactivity Disorder

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Father - Self Esteem	Between Groups	212.874	5	42.575	2.162	.062
	Within Groups	2816.548	143	19.696		
	Total	3029.423	148			
	Total	20341.730	195			
Mother - Self Esteem	Between Groups	123.696	5	24.739	1.078	.374
	Within Groups	4362.222	190	22.959		
	Total	4485.918	195			

	Within Groups	7260.312	194	37.424		
	Total	7512.963	199			

Self esteem of parents was studied in relation to the birth order of children with Attention Deficit Hyperactivity Disorder. No significant difference was seen in the experience of parental self esteem in relation to the ordinal position of the child. Parents whose children were first born, second born or single children experienced similar levels of self esteem. The above evidence refutes **hypotheses 13 i c and 13 ii c** that state 'There will be a significant difference in the Self Esteem of fathers of children with Attention Deficit Hyperactivity Disorder based on the birth order of the child' and 'There will be a significant difference in the Self Esteem of mothers of children with Attention Deficit Hyperactivity Disorder based on the birth order of the child' respectively.

4. PARENTAL SELF ESTEEM BASED ON THE GENDER OF THE CHILD

Table 83

Comparison of self esteem of fathers and mothers based on the gender of children with Attention Deficit Hyperactivity Disorder

Independent Samples Test					
	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	Df	Sig. (2-tailed)
Father - Self Esteem	.630	.429	1.572	147	.118
Mother - Self Esteem	4.174	.042	.838	194	.403

Self Esteem experienced by parents was studied based on the gender of the child with Attention Deficit Hyperactivity Disorder. No significant differences were noted in fathers

and mothers self esteem in relation to the gender of the child. The above evidence rejects **hypotheses 13 i d and 13 ii d** that state 'There will be a significant difference in the Self Esteem of fathers of children with Attention Deficit Hyperactivity Disorder based on the gender of the child' and 'There will be a significant difference in the Self Esteem of mothers of children with Attention Deficit Hyperactivity Disorder based on the gender of the child'.

5. PARENTAL SELF ESTEEM BASED ON WHETHER THE CHILD WITH ADHD IS ON A MANAGEMENT PROGRAM

Table 84

Comparison of self esteem of fathers and mothers based on whether or not the child with Attention Deficit Hyperactivity Disorder is on a management program

Independent Samples Test					
	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Father - Self Esteem	.913	.341	-1.445	147	.150
Mother - Self Esteem	.257	.613	-.322	194	.748

Parental self esteem was studied in relation to whether or not the child with Attention Deficit Hyperactivity Disorder was on a management program. No significant differences were noted in fathers and mothers levels of self esteem in this aspect. The above statistical evidence rejects **hypotheses 13 i e and 13 ii e** that state 'There will be a significant difference in the Self Esteem of fathers of children with Attention Deficit Hyperactivity Disorder based on whether or not the child is on a management program' and 'There will

be a significant difference in the Self Esteem of mothers of children with Attention Deficit Hyperactivity Disorder based on whether or not the child is on a management program'.

i. CO-MORBID FEATURES AND PARENTAL ASPECTS

Table 85

Association of domains of fathers and mothers for children with Attention Deficit Hyperactivity Disorder and Specific Learning Difficulty

Paired Samples Test							
		Paired Differences			T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	Overall QOL - Father - Overall QOL – Mother	-.02	.657	.098	-.227	44	.821
Pair 2	Health - Father - Health - Mother	-.02	.988	.147	-.151	44	.881
Pair 3	Physical Aspects - Father - Physical Aspects – Mother	.44	2.642	.394	1.129	44	.265
Pair 4	Psychological Aspects - Father - Psychological Aspects - Mother	.24	2.186	.326	.750	44	.457
Pair 5	Social Relationships - Father - Social Relationships - Mother	.67	4.400	.656	1.016	44	.315
Pair 6	Environmental Aspects - Father - Environmental Aspects - Mother	.98	6.468	.964	1.014	44	.316
Pair 7	Depression - Father - Depression - Mother	.22	.795	.118	1.876	44	.067
Pair 8	Total QOL - Father - Total QOL - Mother	3.22	12.724	1.897	1.699	44	.096
Pair 9	Whole Scale PSS - Father – Whole Scale PSS - Mother	-.73	4.933	.735	-.997	44	.324
Pair 10	Positive Themes - Father - Positive Themes - Mother	.91	4.171	.622	1.465	44	.150
Pair 11	Negative Themes - Father - Negative Themes - Mother	-1.64	3.909	.583	-2.822	44	.007
Pair	Self Esteem - Father - Self	1.13	5.061	.755	1.502	44	.140

12	Esteem – Mother						

Table 86
Association of domains of fathers and mothers for children with Attention Deficit Hyperactivity Disorder and Autistic Features

Paired Samples Test							
		Paired Differences			T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	Overall QOL - Father - Overall QOL - Mother	.13	.354	.125	1.000	7	.351
Pair 2	Health - Father - Health - Mother	.50	.535	.189	2.646	7	.033
Pair 3	Physical Aspects - Father - Physical Aspects - Mother	.50	2.449	.866	.577	7	.582
Pair 4	Psychological Aspects - Father - Psychological Aspects - Mother	.75	1.832	.648	1.158	7	.285
Pair 5	Social Relationships - Father - Social Relationships - Mother	1.25	3.059	1.082	1.156	7	.286
Pair 6	Environmental Aspects - Father - Environmental Aspects - Mother	4.25	4.590	1.623	2.619	7	.034
Pair 7	Depression - Father - Depression - Mother	.88	.641	.227	3.862	7	.006
Pair 8	Total QOL - Father - Total QOL - Mother	8.25	8.746	3.092	2.668	7	.032
Pair 9	Whole Scale PSS - Father – Whole Scale PSS - Mother	-2.88	6.749	2.386	-1.205	7	.267
Pair 10	Positive Themes - Father - Positive Themes - Mother	-1.25	6.861	2.426	-.515	7	.622
Pair 11	Negative Themes - Father - Negative Themes - Mother	-1.63	3.543	1.253	-1.297	7	.236
Pair 12	Self Esteem - Father - Self Esteem – Mother	.75	4.027	1.424	.527	7	.615

Table 87
Association of domains of fathers and mothers for children with Attention Deficit Hyperactivity Disorder and Slow learner

Paired Samples Test							
		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	Overall QOL - Father - Overall QOL – Mother	-.09	.701	.211	-.430	10	.676
Pair 2	Health - Father - Health – Mother	.18	1.079	.325	.559	10	.588
Pair 3	Physical Aspects - Father - Physical Aspects - Mother	-1.00	2.646	.798	-1.254	10	.239
Pair 4	Psychological Aspects - Father - Psychological Aspects – Mother	.82	3.281	.989	.827	10	.427
Pair 5	Social Relationships - Father - Social Relationships - Mother	1.73	4.101	1.236	1.397	10	.193
Pair 6	Environmental Aspects - Father - Environmental Aspects - Mother	.09	5.839	1.760	.052	10	.960
Pair 7	Depression - Father - Depression - Mother	.18	.603	.182	1.000	10	.341
Pair 8	Total QOL - Father - Total QOL - Mother	2.18	9.988	3.012	.724	10	.485
Pair 9	Whole Scale PSS - Father – Whole Scale PSS - Mother	-1.00	3.768	1.136	-.880	10	.399
Pair 10	Positive Themes - Father - Positive Themes - Mother	-.18	3.573	1.077	-.169	10	.869
Pair 11	Negative Themes - Father - Negative Themes - Mother	-.82	2.822	.851	-.962	10	.359
Pair 12	Self Esteem - Father - Self Esteem - Mother	-.73	3.663	1.104	-.658	10	.525

Table 88
Association of domains of fathers and mothers for children with Attention Deficit Hyperactivity Disorder and Mental Retardation

Paired Samples Test							
		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	Overall QOL - Father - Overall QOL - Mother	.50	.577	.289	1.732	3	.182
Pair 2	Health - Father - Health - Mother	.75	1.500	.750	1.000	3	.391
Pair 3	Physical Aspects - Father - Physical Aspects - Mother	-1.75	1.258	.629	-2.782	3	.069
Pair 4	Psychological Aspects - Father - Psychological Aspects - Mother	1.75	3.096	1.548	1.131	3	.340
Pair 5	Social Relationships - Father - Social Relationships - Mother	5.00	4.546	2.273	2.200	3	.115
Pair 6	Environmental Aspects - Father - Environmental Aspects - Mother	.75	4.031	2.016	.372	3	.735
Pair 7	Depression - Father - Depression - Mother	.50	1.000	.500	1.000	3	.391
Pair 8	Total QOL - Father - Total QOL - Mother	7.50	8.888	4.444	1.688	3	.190
Pair 9	Whole Scale PSS - Father – Whole Scale PSS - Mother	-2.75	2.630	1.315	-2.091	3	.128
Pair 10	Positive Themes - Father - Positive Themes - Mother	-2.00	3.367	1.683	-1.188	3	.320
Pair 11	Negative Themes - Father - Negative Themes - Mother	-1.25	4.992	2.496	-.501	3	.651
Pair 12	Self Esteem - Father - Self Esteem - Mother	1.25	3.775	1.887	.662	3	.555

It was noted that when children with Attention Deficit Hyperactivity Disorder had a co-morbid feature of specific learning difficulty, significant differences were noted in the negative themes of parenting experienced by fathers and mothers. Also, significant differences were noted in the domains relating to health, environmental aspects, depression and quality of life for fathers and mothers whose children had autistic features. No significant differences were experienced by parents whose children had the co-morbid features of mental retardation or being a slow learner. This statistical evidence partially confirms **hypothesis 14** that states 'There will be a significant difference in the quality of life, parental stress and self esteem of parents in relation to the presence of co-morbid features in children with Attention Deficit Hyperactivity Disorder.'

DISCUSSION

The intensity of symptoms reported by parents whose children had Attention Deficit Hyperactivity Disorder was higher in a nuclear family setting than when children hailed from joint families or had single working parents. This may be attributed to shared responsibilities with others in the family or child caregivers. This may not be the case in the nuclear family setting, where parents are the primary caregivers for their children in addition to responsibilities of the home. This may be a factor in the report of a greater number of symptoms when children with Attention Deficit Hyperactivity Disorder hail from a nuclear family.

Research has shown that symptoms of Attention Deficit Hyperactivity Disorder are often associated with relational issues such as parental disharmony (Brendon 1971) and family dysfunction (Gillby et al 1983). However, it is of note that with such research, conclusions reached seem to lean towards the 'linear model', that suggests that it is the disorder of

Attention Deficit Hyperactivity Disorder that causes family disruption. But other research indicates that there is a clear relationship between the behaviours of parents towards each other and the rate of disturbance within the child (Graham et al., 1999). A stark contrast is seen in the current study, where more frequent or intense symptoms are reported in the absence of parental disharmony. In the Indian setting the presence of the joint family or involvement of the extended family in caring for the child with Attention Deficit Hyperactivity Disorder may act as a buffer and reduce parental disharmony. Therefore, symptoms are not as intense as compared to the west, where parents lack the support of the extended family. This finding may require further research.

It was interesting to note that the social factors, especially parental domains are related to each other. Fathers' and mothers' well being, stress and self esteem are related to each other. It was noted that as levels of depression and stress increased, parental quality of life reduces. Mothers seem to be affected on more facets than fathers. Deficits were noted with regard to physical aspects involving aspects of enjoying life, a feeling that life is meaningful and extent of physical pain experienced, psychological aspects involving concentration and a feeling of security, environmental aspects involving activities of daily living, effect on social relationships, level of energy, finances, leisure activities and need for information. Also, stress reported in mothers is related to their physical aspects. Since a relationship exists between fathers and mothers quality of life, experience of stress and self esteem, a change in the level of one parent may attribute an equal or similar change in the other parent. This feature is true for all aspects except depression, which seems more individualistic. This finding also increases the importance on the need for parental counselling in the management of Attention Deficit Hyperactivity Disorder.

It was interesting to note that many social factors especially relating to parental domains varied across different aspects.

With regard to Quality of Life, parents whose children have Attention Deficit Hyperactivity Disorder- Inattentive type seem to have fairly better levels of quality of life when compared to parents whose children have Attention Deficit Hyperactivity Disorder- combined or inattentive types. The component of 'hyperactivity' seems to play a major role in parental quality of life. 'Hyperactivity' seems to retard parents' socialization and affects physical aspects, especially level of parental energy in care-giving. The age of the child was not a factor in the quality of life of parents. It was observed that physical aspects of parents were more affected when they have single children with Attention Deficit Hyperactivity Disorder. In addition, mothers with single children seem more depressed than their counterparts. The complete focus of parents with single children may be only on their child, thus leading to lower quality of life scores. Parents whose sons had Attention Deficit Hyperactivity Disorder reported lower scores on Quality of Life aspects than parents whose daughters had Attention Deficit Hyperactivity Disorder. This may be attributed to the cultural bias that favours the well being of the boy rather than that of the girl child. It was also observed that parents whose children were on a management program had fairly better quality of lives and lower scores on depression, than parents whose children were not on a management program. This portrays the effectiveness of the management program for Attention Deficit Hyperactivity Disorder, but focus on all parental aspects should be worked upon.

Acceptance of a child (themes of parenting) with Attention Deficit Hyperactivity Disorder was a major factor that parents had difficulty coping. This was seen for fathers and mothers

especially when children had Attention Deficit Hyperactivity Disorder- combined type. This may be attributed to the lack of awareness and information with regard to this developmental disorder. The age of the child, ordinal position, whether or not the child is on a management program does not influence the stress experienced by parents. With regard to the gender of the child, it was interesting to note that mothers experienced greater stress when their sons had Attention Deficit Hyperactivity Disorder. They also had greater difficulty accepting their child's difficulties. This may be attributed to the cultural norm that mothers are the primary caregivers for children. Therefore, they experience greater stress.

The self esteem of parents is not influenced by the type of Attention Deficit Hyperactivity Disorder, age, gender, birth order, whether or not the child is on a management program.

The presence of the frequently occurring co-morbid features of specific learning difficulty or autistic features does not affect parental domains. Only when the co-morbid feature of mental sub-normality is present, parents experience lower quality of life and frequent negative moods.

Therefore, in the management program for Attention Deficit Hyperactivity Disorder, parental counselling should be give adequate focus. It should be noted that the type of Attention Deficit Hyperactivity Disorder, age, gender, birth order, whether or not the child is on a management program and co-morbid features influence the quality of life, stress and self esteem experienced by parents in varied ways. Appropriate counselling procedures should be adopted and incorporated for the wholesome effectiveness of the management program for Attention Deficit Hyperactivity Disorder.

j. CLUSTER ANALYSIS

Table 89

Cluster Analysis of children with Attention Deficit Hyperactivity Disorder

		Three Clusters					
		1		2		3	
		N	%	N	%	N	%
Type	Combined	53	82.8	77	75.5	24	66.7
	Hyperactive	7	10.9	13	12.7	9	25.0
	Inattentive	4	6.3	12	11.8	3	8.3
Total		64	100.0	102	100.0	36	100.0
Classification	Above avg	24	37.5	0	.0	0	.0
	Average high	40	62.5	0	.0	0	.0
	Average low	0	.0	62	60.8	0	.0
	Borderline	0	.0	40	39.2	0	.0
	Mid MR	0	.0	0	.0	18	50.0
	Moderate MR	0	.0	0	.0	4	11.1
	Severe MR	0	.0	0	.0	3	8.3
	Superior	0	.0	0	.0	11	30.6
Total		64	100.0	102	100.0	36	100.0
SLD	Yes	41	64.1	64	62.7	2	5.6
	No	23	35.9	38	37.3	34	94.4
Total		64	100.0	102	100.0	36	100.0
Autistic Features	Yes	1	1.6	7	6.9	13	36.1
	No	63	98.4	95	93.1	23	63.9
Total		64	100.0	102	100.0	36	100.0
Slow Learner	Yes	0	.0	25	24.5	0	.0
	No	64	100.0	77	75.5	36	100.0
Total		64	100.0	102	100.0	36	100.0
Mental Retardation	Yes	0	.0	3	2.9	7	19.4
	No	64	100.0	99	97.1	29	80.6
Total		64	100.0	102	100.0	36	100.0

Classification		Three Clusters								
		1			2			3		
		Combined	Hyperactive	Inattentive	Combined	Hyperactive	Inattentive	Combined	Hyperactive	Inattentive
Above avg	N	21	3	0	0	0	0	0	0	0
	%	39.6	42.9	.0	.0	.0	.0	.0	.0	.0
Average high	N	32	4	4	0	0	0	0	0	0
	%	60.4	57.1	100.0	.0	.0	.0	.0	.0	.0
Average low	N	0	0	0	48	6	8	0	0	0
	%	.0	.0	.0	62.3	46.2	66.7	.0	.0	.0
Borderline	N	0	0	0	29	7	4	0	0	0
	%	.0	.0	.0	37.7	53.8	33.3	.0	.0	.0
Mid MR	N	0	0	0	0	0	0	14	3	1
	%	.0	.0	.0	.0	.0	.0	58.3	33.3	33.3
Moderate MR	N	0	0	0	0	0	0	2	0	2
	%	.0	.0	.0	.0	.0	.0	8.3	.0	66.7
Severe MR	N	0	0	0	0	0	0	3	0	0
	%	.0	.0	.0	.0	.0	.0	12.5	.0	.0
Superior	N	0	0	0	0	0	0	5	6	0
	%	.0	.0	.0	.0	.0	.0	20.8	66.7	.0
Total	N	53	7	4	77	13	12	24	9	3
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 90
Results of Cluster Analysis

Test Statistics(a,b)			
	Chi-Square	df	Asymp. Sig.
Age	10.678	2	.005
Type	3.284	2	.194
SLD	30.217	2	.000
Autistic Features	32.493	2	.000
Slow Learner	74.016	2	.000
Mental Retardation	20.285	2	.000

First Consultation	9.244	2	.010
Classification	149.705	2	.000
a Kruskal Wallis Test			
b Grouping Variable: Three Cluster			

Table 91

Cluster Analysis based on the age of children with Attention Deficit Hyperactivity Disorder

	Three Cluster					
	1		2		3	
Age	N	%	N	%	N	%
Early Childhood	40	31.5	27	48.2	14	73.7
Late Childhood	82	64.6	24	42.9	4	21.1
Adolescence	5	3.9	5	8.9	1	5.3
Total	127	100.0	56	100.0	19	100.0

Table 92

Cluster Analysis based on the type of Attention Deficit Hyperactivity Disorder

	Three Cluster					
	1		2		3	
Type	N	%	N	%	N	%
Combined	100	78.7	43	76.8	11	57.9
Hyperactive	15	11.8	8	14.3	6	31.6
Inattentive	12	9.4	5	8.9	2	10.5
Total	127	100.0	56	100.0	19	100.0

Table 93

Cluster Analysis based on the classification of IQ of children with Attention Deficit Hyperactivity Disorder

	Three Cluster					
	1		2		3	
Classification	N	%	N	%	N	%
Above avg	24	18.9	0	.0	0	.0

Average high	40	31.5	0	.0	0	.0
Average low	61	48.0	1	1.8	0	.0
Borderline	2	1.6	38	67.9	0	.0
Mid MR	0	.0	17	30.4	1	5.3
Moderate MR	0	.0	0	.0	4	21.1
Severe MR	0	.0	0	.0	3	15.8
Superior	0	.0	0	.0	11	57.9
Total	127	100.0	56	100.0	19	100.0

Table 94

Cluster Analysis based on whether children with Attention Deficit Hyperactivity Disorder was on a management program

	Three Cluster					
	1		2		3	
First Consultation	N	%	N	%	N	%
Yes	100	78.7	33	58.9	11	57.9
No	27	21.3	23	41.1	8	42.1
Total	127	100.0	56	100.0	19	100.0

Table 95

Cluster Analysis based on the comorbid features in children with Attention Deficit Hyperactivity Disorder

	Three Cluster					
	1		2		3	
SLD	N	%	N	%	N	%
Yes	85	66.9	20	35.7	2	10.5
No	42	33.1	36	64.3	17	89.5
Total	127	100.0	56	100.0	19	100.0

	Three Cluster					
	1		2		3	
Autistic Features	N	%	N	%	N	%
Yes	3	2.4	10	17.9	8	42.1
No	124	97.6	46	82.1	11	57.9
Total	127	100.0	56	100.0	19	100.0

	Three Cluster					
	1		2		3	
Slow Learner	N	%	N	%	N	%
Yes	0	.0	25	44.6	0	.0
No	127	100.0	31	55.4	19	100.0
Total	127	100.0	56	100.0	19	100.0

	Three Cluster					
	1		2		3	
Mental Retardation	N	%	N	%	N	%
Yes	1	.8	9	16.1	0	.0
No	126	99.2	47	83.9	19	100.0
Total	127	100.0	56	100.0	19	100.0

The data collected was subject to the procedure of cluster analysis. Three clusters were identified. In the first cluster, children with Attention Deficit Hyperactivity Disorder had above average, average high or average low intelligence. In the second cluster, the children with Attention Deficit Hyperactivity Disorder were slow learners and had mild mental sub-normality. Children in the third cluster had moderate or severe mental sub-normality. Most of the children in the first cluster belong to early childhood, while those in the second cluster are distributed between early and late childhood. The most number of children in the third cluster belong to early childhood. Children in all three clusters were predominantly Attention Deficit Hyperactivity Disorder-combined type. It was noted that the maximum number of children in cluster one had specific learning difficulty and the most number of children in cluster three had autistic features. It is inferred from the above observation, that specific learning difficulty is most commonly seen in children with above average or average intelligence, while autistic features is seen among children with mental sub-normality. Also, Attention Deficit Hyperactivity Disorder-combined type was seen

across IQ classifications and is the most common manifestation of Attention Deficit Hyperactivity Disorder in the Indian setting.

k. FACTOR ANALYSIS

For the present study, factor analysis was carried out for Attention Deficit Hyperactivity Disorder- Combined, Hyperactive and Inattentive types separately. The method of Varimax rotation was used in the analysis.

A total of 26 parameters were used for the analysis. The parameters were: Birth weight, DSM -Symptom Checklist Scores, Maladaptive Behaviour Checklist - Score .

Father - Total QOL, Social Relationships, Environmental Aspects, Psychological Aspects, Health, Overall QOL, Negative Themes, Whole Scale PSS, Physical Aspects, Depression, Self Esteem, Positive Themes,

Mother - Negative Themes, Whole Scale PSS, Total QOL, Environmental Aspects, Social Relationships, Psychological Aspects, Health, Overall QOL, Self Esteem, Positive Themes, Physical Aspects, and Depression,

Table 96: Factor Analysis for Combined Type Children

Total Variance Explained(a)						
	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.531	23.325	23.325	3.887	13.882	13.882
2	3.225	11.518	34.843	3.510	12.537	26.419
3	2.381	8.504	43.347	3.458	12.351	38.771
4	1.940	6.927	50.274	1.877	6.703	45.474
5	1.633	5.834	56.108	1.718	6.137	51.611
6	1.443	5.152	61.260	1.583	5.652	57.263
7	1.207	4.311	65.571	1.536	5.484	62.748

8	1.161	4.147	69.718	1.509	5.391	68.139
9	1.039	3.711	73.429	1.481	5.291	73.429
10	.872	3.115	76.544			
11	.853	3.046	79.590			
12	.695	2.484	82.074			
13	.648	2.315	84.389			
14	.632	2.258	86.647			
15	.594	2.120	88.767			
16	.533	1.902	90.669			
17	.487	1.740	92.410			
18	.443	1.582	93.992			
19	.343	1.224	95.216			
20	.338	1.207	96.423			
21	.280	1.000	97.422			
22	.243	.866	98.289			
23	.241	.862	99.150			
24	.198	.706	99.856			
25	.024	.087	99.943			
26	.008	.030	99.973			
27	.007	.025	99.998			
28	.001	.002	100.000			
Extraction Method: Principal Component Analysis.						
a Type = Combined						

By the method of principal component analysis, it was seen that there were nine factors contributing to 73% of the total variance. The first factor contributes about 14% of variance, the second and third factors nearly 13% each, the fourth and fifth factors nearly 7% each, sixth, seventh, eighth and ninth factors nearly 5% each of variance.

Table 97: Factor Loadings – Combined Type Children

	Components								
	1	2	3	4	5	6	7	8	9
Father - Total QOL	**.946**	-.059	.216	-.019	.131	.021	.050	-.099	-.017
Father - Social Relationships	**.791**	-.219	.037	.107	.162	.073	.023	.013	-.038
Father - Environmental Aspects	**.732**	.034	.290	.000	-.197	-.183	-.111	-.176	-.149
Father - Psychological Aspects	**.721**	.045	.059	.064	.267	.123	.026	-.115	.187
Father – Health	**.618**	-.261	.021	.001	-.223	.012	.320	.126	.143
Father - Overall QOL	**.612**	.016	.090	-.237	.028	.153	.398	.172	.084
Mother - Negative Themes	-.076	**.842**	-.069	-.106	-.173	-.200	-.060	.001	.132
Mother - Whole Scale PSS	-.092	**.818**	-.216	.370	-.084	-.023	-.034	.050	.151
Father - Negative Themes	-.105	**.810**	-.106	.050	.049	-.065	-.051	.179	-.105
Father - Whole Scale PSS	-.107	**.761**	-.091	.115	-.022	-.022	-.054	.520	-.084
Mother - Total QOL	.147	-.170	**.913**	-.011	.186	-.025	.149	-.079	.018
Mother - Environmental Aspects	.023	-.048	**.761**	-.196	-.096	.018	.191	-.212	-.135
Mother - Social Relationships	.188	-.171	**.747**	.257	.044	.037	-.059	.064	.097
Mother - Psychological Aspects	.277	-.193	**.666**	.154	.304	-.157	.009	.049	.126
Mother – Health	.015	.274	**.549**	-.267	-.323	.218	-.015	.195	-.017

Mother - Overall QOL	.304	-.134	**.471**	-.280	-.097	.268	.143	-.014	.361
Mother - Self Esteem	.042	-.002	.131	**.707**	-.124	.002	-.064	.141	-.044
Mother - Positive Themes	-.043	.370	-.279	**.658**	.050	.219	.010	.067	.114
Mother - Physical Aspects	.081	-.370	.029	.042	**.739**	-.189	.064	-.029	.094
Father - Physical Aspects	.184	.134	.175	-.252	**.696**	.272	-.037	-.046	.086
Birth Weight	.064	-.099	-.001	.045	.063	**.798**	.064	.069	-.039
DSM -Symptom Checklist Scores	-.120	.220	-.062	-.077	.291	**-.506**	.088	.406	.136
Father – Depression	.459	-.200	.079	-.083	-.081	.006	**.653**	-.049	-.018
Father - Self Esteem	.052	.183	.020	.529	.012	-.215	**.605**	-.163	-.039
Mother – Depression	-.007	-.146	.390	-.105	.169	.256	**.579**	.034	-.031
Father - Positive Themes	-.084	.349	-.030	.166	-.107	.044	-.045	**.793**	-.045
IQ	.019	.011	.087	-.049	.180	.010	.016	-.133	**.831**
Maladaptive Behaviour Checklist – Score	-.081	-.129	.091	-.176	.071	.387	.124	-.368	**-.645**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.									

In the first component, the variables that are highly loaded include: father-total quality of life, social relationships, environmental aspects, psychological aspects, health and overall quality of life.

Variables highly loaded in the second component include: mother-negative themes, whole scale parental stress, father- negative themes and whole scale parental stress.

In the third component, the variables that are highly loaded include: mother- total quality of life, environmental aspects, social relationships, psychological aspects, health and overall quality of life.

Variables highly loaded in the fourth component include: mother- self esteem and positive themes.

In the fifth component, the variables that are highly loaded include: mother- physical aspects and father-physical aspects.

Variables in the sixth component include DSM scores and birth weight.

In the seventh component, variables highly loaded include: father- depression and self esteem, mother – depression.

Variables highly loaded in the eighth component include father-positive themes.

In the ninth component, factors highly loaded include IQ and Maladaptive Behaviour Checklist scores.

Table 98: Factor Analysis for Hyperactive Children

Total Variance Explained(a)

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.569	19.889	19.889	4.333	15.474	15.474
2	4.205	15.017	34.906	4.109	14.674	30.148
3	3.729	13.318	48.225	3.078	10.993	41.141
4	2.826	10.094	58.319	2.886	10.307	51.448
5	2.203	7.869	66.188	2.460	8.786	60.234
6	2.086	7.451	73.639	2.159	7.709	67.943
7	1.466	5.234	78.873	1.942	6.937	74.880
8	1.436	5.129	84.002	1.833	6.545	81.425

9	1.052	3.758	87.760	1.774	6.336	87.760
10	.882	3.149	90.909			
11	.712	2.541	93.450			
12	.529	1.889	95.339			
13	.430	1.536	96.875			
14	.348	1.244	98.118			
15	.260	.927	99.046			
16	.119	.425	99.471			
17	.098	.349	99.819			
18	.051	.181	100.000			
19	.000	.000	100.000			
20	.000	.000	100.000			
21	.000	.000	100.000			
22	.000	.000	100.000			
23	.000	.000	100.000			
24	.000	.000	100.000			
25	.000	.000	100.000			
26	.000	.000	100.000			
27	.000	.000	100.000			
28	.000	.000	100.000			
Extraction Method: Principal Component Analysis.						
a Type = Hyperactive						

In children with Attention Deficit Hyperactivity Disorder –Hyperactive type, by method of principal component analysis, it was seen that there were nine factors contributing to 87% of the total variance. The first and second factors contribute to around 15% each of variance, third factor around 11% of variance, fourth factor 10% of variance, fifth factor 9% of variance, sixth factor 8% of variance, seventh and eighth factor 7% each of variance and ninth factor around 6% of variance.

Table 99 : Factor Loadings - Hyperactivity Children

	1	2	3	4	5	6	7	8	9
Father – Health	**.888**	.185	.104	.031	.078	.098	-.043	.262	.031
Mother - Self Esteem	**.832**	-.059	.069	-.029	.199	.076	-.099	-.029	.083
Father - Negative Themes	**.820**	-.100	-.036	-.046	.073	.065	.338	-.129	-.086
Mother - Environmental Aspects	**-.648**	-.099	.390	.129	.389	-.330	.142	.101	.128
Mother - Depression	**.501**	-.196	.219	.331	.017	-.308	.009	.429	.424
Father - Depression	**.456**	.192	-.414	.398	.194	-.378	.031	.378	.195
Father - Total QOL	.109	**.937**	-.062	.085	.037	.170	-.040	.139	.156
Father - Social Relationships	-.072	**.927**	-.064	-.005	-.077	-.083	-.107	.116	.090
Father – Overall QOL	.025	**.764**	.093	.069	-.005	-.358	.298	-.049	.305
Father - Environmental Aspects	-.009	**.735**	.221	-.064	.142	.091	-.391	-.060	-.192
Mother - Overall QOL	.288	**.508**	-.166	.358	.113	-.041	.107	-.088	.462
Father - Positive Themes	-.268	-.031	**.909**	.001	-.026	-.103	-.030	.164	.045
Father - Whole Scale PSS	.420	-.109	**.802**	-.037	.035	-.042	.247	.046	-.028
Mother - Positive Themes	.283	.221	**.718**	-.241	.280	-.083	-.204	.273	-.070
Mother – Health	-.282	.389	**.520**	.210	.001	.103	.078	-.438	.265
Mother - Total QOL	-.195	.033	.167	**.908**	.238	-.008	.138	.070	.097
Mother - Psychological Aspects	-.119	-.099	-.185	**.810**	-.199	-.013	-.305	-.048	.072
Mother - Social Relationships	.370	.317	-.129	**.767**	.016	.158	.107	.135	-.124
Mother - Negative Themes	.050	-.030	-.157	.127	**.918**	.041	.089	-.117	.067
Mother - Whole Scale PSS	.233	.133	.389	-.078	**.846**	-.029	-.079	.107	-.001
Father - Physical Aspects	.113	.023	-.101	-.027	.049	**.860**	.208	.103	.064

IQ	.380	.194	-.047	.076	-.404	**.589**	-.387	-.041	.280
Mother - Physical Aspects	.144	-.289	-.027	.375	.126	**.569**	.299	-.134	-.200
DSM -Symptom Checklist Scores	.042	-.088	.061	-.005	.023	.241	**.913**	-.008	-.103
Father - Self Esteem	-.057	.141	.231	.070	-.054	.055	.011	**.875**	.077
Birth Weight	.356	.368	.106	.058	.394	.151	-.003	**.409**	-.227
Father - Psychological Aspects	-.155	.467	.060	-.097	.118	.034	-.159	.154	**.735**
Maladaptive Behaviour Checklist - Score	-.462	-.099	-.002	-.305	.302	-.255	.375	.176	**-.553**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.									
a Rotation converged in 10 iterations.									
b Type = Hyperactive									

In the first component, the variables that are highly loaded include: father- health, positive themes and depression, mother-self esteem, environmental aspects and depression

Variables highly loaded in the second component include: father- total quality of life, social relationships, overall quality of life, environmental aspects, mother-overall quality of life.

In the third component, the variables that are highly loaded include: father- positive themes and whole scale parental stress, mother-positive themes and health.

Variables highly loaded in the fourth component include: mother- total quality of life, psychological aspects, and social relationships.

In the fifth component, the variables that are highly loaded include: mother- negative themes and whole scale parental stress

Variables in the sixth component include father- physical aspects, mother-physical aspects and IQ.

In the seventh component, variables highly loaded include: DSM scores

Variables highly loaded in the eighth component include father- self esteem and birth weight.

In the ninth component, factors highly loaded include father- physical aspects and maladaptive behaviour checklist scores.

Table 100 : Factor Analysis for Inattentive Type Children

Total Variance Explained(a)						
	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.593	34.262	34.262	8.257	29.488	29.488
2	6.980	24.928	59.190	5.445	19.447	48.935
3	5.281	18.862	78.052	5.167	18.453	67.388
4	3.922	14.008	92.059	4.988	17.813	85.201
5	2.223	7.941	100.000	4.144	14.799	100.000
6	.000	.000	100.000			
7	.000	.000	100.000			
8	.000	.000	100.000			
9	.000	.000	100.000			
10	.000	.000	100.000			
11	.000	.000	100.000			
12	.000	.000	100.000			
13	.000	.000	100.000			
14	.000	.000	100.000			
15	.000	.000	100.000			
16	.000	.000	100.000			
17	.000	.000	100.000			
18	.000	.000	100.000			
19	.000	.000	100.000			

20	.000	.000	100.000			
21	.000	.000	100.000			
22	.000	.000	100.000			
23	.000	.000	100.000			
24	.000	.000	100.000			
25	.000	.000	100.000			
26	.000	.000	100.000			
27	.000	.000	100.000			
28	.000	.000	100.000			
Extraction Method: Principal Component Analysis.						
a Type = Inattentive						

For children with Attention Deficit Hyperactivity Disorder- Inattentive type, by the method of principal component analysis, it was seen that there were five factors contributing to all the variance. The first factor contributed to 29% variance, the second factor 19% variance, third factor 18% variance, fourth factor 17% variance and fifth factor 15% variance.

Table 101: Factor Loadings - Inattentive Children

Rotated Component Matrix(a,b)					
	Component				
	1	2	3	4	5
Mother - Positive Themes	**-.968**	.085	-.206	-.037	.110
Father - Whole Scale PSS	**-.944**	.030	-.193	-.182	.197
Father - Psychological Aspects	**.916**	.390	.046	-.040	-.077
Father - Positive Themes	**-.873**	-.039	-.089	.406	.254
Father - Physical Aspects	**.864**	.150	-.084	.418	-.224
Mother - Negative Themes	**.844**	.105	-.515	-.035	-.096
Father - Social Relationships	**.819**	-.302	-.177	.392	-.230
Father - Total QOL	**.760**	.537	-.198	.290	.100
Mother - Psychological Aspects	**.658**	.463	-.181	-.121	.553
Mother – Health	-.015	**.941**	.184	.014	.282

Mother - Physical Aspects	.057	**.934**	-.009	-.194	-.295
Father - Environmental Aspects	.152	**.906**	-.318	.020	.232
Father – Depression	.292	**.720**	.444	.446	-.007
Mother - Self Esteem	-.025	**-.651**	-.421	.539	-.329
Mother - Whole Scale PSS	.339	.223	**-.910**	-.082	-.038
Mother - Environmental Aspects	.003	.237	**.906**	-.114	-.331
Mother - Social Relationships	.346	.004	**.876**	-.114	.316
Maladaptive Behaviour Checklist - Score	-.490	-.161	**.785**	.268	-.211
Mother - Total QOL	.480	.497	**.673**	-.183	.189
Father - Negative Themes	-.033	.113	-.157	**-.974**	-.114
IQ	-.182	-.053	-.121	**.860**	-.458
DSM -Symptom Checklist Scores	-.348	.252	.216	**-.822**	.307
Mother - Depression	-.438	-.305	-.502	**-.639**	.233
Mother - Overall QOL	.438	.305	.502	**.639**	-.233
Father – Health	-.364	.037	-.029	-.134	**.920**
Father - Self Esteem	.297	.025	-.118	.407	**-.855**
Birth Weight	.070	-.617	.093	.207	**-.751**
Father - Overall QOL	-.324	.330	-.304	.536	**.638**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
a Rotation converged in 7 iterations.					
b Type = Inattentive					

In the first component, the variables that are highly loaded include: mother- positive themes of parenting, negative themes of parenting, psychological aspects, father- whole scale parental stress, physical aspects, positive themes of parenting, psychological aspects, social relationships, total quality of life.

Variables highly loaded in the second component include: mother- health, physical aspects, self esteem, father- environmental aspects, and depression.

In the third component, the variables that are highly loaded include: mother- whole scale parental stress, environmental aspects, social relationships, total quality of life and maladaptive behaviour checklist scores.

Variables highly loaded in the fourth component include: father- positive themes, IQ, DSM scores, mother-depression and overall quality of life.

In the fifth component, the variables that are highly loaded include: father- health, self esteem and overall quality of life.

l. DISCRIMINANT ANALYSIS

Cluster analysis has been used in the present study to build models for the types of problems of children based on the following parameters:

(a) Birth weight, DSM -Symptom Checklist Scores, Maladaptive Behaviour Checklist of the child

(b) Father - Total QOL, Social Relationships, Environmental Aspects, Psychological Aspects, Health, Overall QOL, Negative Themes, Whole Scale PSS, Physical Aspects, Depression, Self Esteem, Positive Themes

(c) Mother - Negative Themes, Whole Scale PSS, Total QOL, Environmental Aspects, Social Relationships, Psychological Aspects, Health, Overall QOL, Self Esteem, Positive Themes, Physical Aspects, and Depression.

These 26 parameters are of the continuous data type and hence these were used in the analysis.

Table 102: Summary of Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.599(a)	68.6	68.6	.612
2	.274(a)	31.4	100.0	.464
a First 2 canonical discriminant functions were used in the analysis.				

The first two canonical variables account for 100% of the total dispersion. The canonical correlation measures the association between the discriminant scores and the groups. Values close to 1 indicate a strong correlation between the discriminant scores and the groups.

Table 103: Standardized Canonical Discriminant Function Coefficients

	Function	
	1	2
Father - Overall QOL	.228	.288
Father - Health	.318	.111
Father - Physical Aspects	1.172	.769
Father - Psychological Aspects	.961	.630
Father - Social Relationships	1.939	2.076
Father - Environmental Aspects	2.552	2.529
Father - Depression	.458	.700
Father - Total QOL	-5.133	-5.335
Father - Whole Scale PSS	1.642	.283
Father - Positive Themes	-1.217	-.300
Father - Negative Themes	-1.032	-.273
Father - Self Esteem	.045	.348
Mother - Overall QOL	.552	-.043
Mother - Health	-.219	.424
Mother - Physical Aspects	-.426	.300
Mother - Psychological Aspects	-.197	.195

Mother - Social Relationships	.311	-.243
Mother - Environmental Aspects	-.366	-.760
Mother - Depression	.030	-.018
Mother - Total QOL	-.012	.457
Mother - Whole Scale PSS	-1.905	-1.217
Mother - Positive Themes	.998	.379
Mother - Negative Themes	1.040	.987
Mother - Self Esteem	.066	.229
Birth Weight	-.092	.388
IQ	.056	-.224
DSM -Symptom Checklist Scores	.856	-.029
Maladaptive Behaviour Checklist - Score	.501	-.350

The structure matrix contains within-group correlations of each predictor variable with the canonical function. This matrix provides another way to study the usefulness of each variable in the discriminant function. For each variable, an asterisk marks its largest absolute correlation with one of the canonical functions. With each function, these marked variables are then ordered by the size of the correlation.

Table 104: Structure Matrix

	Function	
	1	2
DSM -Symptom Checklist Scores	.374(*)	-.024
Father - Positive Themes	-.320(*)	-.036
Mother – Positive Themes	-.300(*)	-.172
Mother - Whole Scale PSS	-.263(*)	-.050
Father - Physical Aspects	.262(*)	-.251
Maladaptive Behaviour Checklist – Score	.239(*)	-.182
Mother - Overall QOL	.196(*)	-.051
Father - Whole Scale PSS	-.171(*)	-.013
Mother – Depression	.170(*)	.084
Mother - Social Relationships	.125(*)	.065
Father – Health	.097(*)	-.057

Mother – Health	-.080(*)	.066
Mother - Total QOL	-.017(*)	-.017
Father - Negative Themes	.013(*)	.008
Father - Total QOL	.059	-.243(*)
Mother - Environmental Aspects	-.068	-.234(*)
Mother - Physical Aspects	-.038	.229(*)
Father - Psychological Aspects	-.024	-.228(*)
Mother - Self Esteem	-.057	.227(*)
Father - Overall QOL	.047	-.221(*)
Father - Self Esteem	-.053	.194(*)
Mother - Psychological Aspects	-.102	.190(*)
IQ	-.016	-.142(*)
Father – Depression	.075	.139(*)
Father - Social Relationships	.025	-.134(*)
Father - Environmental Aspects	.009	-.131(*)
Mother - Negative Themes	-.081	.094(*)
Birth Weight	-.008	.063(*)
Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions Variables ordered by absolute size of correlation within function.		

This table displays the canonical variable means by group. Within-group means are computed for each canonical variable.

With regard to the types of Attention Deficit Hyperactivity Disorder, two discriminant functions evolved from the structure matrix. The first function included: DSM scores, maladaptive behaviour checklist scores, father- positive themes, physical aspects, whole scale parental stress, health, negative themes, mother- positive themes, whole scale parental stress, overall quality of life, depression, social relationships, health, and total quality of life. The second function included: IQ, father- total quality of life, psychological aspects, overall quality of life, self esteem, depression, social relationships, environmental aspects,

mother- environmental aspects, physical aspects, self esteem, psychological aspects, and negative themes of parenting.

Table 105: Functions at Group Centroids

	Function	
Type	1	2
Combined	.358	8.131E-02
Hyperactive	-1.176	-.927
Inattentive	-2.502	1.741
Unstandardized canonical discriminant functions evaluated at group means		

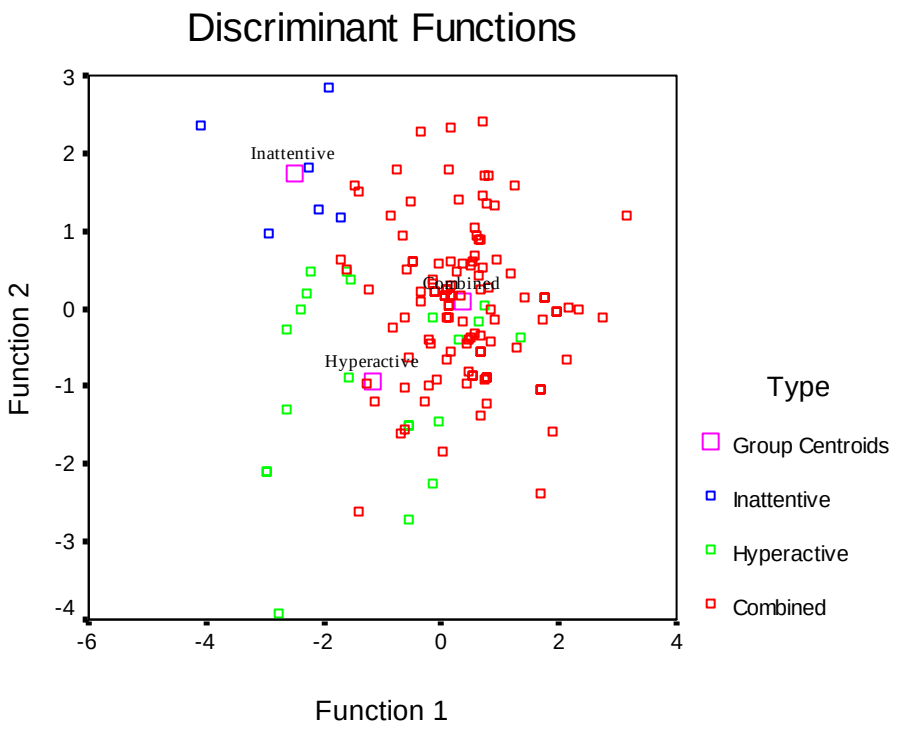


Figure 3: Sample values plotted using the first two discriminant scores

From the figure, it is evident that children with inattentiveness problems and Hyperactive problems remain totally different. Children with combined problems are relatively closer to children with hyperactive problem than children with inattentiveness problems.

DISCUSSION

In cluster analysis, three significant groups were identified on the basis of IQ. It was observed that children in the first cluster more commonly had specific learning difficulty, while children in the third cluster had autistic features. Attention Deficit Hyperactivity Disorder- Combined type seemed to be the most frequent diagnosis and is seen across the three clusters.

Factor analysis was carried out on 26 parameters based on the type of Attention Deficit Hyperactivity Disorder. The results of factor analysis adds significance to the importance of diagnosis as differences are present in the factor loadings for the three types of Attention Deficit Hyperactivity Disorder diagnosed in children. Thus, the focus on parental counselling is three-fold. It should be noted that in the counselling process, that parents of children with Attention Deficit Hyperactivity Disorder- combined type, hyperactive type and combined type require varied approaches in managing various aspects of quality of life, parental stress and self esteem.

Discriminant analysis reveals two functions in the structure matrix. The first function involves interaction between the child's maladaptive behaviour checklist, symptom intensity and parental stress and other aspects of parental quality of life. The second function portrays the interaction between IQ, parental self esteem and environmental aspects. These results also contribute to the parental counselling module for Attention Deficit Hyperactivity Disorder.

It is also evident that children with inattention and hyperactivity remain totally different. Children with Attention Deficit Hyperactivity Disorder- combined type are relatively close to children with Attention Deficit Hyperactivity Disorder-hyperactive type. This further emphasizes the need for individualistic approaches while dealing with parental counselling in Attention Deficit Hyperactivity Disorder.

CHAPTER V

SUMMARY AND CONCLUSIONS

Attention Deficit Hyperactivity Disorder is not a recent discovery. The essential feature of Attention Deficit Hyperactivity Disorder is a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development. In India, the prevalence of Attention Deficit Hyperactivity Disorder is estimated at 10% to 20% in school age children. Attention Deficit Hyperactivity Disorder is frequently associated with the co-morbid features of Specific Learning Difficulty, autistic features, mental retardation or slow learners. In India, the multimodal approach has been adapted in the treatment of Attention Deficit Hyperactivity Disorder. An eclectic approach involving the paediatrician, psychiatrist, psychologist, occupational therapist, speech therapist, family and teachers is most effective in dealing with Attention Deficit Hyperactivity Disorder. Parents play a vital role in facilitating and maintaining developmental gains in children with Attention Deficit Hyperactivity Disorder.

In the Indian setting, there is a lack of evidence on the child with Attention Deficit Hyperactivity Disorder and parental aspects involved. Review of literature reveals a lacuna in the areas relating to the various developmental and parental issues involved in Attention Deficit Hyperactivity Disorder. Hence, the investigator felt a pressing need to explore these un-tread areas.

In light of the above, the research opined that an amalgamation of the various clinical, psychological and social factors relating to Attention Deficit Hyperactivity Disorder in

India should be studied. This study attempts to portray the Indian child with Attention Deficit Hyperactivity Disorder and strives to identify parental issues, if worked upon, may provide a comprehensive management program for Attention Deficit Hyperactivity Disorder.

The aim of this study has necessitated the researcher to arrive at the objectives of examining the family history, birth history, developmental history and educational history of children with Attention Deficit Hyperactivity Disorder. Cognitive factors, presence of co-morbid features, symptom intensity and maladaptive behaviours were also assessed. Parental aspects including Quality of Life, Parental Stress and Self esteem were also studied.

In accordance with the objectives mentioned above, appropriate hypotheses were formulated.

The research design adopted for his study is causal comparative as well as descriptive in nature. The survey method and psychological assessment was implemented to procure the required data. Two hundred and two children with Attention Deficit Hyperactivity Disorder, diagnosed by DSM IV, and their parents (One hundred and seventy two fathers and Two hundred mothers) residing in TamilNadu, India, were chosen by means of purposive sampling technique.

Detailed structured interview was used to obtain details of the child from parents and caregivers. Detailed psychological analysis was conducted to obtain the cognitive profile of children with Attention Deficit Hyperactivity Disorder. The tests used include the Seguin Form Board, the Binet Kamat Intelligence Scale, the Bender Visual Motor Gestalt test

protocol, screening for learning difficulty, the Vineland Adaptive Behaviour Scale and the DSM-IV to assess the symptoms of Attention Deficit Hyperactivity Disorder.

The questionnaire method elicited the necessary data from the parents. The standardized questionnaires used included the World Health Organization Quality of Life- Bref (1996), Parental Stress Scale by Judy.O. Berry (1997) and the Rosenberg's Self Esteem Scale (1965).

The data was collected from children and their parents referred to the Child Guidance Clinic, Kanchi Kamakoti CHILDS Trust Hospital, Chennai, TamilNadu, India, over two sessions, each session lasting for one hour.

The compiled data was statistically analysed using frequency distribution, chi-square, binomial test, t-test, F-test, analysis of variance, correlation, cluster, factor and discriminant analyses.

The results of the present study are summarized as follows:

GENERAL PROFILE OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER AND THEIR PARENTS

A total of two hundred and two children were studied. Of these, 76.2% were diagnosed to have combined type Attention Deficit Hyperactivity Disorder, 14.4% were hyperactive and 9.4% were inattentive. 75.7% of children studied were males and 24.3% females. With respect to age, 40.1% belonged to early childhood (3 to 6 years), 54.5% to late childhood (6 to 12 years) and 5.4% were adolescents (13 to 16 years). 69.8% of children were single children.

Of the one hundred and seventy two (172) fathers studied, 41.6% were graduates and 18.8% were professionals. Of the two hundred (200) mothers studied, the majority (58.9%) were graduates. Fathers of children in this study were mostly businessmen (30.7%) or in service (36.6%), while a majority (59.9%) of mothers were home-makers.

CLINICAL FACTORS OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

The majority of mothers (49%) were between 25 to 30 years at the time of delivery. 73.8% had a non-consanguinous marriage. Around 2.9% of fathers and 1% of mothers report a history of Attention Deficit Hyperactivity Disorder. Around 5.5% of siblings and 5.9% of relatives reported a similar difficulty. It was observed that nearly 30% of mothers had thyroid, hypertension, or diabetes during gestation. 35.6% of mothers reported emotional stress during pregnancy.

Most children with Attention Deficit Hyperactivity Disorder achieved motor milestones appropriately, but mild to moderate speech delay was seen in 50% of the sample.

PSYCHOLOGICAL FACTORS OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

Around 75.7% of children studied were right-handed, but a forced change in handedness was noted in 51% of the children. 63.9% of children with Attention Deficit Hyperactivity Disorder had difficulty with academics. The co-morbid features associated with Attention Deficit Hyperactivity Disorder were specific learning difficulty, autistic features, mental retardation and slow learners.

The mean IQ of children with Attention Deficit Hyperactivity Disorder was 92, while the performance IQ was 101. A significant difference was noted between verbal and performance IQ of children with Attention Deficit Hyperactivity Disorder. There were no significant differences with regard to the type of Attention Deficit Hyperactivity Disorder.

Attention and Concentration in children with Attention Deficit Hyperactivity Disorder was measured using digits span. No significant deficits were noted, indicating that children with Attention Deficit Hyperactivity Disorder may have difficulty sustaining attention for tasks involving long duration. Mild (23.8%) to moderate (25%) visuomotor disturbance was also observed in the children studied.

With regard to the intensity of symptoms, children with Attention Deficit Hyperactivity Disorder- combined type reportedly manifest more symptoms of the disorder. Significant differences were thus noted based on the type of Attention Deficit Hyperactivity Disorder. Children with Attention Deficit Hyperactivity Disorder- combined and hyperactive types were observed to exhibit more maladaptive behaviours than children with Attention Deficit Hyperactivity Disorder- inattentive type. A negative relationship exists among IQ, symptom intensity and maladaptive behaviours for children with Attention Deficit Hyperactivity Disorder. The management program for children with Attention Deficit Hyperactivity Disorder include medication, Occupational therapy, Speech therapy and remedial coaching.

SOCIAL FACTORS IN ATTENTION DEFICIT HYPERACTIVITY DISORDER

The majority of children with Attention Deficit Hyperactivity Disorder were from nuclear families (54%), 28.7% from joint families and 17.3% were single parents. It was noted that

children from nuclear families were reported to have more symptoms than children from joint families or those who had single parents. Also, the aspect of a working mother does not influence the symptom intensity or maladaptive behaviours of children with Attention Deficit Hyperactivity Disorder.

Parental disharmony was reported in 49.3% of children with Attention Deficit Hyperactivity Disorder. A significant difference exists in the intensity of symptoms when children with Attention Deficit Hyperactivity Disorder experience parental disharmony. These children are reported to have higher symptom intensity. Adequate and appropriate socialization is observed in the majority of children (99%) in this study.

The parental domains studied were Quality of Life, Parental Stress and Self esteem. The sub-domains relating to quality of life include: overall quality of life, health, physical aspects, psychological aspects, social relationships, environmental aspects, depression and total quality of life. The sub-domains relating to parental stress include positive and negative themes of parenting.

Data was analyzed for fathers and mothers. For fathers, a relationship was observed among quality of life, depression and stress. A positive relationship is also noted between positive themes of parenting and self esteem. For mothers, a negative correlation is seen between quality of life, physical aspects, psychological aspects, environmental aspects, social relationships and stress.

Also, there is a relationship between overall quality of life, psychological aspects, social relationships, environmental aspects, depression, parental stress, positive and negative themes of parenting and self esteem of fathers and mothers. It was noted that mothers have lower quality of life and higher stress when compared to fathers.

Parental domains were also studied based on the type of Attention Deficit Hyperactivity Disorder, age, birth order and gender of the child, whether or not the child is on a management program.

It was seen that based on the type of Attention Deficit Hyperactivity Disorder, fathers and mothers of children with inattentive type report better experience of quality of life. With regard to birth order, fathers and mothers of single children report lowered quality of life. Fathers and mothers who had sons reported difficulty with certain domains of quality of life. Also, fathers and mothers whose children were on a management program for Attention Deficit Hyperactivity Disorder report better quality of life relating to environmental aspects. The age of the child does not affect the quality of life of fathers and mothers.

Parental stress and its domains, namely positive and negative themes of parenting were also studied in relation to the type of Attention Deficit Hyperactivity Disorder, age, birth order and gender of the child, whether or not the child is on a management program. It was observed that fathers and mothers of children with Attention Deficit Hyperactivity Disorder- combined type report lower scores on positive themes of parenting and higher levels of stress. Mothers of males who had Attention Deficit Hyperactivity Disorder, report higher stress, when compared to fathers. Also, when children were on a management program, mothers seemed to experience relatively less stress. The age and birth order of the child does not play a major role in the experience of parental stress.

The self esteem of fathers and mothers do not differ based on the type of Attention Deficit Hyperactivity Disorder, age, birth order and gender of the child, whether or not the child is on a management program.

Parents whose children had the co-morbid feature of specific learning difficulty and autistic features reported lower quality of life.

It was evident from discriminant analysis that children with inattention and hyperactivity remain totally different. Also, children with Attention Deficit Hyperactivity Disorder-combined type are relatively closer to children with hyperactivity. Results of factor analysis add significance to the importance of diagnosis as differences are present in the factor loading for the three types of Attention Deficit Hyperactivity Disorder.

It was thus concluded that in the management program for Attention Deficit Hyperactivity Disorder, parental counselling should be given adequate focus by a qualified health professional team. As it was observed in this study that the type of Attention Deficit Hyperactivity Disorder, age, gender, birth order of the child, whether or not the child is on a management program and co-morbid features influence the quality of life, stress and self esteem experienced by parents in varied ways, appropriate counselling procedures should be adopted and incorporated for the wholesome effectiveness of the management program for Attention Deficit Hyperactivity Disorder.

CHAPTER VI

IMPLICATIONS OF THE STUDY

The findings of the study imply the following:

1. The profile of the Indian child with Attention Deficit Hyperactivity Disorder is similar in most aspects to the west. It is noted that children with Attention Deficit Hyperactivity Disorder- combined type are more commonly diagnosed than statistics in western literature. This requires a comprehensive epidemiological study.

2. The quality of life, parental stress and self esteem of parents of children with Attention Deficit Hyperactivity Disorder is affected. These issues need to be addressed to provide a wholesome and comprehensive management program for Attention Deficit Hyperactivity Disorder.

3. Based on the results of the present study, the investigator puts forth a few suggestions for further research:
    i. The effectiveness of a parental counselling program drawn from the above findings may be studied.
    ii. Other parental aspects such as locus of control, personality and parenting methods may be studied.
    iii. Psycho-educational programs can be drawn out from the results of the above study to orient parents and teachers toward the child

with Attention Deficit Hyperactivity Disorder in India. The effectiveness of this program may be studied.

iv. Early acceptance of the Attention Deficit Hyperactivity Disorder by parents at the time of diagnosis may be studied with regard to multi-cultural and multi-lingual settings.

v. The various factors of parental Quality of Life, Stress and Self Esteem may be associated with multi-cultural settings.

vi. Other factors that may be studied include food habits, parenting style and cultural aspects in association with Attention Deficit Hyperactivity Disorder.

vii. A study on the Quality of Life of the child with Attention Deficit Hyperactivity Disorder may also be studied.

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