1.1 Concept and Review of Literature on ADHD - An Overview

The term ‘Hyperactivity’ as defined in encyclopedia of psychology refers to restless, over-active motor movements and behaviour which may be aggressive or destructive most commonly seen in children with hyperactive conditions. In other words, it is stated that the hyperactivity is primarily concerned to qualitative and quantitative description of motoric behaviour or motility, a non-specific symptom of a variety of medical and behavioural disorders and a common syndrome of childhood pathology which was first identified over a century ago. There has been considerable debate over the use of appropriate word because researchers employed a range of related words and concepts interchangeably. The overlapping words as used by them synonymously that include over-activity, Hyperkinesis, Minimal Brain Dysfunction, Attention-Deficit Disorder and Learning Disabilities etc. It is imperative to emphasize that the activity level of an individual to be considered as a very important dimension of individual differences among human beings because it has significant implications for development and adaptation of the individuals to his/her environment. If a child shows the symptoms of hyperactivity should have serious implications concerning to his/her problems in development and adaptation to the environment in which he/she lives. It means there may be mismatch between the child and his/her environment. The hyperactivity has been identified as a behavioural problem of children that attracted the attention of the psychiatrists and clinical psychologists to deal with the problems of such types of children. In the light of mentioned above explanation it appears that the hyperactivity syndrome is a childhood behavioural disorder in
which an unusual degree of restlessness, interrupting concentration and impaired attention leading to difficulty in the completion of the structured task. If a child is suffering from these symptoms is a worry for the parents and teachers because such type of children are more often restless and mischievous if left unnoticed. So, as they need special care and attention because these children are over-active and irritable if restricted in activity.

The notion of hyperactivity came into light from the work of German physician Heinrich Hoffman (1845) wrote a book for children popularly known as ‘Struwelpeter’ in which he made efforts to relate humorous tale of fidgety Phil in picture and doggerel. Moudsley (1867) described such type of children as little more than organic machine automatically impelled by disorder nerve centers. He emphasized that these children showed the absence of mind and actual abnormality underline children problems (cited in Sandberg, Seija and Barton, Jonne, 2002). Later researcher Ireland (1877) inspired and attempted to describe the concept of hyperactivity relating it to a group of ‘mad idiots’ who were prone to violent motor outburst and restlessness. It appears from research review that the hyperactivity is also known as hyperkinesis, a behavioural syndrome of children, so called because of the typical symptoms of restlessness, inability to sit still and difficulty on concentrating for any thing for any period of time. A hyperactive child is most often impulsive, easily upset or excited and may be more irritable and aggressive than other children. The hyperactivity seems to cause serious problem for children of school age because they find it difficult to sit still at their desk and concentrate on lessons and they most often misbehave and involve in disruptive activities. Another researcher
Albutt (1892) reported that these children are having an unstable nervous system.

Tuke (1892) was of the view that hyperkinesia is a symptom of impulsive insanity and younger the affected child the more likely he will be restless and disruptive during that period. It was considered as a behavioural disorder with educational repercussions because children having such type of symptoms are found to show inability to adjust to a structured environment. If we trace the historical antecedents of the concept, it was noticed that an important event that gave momentum to the bio-medical approach to hyperactivity and behavioural problems was the epidemic of encephalitis that spread through Europe and United States in 1917-1918. Undoubtedly, it was a breakthrough regarding prevalence of this disease. The report relating to it published in 1920 that described the behavioural and neurological consequences of those children who survived encephalitis infection. It was observed that some children who suffered from this disease were also found to show the symptoms of hyperactivity. Some researchers were of the view that the spread of encephalitis infection opened new avenues of investigation in this direction and researchers of North America showed much interest and started working on those patients who showed the symptoms of hyperactivity as a consequence of encephalitis infection (cited in Sandberg, Seija and Barton, Joanne, 2002).

Literature review also reveals that a very popular pediatrician George Still (1902), a London based psychiatrist is popularly known for the description of children behaviour who suffered from rheumatoid arthritis. He analyzed the behaviour of 20 children found that some of the children showed very similar characteristics to children who currently fall under Attention-Deficit Hyperactive Disorder diagnoses reported were
also found to show that the children were overly emotional/passionate, many of them showed lack of inhibitory volition, lacking in power of attention, displayed exaggerated fidgety and choreiform movements, the children were unusually resistant to discipline showing genuine fear at the time of punishment but immediately repeating their behaviour afterwards. Many of these children performed very low level in the school despite they possessed normal intelligence. Some of the children persistently stole although not out of particular use or desire for the objects. He described the behaviour of these children as mischievous, destructive and dishonest. He considered their behaviour to represent a defect of moral control that is very much apparent from the behavioural qualities of these children. He also emphasized that the behaviour characteristics of the children are not inborn rather they develop during childhood.

Another researcher, Alfred Tredgold (1908) extended biological theory and suggested that there can be some forms of brain damage resulting from birth injury which may be undetected at that time may also cause behaviour problems or learning difficulties in children during early school years. On the basis of his own observations he introduced the concept of minimal brain damage and became famous for the description of the behaviour problems of the children he also reported that the children also showed the symptoms of soft neurological signs and motor clumsiness. He also wrote a major text book ‘Mental Deficiency’ which published in 1910 and reprinted from time to time is another source that provides in-depth description of children that portray the traits of hyperactivity, impulsivity and lack of attention. He used a common term ‘feeble minded’ to classify people considered to have mental defects without severe intellectual impairment. The deficiencies found among such type of children were considered as primary by describing this group
who had inhibitory control of primitive instinct and active attention that left these patients lacking in-terms of their ability to control, co-ordinate and adapt their conduct to the requirements of their surroundings so that such type of children were found to suffer from various behavioural problems in managing themselves and to a large extent were usually dependent on family members (cited in Sandberg, Seija and Barton, Jonne, 2002).

Robert Stein (1913) a Dublin born paediatrician discussed that the children saturated with insanity while still in the womb with badly built minds and a kind of partial moral dementia. He was of the view that the children with these afflictions presented with pervasive disruptive behaviour problems which is evident in the early school years resulting in educational underachievement and relationship difficulties. The explanation given by Still and Robert can be suitable criteria for the diagnoses of ADHD because the phrase 'badly built minds' could equate with the current neuro-biological findings underline the disorders. The out-break of encephalitis and its long term consequential effect on children behaviour as we have already described earlier is also a breakthrough in understanding the problem of the children. Despite recovery from the infection the children presented the symptoms of over-activity, distractibility, poor impulse control and cognitive deficit. The children who survived of the inflicting from encephalitis infection gave support to the theories of minimal brain dysfunction and gave new directions and develop interest in understanding the concept of hyperactivity. Winnicot (1931) presented a very good description of hyperkinetic child. These children is a worry because the symptoms that they exhibit is restlessness always mischievous if left for a moment unnoticed and not sit at table patiently while eating food as some one
would snatch from him, sleep is usually restless, over-excitable or nerdy rather than nervous.

Kramer-Pollnow (1932) described several cases of young patients who showed the syndrome of behavioural difficulties, which he named hyperkinetic disease as characterized by extreme restlessness, distractibility and speech disorder. In a research paper on 'Organic Drivenness' by Kahn and Cohen (1934) referred to clinical and pathological study of Post Encephalitic Nervous Disorders, tried to identify changes that took place in the brain-stem to be related to encephalitis induced changes in personality and behaviour identified four elements that characterized these patients who showed unusual behaviour, hyperactivity with 'Choreiform' or tic like movements; an extreme difficulty in remaining quite or still for even short periods of time; clumsiness in their movements and an explosive quality to their voluntary motor activity.

Another explanation of Hyperkinetic disease was given by Kramer-Pollnow (1934) (cited in Sandberg, 1996) described this syndrome which was characterized by symptoms of extreme restlessness, distractibility and speech disorder, a condition of persistence motor unrest which usually appears between the age of 2 and 4 years. The description is based on the case studies of 15 children towards symptomatic by the age of six and the addition to syndrome also showed aggressiveness, impulsivity and learning difficulties. The descriptions presented by him also give support for the diagnosis of ADHD conditions of the children. Kahn and Cohen (1934) also presented a case series of three children with symptoms of over-activity, impulsivity and clumsiness and soft neurological signs. In their description they maintained that the symptoms were by 'organic drivenness’ or a surplus of inner impulse stemming
from the defect in the organization of their brain stem caused by birth injury or a congenital abnormality.

A prominent sociologist Adam Rafalovich discussed the importance of psycho-dynamic perspectives to the conceptualization and clinical treatment of hyperactivity in the 1920s through 1950s.

Psychoanalysts such as Anna Freud postulated that environmental conditions such as problematic family dynamics caused a fragmented ego and that the resulting anxiety was expressed by children in the form of hyperactivity (cited in Rafalovich, 2001). Lewin (1938) studied 279 restless subjects and concluded that cerebral lesions were responsible in large part for the production of severe forms of motor restless and mild forms were due to disturbed parental relationships. The Minimal Brain Damage Syndrome was a diagnostic label for children with behavioural and learning problems, who were typically hyperactive and impulsive. This label assumed an organic etiology, Strauss (1942) speculated that sub-microscopic lesions and abnormal organization in the brain and Pasmanick’s contention that relatively small amounts of brain damage occurred in undetected or undocumented fetal and birth events. This concept gained considerable popularity and influenced in the 1950s and 1960s, it was widespread criticized in the scientific community.

Kanner (1957) in his book ‘Child Psychiatry’ made no reference to hyperactivity as a diagnostic entity. He discussed a syndrome which bears a strong resemblance to the hyperactive sub-type of ADHD as early as 1935. He gave description of the extreme restless, fidgety, hyperactive child who is always on the go, can never still, always must be doing something and these children also show daydreaming, lack of concentration which is almost very much similar to DSM- IV definition of Attention-Deficit Disorder.
Laufer et al. (1957) selected samples of emotionally disturbed children from the Bradley home and divided them into two groups: an experimental group of children who presented with a hyperactive pattern of behaviour, which he categorized as “Hyperkinetic Impulse Disorder”, and a control group of children who were not hyperactive. They outlined the behavioural characteristics of “hyperkinetic impulse disorder”: hyperactivity was “the most striking” feature but was also associated with impulsiveness and an inability “to tolerate any delay in gratification of their needs and demands” (Laufer et al., 1957). Stella Chess (1960), a prominent researcher, paid little attention to the theories of etiology in her explanation and focused on classification and clinical descriptions of hyperactive children. She proposed a straightforward definition of hyperactivity: “The hyperactive child is one who carries out activities at a higher rate of speed than the average child or who is constantly in motion or both”. She studied the 82 children who were diagnosed as hyperactive out of a total of 881 children seen in her practice. She further divided these children into five diagnostic categories: physiologic hyperactivity, which presented without a history of brain injury or any other such pathology; hyperactivity with a history of organic brain damage; hyperactivity accompanied by an intellectual deficiency; hyperactivity determined to be a reaction to “environmental stress or neurotic patterns”. She studied 36 male children with physiologic hyperactivity in detail who were referred at the age of six or younger. She obtained similar findings to that of Laufer’s descriptions and to the current descriptions of ADHD. She maintained that the defining feature of the disorder was hyperactivity. Associated symptoms included impulsiveness, non-conformity to rules, short attention span and poor school achievement, though these depended on the age of the patient. Chess (1960) made suggestions for both diagnosis and treatment of the disorder. She insisted
that doctors not depend on “subjective reports” of parents and teachers, but rather use “objective behavioural data obtained from these sources and supplemented by the clinician’s own observations, by psychological tests and by reports from other physicians”. She recommended a treatment approach even more encompassing than Laufer’s suggestions, combining behavioural modification, medication, consultation with the school about special education measures, consultation with parents about their child’s disorder and psycho-therapy in many cases involving psychological problems secondary to the child’s hyperactive behaviour.

The review of literature pertaining to the problems relating to over-activity, poor impulse Control and inattention reveals that various researchers in the field of child psychiatry put all efforts to develop a variety of diagnostic levels of such type of children over the years. Infact the problem of ADHD has been described in the second edition of the Diagnostic Statistical Manual of Mental Disorders (DSM) in 1968 and labeled as Hyperkinetic Disorder of childhood. Over the years some changes in nomenclature took place and in the DSM classification it was felt necessary to have pervasive symptoms of inattention or inattention hyperactivity and impulsivity which are clinically impairing with the age of the child. The Diagnostic criteria of DSM-IV are most similar to the criteria for hyperkinetic disorder used in the current edition of the International Classification of Diseases (ICD-10) in that specific behaviour symptoms of inattention and hyperactivity where impulsivity are recognized and both are required for its Diagnosis as per dominantly inattentive or predominantly hyperactive, impulsive sub-types and it requires a direct observation of the symptoms by the clinician together with parental and school reports.
The problems of children as observed by the clinicians is much important because the age itself is a factor that is very much relevant for such type of children because some counselling and training techniques can be useful for these children so far as the problems of ADHD is concerned. It is the concern of the physicians, researchers and clinicians who diagnose the problems and to evolve most suitable methods through which such type of children may be helped and their problems to an extent can be alleviated.

Some clinician were of the view that the children who showed the syndrome as visualize by earlier researchers can be looked into the domain of brain damage which is the only cause of childhood hyperactivity. The brain damage of childhood hyperactivity was criticized by some clinicians questioned assumptions that brain damage caused behavioural problems on the basis of that the most children with behavioural problems demonstrated no physical evidence of brain damage (Birch, 1964; Herbert, 1964; Rapin, 1964). The Oxford International Study Group of Child Neurology in 1963 stated that brain damage can not be inferred from behaviour alone and recommended that the term ‘Minimal Brain Damage’ replaced by ‘Minimal Brain Dysfunction’ (MBD). An official definition of minimal brain dysfunction was given by Clement (1966) in U.S.A that described minimal brain dysfunction that refers to children of near average or above average in general intelligence to certain learning and behaviour disabilities ranging from mild to severe, which are associated with deviations of function of the central nervous system. These deviations may manifest themselves by various combinations, impairment in perception, conceptualization, language, memory and control of attention impulse or motor function. The minimal brain dysfunction is caused by organic factors which is also
found in the etiology of ADHD but it contrasted psycho-analytic theories at that time proposed that the disorder was due to poor parenting. Some clinicians in late 1950 and 1960 introduced the terms such as hyperkinetic behaviour syndrome who gave emphasis to recognize symptoms of hyperactivity and impulsivity but they moved away from the theories of brain damage or dysfunction in fact disorder of the hyperkinetic reaction of childhood first appeared in DSM-II (1968) the American Psychiatric Association (APA) emphasized over-activity as the cardinal feature of syndrome rather than minimal brain damage or dysfunction. It was felt necessary to develop some parents and teachers rating scale for the purpose of diagnostic assessment of symptoms of hyperactivity and monitoring response to treatment. The questionnaires were used in home and school setting as standardized tools for assessment of children behaviour in those days.

In 1970 the concept of hyperactivity became very much popular in U.S.A with regard to the symptom of these behavioural problems in the form of inattention, over-activity and impulsivity as symptom of the disorder. The concept of hyperactivity attracted the attention of clinicians and researchers in United States and attempts were made to deal with the problems of the children who showed the symptoms of inattention, over-activity and impulsivity because it became the basis for the symptoms of this disorder. The problem of inattention was initiated by Virginia Douglas and her team at Mc Gill University suggested that this type of deficits as shown by the children refers to deficit in their ability to sustained attention underlay the observed symptom of hyperactivity and poor impulse control. The work done by her became very much helpful in the re-categorization of this disorder in DSM-III (APA, 1980) as Attention Deficit Disorder with and without Hyperactivity thus,
emphasized the attentional aspects of the disorder rather than hyperactivity. The DSM-III defines Attention-Deficit Disorders with hyperactivity as a tri-dimensional disorder characterized by developmentally inappropriate inattention, impulsivity and hyperactivity with symptoms and operationalise the diagnosis.

The work done by Douglas (1972) increased the interest of researcher in North Europe regarding the concept of hyperactivity as diagnostic entity. The advancement took place with area and the DSM-III was revised in 1987 and in its revised addition there was list of 14 symptoms of which some are referring to attention and some to hyperactivity and some to impulsivity requiring its symptoms for the purpose of diagnoses. The criteria also necessitated on set of symptom prior to age 7 and it also included a category of Attention-Deficit Disorder which excluded hyperactivity and impulsivity. The inclusion of hyperkinetic syndrome of childhood in DSM-IV was used as diagnostic criteria for childhood hyperactivity. For the diagnosis of ADHD it requires the symptoms of hyperactivity, impulsivity and inattention should be present where as the ICD requires that an Anxiety Disorder, Mood Disorder, Pervasive Developmental Disorder.

Connors (2000) examined the historical origin and development of the concept of Attention Deficit/Hyperactivity Disorder, currently known as ADHD. Early roots in neurology, paediatrics, education and psychology are traced to the present American Psychiatric Association concept of a dual sub-type involving attention and hyperactive-impulsive symptoms. Changes from a syndrome involving brain damage and brain dysfunction to a symptom-oriented classification system are described. The early history of the ‘Hyperkinetic Syndrome’ and its association with stimulant drug treatment showed a fundamentally different approach to
the diagnosis than current symptom oriented approaches, which drop requirements for learning disabilities and neurological signs.

The prevalence rate of ADHD was studied in various countries and it was observed that prevalence of syndrome varies, depending on diagnostic criteria used, method of study and population studied. Huessy (1967) found 10 percent prevalence in Vermont second grade children, Rutter et al. (1976) found only 2 hyperkinetic children in a total population study of 2199, 10 and 11 years olds and only 1.6 percent of all disturbed children in this investigation were labeled hyperkinetic. Thorley (1984) identified 73 children and adolescents in a total children clinic population of 5923 seen at the Maudsley hospital between 1968 and 1980. Gada (1987) reported an incidence of 8.7 percent in primary school children in Bombay, with sex ratio of 7.6:1; Cantwell (1996) reviewed the literature on ADHD in the previous 10 years and found that the prevalence rate was 3 percent to 5 percent of school-age children. Stewart et al. (1996) reported 4 percent prevalence in St. Louis children aged 5-11 years. Sandberg (1996) reported that the median prevalence rates ranged from 3.2 percent to 17 percent the percentage of school children diagnosed with ADHD has been found much higher in United States than in most others countries (Klasen, 2000).

Pineda et al. (1999) estimated the prevalence of Attention-Deficit Hyperactivity Disorder (ADHD) symptoms in the general preschool and school population and analyzed the influence of gender, age and SES variable on ADHD symptoms out of the 80,000 pre-school and school children living in Manizales, Colombia. A random sample of 540 children was selected. Two gender, 3 ages (4 to 5 years olds, 6 to 11 years olds and 12 to 17 years olds) and 3 SES (low, middle and high) groups were used. The 18 DSM-IV symptoms corresponding to ADHD criterion-A
were assessed on a scale of 0 (never) to 3 (almost always). All 3 demographic variables established statistically significant differences: ADHD symptoms were more frequent in 6 to 11 years old, low SES, male participant. DSM criterion-A for ADHD was fulfilled by 19.8 percent of the boys and 12.3 percent of the girls. It was concluded that the demographic variables are the significant correlates of the ADHD diagnoses. The prevalence found in this study was higher than usually reported, even though only the symptomatic DSM-IV ADHD criterion was analyzed.

Bhatia, et al. (2002) reported that the prevalence rates of ADHD in India are 29.2 per cent amongst children, aged between 11 and 12 years. DSM-IV specifies that the prevalence of ADHD 3 to 5 percent of school children, it is notably higher than rates reported for hyperkinetic behaviour in Europe. Data in Great Britain showed a rate lower than 1 percent and data from Sweden indicates the prevalent rate between 1.2 and 2.1 percent. DSM-IV field trial data suggest that about 25 percent of all children diagnosable as having ADHD have the predominantly inattentive type and the majority have the combined type.

Kessler, Ronald C. et al. (2006) Despite growing interest in adult attention deficit hyperactivity disorder (ADHD), little is known about its prevalence or correlates. A screen for adult ADHD was included in a probability sub-sample (N = 3,199) of 18 to 44 year-old respondents in the National Comorbidity Survey Replication, a nationally representative household survey that used a lay-administered diagnostic interview to assess a wide range of DSM-IV disorders. Blinded clinical follow-up interviews of adult ADHD were carried out with 154 respondents, over sampling those with positive screen results. Multiple imputations were used to estimate prevalence and correlates of clinician-assessed adult
ADHD. The estimated prevalence of current adult ADHD was 4.4 %. Significant correlates included being male, previously married, unemployed and non-Hispanic white. Adult ADHD was highly comorbid with many other DSM-IV disorders assessed in the survey and was associated with substantial role impairment. The majority of cases were untreated, although many individuals had obtained treatment for other comorbid mental and substance-related disorders.

Polanczyk et al. (2007) in one of their study determined the possible causes of the varied worldwide estimates of the disorder and to compute its worldwide-pooled prevalence. The authors searched MEDLINE and PsycINFO databases from January 1978 to December 2005 and reviewed textbooks and reference lists of the studies selected. Authors of relevant articles from North America, South America, Europe, Africa, Asia, Oceania and the Middle East and ADHD/HD experts were contacted. Surveys were included if they reported point prevalence of ADHD/HD for subjects 18 years of age or younger from the general population or schools according to DSM or ICD criteria. The literature search generated 9,105 records and 303 full-text articles were reviewed. One hundred and two studies comprising 171, 756 subjects from all world regions were included. The ADHD/HD worldwide-pooled prevalence was 5.29 %. This estimate was associated with significant variability. In the multivariate meta-regression model, diagnostic criteria, source of information, requirement of impairment for diagnosis and geographic origin of the studies were significantly associated with ADHD/HD prevalence rates. Geographic location was associated with significant variability only between estimates from North America and both Africa and the Middle East. No significant differences were found between Europe and North America.
It is noticed that mostly in the childhood all children are active, but some are found more active and show the symptoms of ADHD, if they are not treated in early stage it will become a big problem for parents as well as for teachers and even for child itself. These children are found to experience a number of cognitive, academic, emotional, social, physical problems and deficits in general intelligence. They are at increased risk for developing other types of behaviour disorders including oppositional defiant disorder, conduct disorder, learning disabilities, depression and anxiety so that the over all effects of the problem can be large. It is possible to some extent the problem of ADHD may be handled through the techniques such as parental counselling and educative strategies and marked improvement may be seen in them. It is also observed that some children are temperamentally hyperactive they are born with an active disposition. Habitual lack of concentration or fidgety behaviour in them, which is not due to physical factors or due to family up-bringing, it is usually temperamental in origin. Such children have passion of movement. They do not sit still, being too dynamic to be absorbed in one thing for long such type of children and constantly mess about with toys or thing in their environment, as they seem to enjoy moving about as an end in itself. They do not concentrate on one game task or play by constructing something. Their personalities, because of their excessive activity, remain mostly unformed and nebulous as for the integration of emotional and intellectual processes, a certain amount of inner and outer quiet is essential. They can be of average intelligence, but owing to over-activity of mind they are distractible and their power of attention and concentration is variable. They have more appetite for movement and just as some children require more rest and activity. Such children need more physical activities and manual skills usually come easier to them hopping, jumping, skipping, ball throwing etc. can bring the joy of
achievement which is so essential for their well being. (Uday Shanker, 1958).

There seems to be some confusion about the nature and definition of hyperactivity because the present definitions are often amalgam of psychological, medical, pharmacological and Pedagogical concepts. Psychological because hyperactivity is a behaviour disorder, medical because the problem is often diagnosed as minimal brain dysfunction and treated with drugs, pharmacological because the diagnosis is often believed to be validated if the ingestion of CNS stimulants reduces symptoms and pedagogical because the starting point for the diagnosis is often a teacher’s report of ‘Learning Disabilities’. Hyperactive child may on backtrack in the class, though he may be of average intelligence. The atmosphere of the class may too dull for him and adequate expected learning is not possible. According to the fourth edition of Diagnostic and Statistical Manual of Mental Disorder (DSM-IV), Attention-Deficit Hyperactivity Disorder (ADHD) is a persistent pattern of inattention, hyperactivity and impulsivity more frequent and severe then is typical of children at a similar level of development. Some symptoms must have been apparent before the age of 7 years although many children are diagnosed after the symptoms have been obvious for several years. Impairment must occur in social, academic or work settings. The children showing the symptoms of ADHD may commonly, observed more often in boys than in girls and causes disruption in school and at home. It is characterized by a developmentally inappropriate poor attention span, age inappropriate feature of hyperactivity and impulsivity or both.

Boys with ADHD have social difficulties with their peers as well as with parents and teachers. Parents often report that their hyperactive children have no friends or get along only with children several years
younger to them. One reasons for these social difficulties is that hyperactive children have deficits both in their social knowledge and in their performance of socially skilled behaviour (Grenell, Glass, Katz, 1987).

According to Mash et al. (1982) interaction conflicts most commonly appear to be greatest in younger children (4 to 5 years old). The biggest problem for these children comes when they need to maintain an already established relationship. When conflict arises they are less friendly, more impulsive and more assertive toward the other child. They show much difficulty in following the rules in games or in co-operating others on joint projects. While many ADHD children may improve as they grow older, they have an elevated risk for mental and behavioural disorders. Later on a substantial minority of these children enters the criminal justice system in adolescence or young adulthood and drug use disorders are also frequently noted (Mannuza; Klein; Bonagura; Malloy; Giampino; Addali, 1991).

Hyperactive children are ordinarily just as intelligent as other youngster but do have more school related problems. In addition to behaviour and discipline conflicts, such type of children is commonly poor in reading and has meager arithmetic or other literacy skills. By at the age of 10 and 11 years and especially entering puberty, even without treatment hyperactivity substantially diminishes but it was also found that a large portion of children judged hyperactive continue to have serious academic, social and psychological problems in high school and beyond. The hyperactive child shows heightened activity level, or more often for a syndrome that collectively reflects a specific disease (Rose and Rose, 1976). Onset of ADHD symptoms is ordinarily noted early in life (usually before 6 years of age) and the disorder is especially common in first born
males. The new born may be extremely sensitive to external stimuli and may be very active in crib and play pen. Child may be very destructive, touches everything in sight or spells, breaks, empties and disturbs everything, sleeps little and reluctant to go to bed. Hitting a friend playing hokey, losing things or in some other way getting into trouble.

The Hyperactive children are easily excitable, emotionally labile easily frustrated at one movement and can be happy at other and at the next irritable, hostile or tearful apparently such type of children are very much restless and very active in the early age of life but their activity level tend to decrease with the age although many of the other symptoms persist through the teenage years (Minde, Lewin, Weiss, Lairgueur, Douglas and Sykes, 1971; Weis, Minde, Werry, Douglas and Nemeth, 1971).

Safer (1982) used developmental hyperactivity and described that the essential features of this disorder or hyperactivity which is usually associated with inattentiveness, a learning impediment or lag, misconduct and immaturity. It has been observed by various researches that the hyperactive child generally manifest their behaviour throughout the elementary school years and it may decrease from the ages 13-15 years but relatively they show high level of restlessness in the age of young adults and adulthood. The hyperactive children have a low chance of successful adjustment during adolescence and adulthood than non-hyperactive children (Mendelson, Johnson, and Stewart, 1971; Menkes, Rowe and Menkes, 1967; Stewart, 1970). Coleman and Levine (1988) have defined ADHD as the presence of ‘developmentally inappropriate degrees of inattention, impulsivity and hyperactivity’ which suggest a disorganized central nervous system.
Parrino et al. (1983) demonstrated that the excess of motor activity occurs even during sleep and therefore is unlikely to be secondary to attention deficits. Impulsivity refers to acting without thinking and this symptom is also seen in children who do not have ADHD. Therefore, an ambiguous definition of impulsivity specific for ADHD is not forthcoming and there is a difference of opinion that which behaviour should be the part of the definition for hyperactivity, infact inattention that leading to task inefficiency is an important characteristic of hyperactive children.

Tailor (1994) stated that inattention is a behavioural trait and as opposed to any hypothesized deficit in a psychological process or a pattern of test performance.

Zentall et al. (1994) evaluated the effect of Attention-Deficit Hyperactivity disorder (ADHD) on performance of conceptual and computational maths of 107 boys with ADHD and 121 non disabled boys (aged 7-14 years) completed the computer generated Word Problem Assessment Program, the reading Assessment Program, and Timed Arithmetic Tasks. Two performance measures (accuracy and speed) and 3 behavioural measures (vocalization, head movements and bottom movements) were also recorded. Subjects with ADHD had significantly lower problem solving scores in specific maths concept and slower computational performance. Poorer performance of maths facts also co-occurred with greater activity; Subjects with ADHD were observed more frequently (1) looking away from the task, (2) being physically active and (3) vocalizing.

Frederick and Olmi (1994) reviewed the literature on social skill deficits in children with Attention-Deficit Hyperactivity disorder (ADHD). An overview of social skills was presented with regard to, peer
interactions, communication skills, peer rejection, teacher interactions and parent’s interactions of children with ADHD. The primary symptoms of ADHD may not accurately reflect the interpersonal difficulties faced by the children with this disorder. Yet it is clear that children with ADHD may display deficient social skills that may lead to disturbed interactions and social rejection.

Pearson and Aman (1994) assessed the relationship between parents and teachers ratings of Hyperactivity (HYP) and developmental indices in 2 groups of children (5-16 years old) and predicted that Mental Age (MA) would not be related to HYP. 58 children from a general clinic were largely of normal ability and had many psychiatric and behavioural problems. 55 children from a developmental clinic had behavioural problems. 55 children from a developmental clinic had cognitive delays; some had Attention-Deficit Hyperactivity Disorder (ADHD). Results showed consistent negative correlations between chronological age and severity of HYP symptoms.

Erhardt and Hinshaw (1994) compared the influence of naturalistic social behaviour and non behavioural variables on the development of peer status of 49 previously unfamiliar boys, aged 6-12 years 25 boys with Attention-Deficit Hyperactivity Disorder (ADHD) and 24 comparison boys participated. Physical attractiveness, motor competence, intelligence and academic achievement constituted the non-behavioural, variables; social behaviour included non-compliance, aggression, pro-social actions and isolation, measured by live observations of classroom and play ground interactions. The result showed that the first day of interaction of ADHD and comparison Subjects displayed differences in social behaviour and the ADHD Subjects were overwhelmingly rejected. Whereas pro-social behaviour independently
predicted friendship ratings during the 1st week, the magnitude of prediction was small. In contrast, the Subject's aggression (or noncompliance) strongly predicted negative nominations.

Sharma et al. (1994) the samples of the study consisted of Mothers and teachers of 60 hyperactive and 60 non-hyperactive boys (aged 8-11 years) completed the hyperactive behaviour checklist, Teacher Rating Scale, Observer Rating Scale, Child Behaviour Questionnaire and Draw A-Man Test for Indian Children were used to identify hyperactive children. Chi-Square Analyses revealed that, compared with normal children, the hyperactive children scored significantly higher on behavioural problems including nail biting, bed wetting, talkativeness, secretiveness, excessive crying, mood fluctuations, sleep disturbances, feeling of sickness, feelings of Worthlessness and feeling of inferiority and jealousy.

Farmer et al. (1995) processes related to injury in children with Attention-Deficit Hyperactivity Disorder (ADHD) examined two groups of 7-11 years old boys (14 ADHD and 16 controls) by watching a videotape of play activities in order to identify risk behaviour and then answered questions about risky scenes. Group did not differ in ability to identify hazards, but children with ADHD anticipated less severe consequences following risky behaviour and reported fewer active methods of preventing injury than did controls. Cognitive factors, including lower expectations of personal risk in hazardous situations and less ability to generate prevention strategies and safety rules, may contribute to increased injury liability in boys with ADHD.

Lufi et al. (1995) assessed the personality variable of locus of control, anxiety and persistence in a sample of 28 boys with Attention-Deficit Hyperactivity Disorder (ADHD) as compared with 83 normal
control children (aged 7-13 years). Subjects completed 3 questionnaires: the locus of control scale for children, the revised children’s Manifest Anxiety Scale and the persistence scale for children. The ADHD Subject has significantly higher external locus of control, were significantly less persistent and reported an elevated level of ‘concentration/social worry’ (an anxiety subscale). Findings may help to clarify both the personality structure and the coping styles of the ADHD child.

Carlson et al. (1995) investigated the development of inattentiveness of hyperactivity in middle childhood using a subset of 191 participants in a prospective longitudinal study of lower SES families. Endogenous and exogenous predictors measured in infancy and in early and middle childhood were examined independently and in combination. In early childhood, quality of care giving more powerfully predicted distractibility, an early pre-cursor of hyperactivity, than did early biological or temperamental factors. Care giving and contextual factors together with early distractibility significantly predicted hyperactivity in middle childhood. While environmental variables also predicted hyperactivity in later elementary years, these factors did not improve the prediction beyond the influence of hyperactivity in early elementary years. The result supports a development view of the origins and course of hyperactivity in childhood.

Sandberg (1996) pointed out that the nature of Attention Deficit in ADHD has a list of 4 competing explanations:

1. There is a generalized defect in the executive cognitive functions;
2. There is an ability to wait for deferred reward;
3. Inattention arises from lack of inherent motivation in the tasks performed by the hyperactive child and
(4) A state regulation defect theory in which primacy is accorded of output related process (response decision and response organization) whereas input related process (orientation and focusing) are of secondary importance. This opens up the possibility of interventions through manipulations of rewards, motivation and external control.

The core domains of inattention, impulsivity and hyperactivity were identified by DSM-III as separate symptom areas, whereas DSM-III-R grouped these two in a single symptom list using any eight criteria to diagnose ADHD in DSM-IV. There are two core dimensions, with impulsivity and hyperactivity being pooled together, the other being the inattention dimension. ICD-10 has a category called the hyperkinetic disorder and the criteria here is more similar to DSM-IV criteria but the category of attention deficit without over-activity does not figure in ICD-10, whereas in DSM-IV there is a provision to diagnose a predominantly inattentive sub-type, which has at least six of nine inattention symptoms while having only five or fewer impulsive/hyperactive symptoms. It also has a predominantly hyperactive/impulsive type as well as a combined type. The criterion of significant functional impairment is specified, although this may vary across children. DSM-IV specifies that the symptoms should have started before age of seven years and the concept of pervasiveness should be present in them at least in 2 setting that is in home and at school.

Faraone et al. (1997) compared rates of symptom expression between 26 Attention-Deficit Hyperactivity Disorder (ADHD) adults who had ADHD children and 49 ADHD adults who did not follow their diagnosis, were contacted by phone to inquire about ADHD symptoms in
their children. Results indicate rate of symptom reporting are similar between ADHD adults who have ADHD children and those who do not.

Rapport et al. (1999) recently hypothesized in a Conceptual Model in which parallel but correlated developmental pathways exist for Attention Deficit (AD) behaviour and conduct problems. An important component of this model suggests that AD behaviour are related to scholastic under-achievement, whereas conduct problems are unrelated to scholastic under-achievement except their common correlation with attention deficit and intelligence. The present study replicated the general model using a cross-sectional sample of 325 children (aged 7-11 years), and examined whether hypothesized dual pathways (behavioural and cognitive) better account for the relationship between AD, intelligence and later scholastic achievement. Result of the structural equation modeling analysis were consistent with the hypothesized dual pathway model and suggest that school behaviour and select cognitive abilities serve as important mediators between AD intelligence and later scholastic achievement.

Camarata et al. (1999) the nature of Attention-Deficit Hyperactivity Disorder (ADHD), as described in the DSM-IV, American Psychiatric Association, (1994) indicated a potential association with language disorder, particularly in the area of social language skills (pragmatics). However, to date there have been relatively few studies remaining this language behaviour relationship in children with ADHD. The Purpose of this paper was to provide a description of social/pragmatic language deficits and to present a theoretical model of potential association between pragmatic language deficit and ADHD.

Stormont et al. (1999) the DSM-IV has differentiated children with Attention Deficit. Researches have also shown that the children with
Attention Deficit Hyperactivity Disorder (ADHD) and children with undifferentiated Attention Deficit Disorder (UADD) have different diagnostic characteristics and different psychological outcomes. However, research has not investigated whether children with ADHD and children with UADD are treated differently educationally. The primary purpose of this study was to examine the types of medical and educationally service received by children with ADHD and children with UADD. Seventy-four children with ADHD and fifty-six children with UADD (aged 6-13 years) were administrated an educational information questionnaire. Children with ADHD were reportedly diagnosed more than one year earlier than were children with UADD. Interestingly, even though children were differentially diagnosed and it was observed that children with ADHD and children with UADD received similar educational and medical interventions.

According to Barkley, Russell A. (1999) an overview of a number of different lines of research review reveals that the problems with response inhibition are also involved in Attention-Deficit Hyperactivity Disorder (ADHD). Response inhibition is defined as the capacity to delay proponent responses, to interrupt on going responses given feedback about performance and to inhibit responding to sources of interference when engaged in task requiring self-regulation and goal-directed action. A considerable amount of research explored on each of these aspects of inhibition among children and adults with ADHD. Results as reported in that literature are reasonably consistent in support of the assertion that ADHD creates deficiencies in each of the 3 areas of inhibitory functioning. Such deficits appear to be rather specific to ADHD and do not seem to be caused by other disorders that often co-exist with ADHD, such as mood, anxiety and learning disorders. Here, research needs to be
done, however, on whether or not conduct disorder is also associated with difficulties in behavioural inhibition and if so, whether they are of the same qualitative nature as those seen in ADHD and are simply not the result of the large overlap of Conduct Disorder with ADHD.

Bonafina et al. (2000) reported that children with Reading Disability (RD) and Non-RD children with Attention-Deficit Hyperactivity Disorder (ADHD) may comprise distinct sub-groups. Research has been hampered by variance in definitional criteria, which was observed from the results in the study of different sub-groups of children. Using cluster analysis and study empirically divided 54 children (aged 7-11 years) with ADHD, based on their Full Scale IQ (FSIQ) and reading ability four distinct sub-groups emerged in with cognitive, behavioural and neuro-chemical function was compared. Cluster 1 was of average FSIQ and reading scores, cluster 2 was of average FSIQ but showed impairment in reading, cluster 3 had high FSIQ and reading scores and cluster 4 had low scores in both domains. The groups had different patterns of cognitive, behavioural and neuro-chemical function, as determined by discrepancies in verbal performance rating and a measure of noradrenergic function.

Biederman et al. (2000) reported that the symptom decline in Attention Deficit Hyperactivity Disorder (ADHD) as examined by these investigators with different definitions of remission. Symptoms in 128 boys were measured 5 times over 4 years at the following age categories: <6, 6-8, 9-11, 12-14, 15-17 and 18-20 years old. Psychiatric assessments were made with the schedule for Affective Disorders and Schizophrenia for Schools-Age Children-Epidemiologic version. The prevalence of syndromatic (less than feel syndrome), symptomatic (less than sub threshold diagnosis) and functional (full recovery) remission were
estimated as a function of age with multivariate logistics regression. Age was found significantly related with the symptoms of hyperactivity, impulsivity and inattention. Symptoms of inattentions remitted for fewer subjects that did symptoms of hyperactivity or impulsivity. The proportion of subjects experiencing remission varied considerably with the definition used (highest for syndrometic to mission, lowest for functional remission). These results indicate that differences in reported remission rates reflect the definition used rather than the disorder’s course. They provide systematic support for the clinical observation that hyperactivity and impulsivity symptoms tend to decline at a higher rate than inattention symptoms.

Merrell et al. (2001) determined the proportion of children who were assessed by their teachers as exceptionally inattentive, hyperactive or impulsive in the classroom. The relationship between these traits, achievement and progress were examined. The participants comprised 4,148 children from a nationally representative sample of schools in England. Reading and Mathematics achievement of the participants was assessed at the start and end of the reception year, in year 2 their behaviour was assessed at the end of reception using a rating scale based on the diagnostic criteria for Attention-Deficit Hyperactivity Disorder (ADHD). The proportion of children with exceptional scores on the behaviour rating scale was reported. The reading and mathematics attainment and value added of children with high scores on the behaviour rating scale were found to be educationally and statistically significantly lower than children with zero scores.

Ellison, Anne Teeter (2002) In an effort to establish a developmental link for Attention-Deficit Hyperactivity Disorder (ADHD) from childhood and adolescence made first a Transactional Model for
understanding how biogenetic, neuro-psychological cognitive and psychological factors interact and effect the overall adjustment of individuals with ADHD is advanced. The impact of environmental and cultural factors was also explored. Second, a developmental framework for ADHD has been presented in which characteristics and associated features that appear early and persist up to adulthood are summarized. Third, risk and resiliency factors are explored in an effort to identify variables that either enhance or impede the adjustment of individuals with ADHD.

Renz et al. (2003) suggested that Children with Attention-Deficit Hyperactivity Disorder (ADHD) face an increased risk of poor achievement in school. Thus, knowledge of the cognitive processing abilities of children with ADHD is critical to understanding and improving their academic performance. Although many studies have focused on the specific nature of the Attention-Deficit experienced by children with ADHD, but few have examined higher order cognitive processing such as comprehension of stories. Taking into consideration this view with regard to ADHD, study was planned to examine the process of encoding story information, building a story representation, and modifying a story representation in boys with ADHD and non-referred boys. Boys were asked to narrate a story from a picture book twice. Boys with ADHD showed deficits in representing goals and goal plans in their narrations, as compared to non-referred boys. Boys with ADHD also committed more errors than non-referred boys, but did correct types of errors on their second telling.

Konofal et al. (2004) conducted small and controlled study, they compared serum ferritin levels on 53 children with Attention-Deficit Hyperactivity Disorder (ADHD) symptoms and 27 controls with no
ADHD symptoms. The children ranged in age between 4 and 14 years and came from the same school district. ADHD symptoms were measured using the Connors’ Parent Rating Scale and serum ferritin levels, blood hemoglobin, hematocrit and iron levels were measured in all the children. The serum ferritin levels were twice as low in the children with ADHD than the controls, while the serum iron, hemoglobin and hematocrit levels remained within normal ranges for both sets of children. Studies suggest that ADHD may be caused by dopamine dysfunction and iron is a coenzyme of dopamine synthesis. The authors suggest iron supplementation might improve central dopaminergic activity in children with ADHD, thereby decreasing the need for stimulant medication.

Selman (2005) commented on the author’s review of Attention-Deficit Hyperactivity Disorder that omits important diagnosis which can be Mimic Attention Deficit Disorders, Sleep-Disorders and Convulsive Disorders day-time inattention and fidgetiness often result from sleep-disordered breathing and periodic limb movements of sleep, which may occur in isolation or with the restless legs syndrome. Physicians must include detailed questions concerning sleep disorders and epilepsy in the evaluation of children with attentional academic and learning problems.

MC Menamy et al. (2005) presented substantial evidence that young children reason about illness using biological causal principles and that, with increasing age, children provide more explicit account of mechanisms underlying different conditions. In order to investigate these claims, sixteen 7-8 year old children and sixteen 11-12 year old children with Attention-Deficit Hyperactivity Disorder (ADHD) completed an open-ended interview about the etiology and treatment of ADHD, aggressive behaviour and colds. Younger children used either biological
or psychological principles to explain ADHD, while older children used biological causality or integrated biological and psychological principles into explanations. Children at both ages used biological causality to explain cold and intentional psychological causality to explain aggression. Older children provided more complex accounts of the mechanisms. The findings suggest that school aged children utilized principles spanning different domains to explain conditions with physical and behaviour symptoms.

Rappley (2005) Attention-Deficit Hyperactivity Disorder (ADHD) is characterized by the inability to sustain attention, modulate activity level and moderate impulsive actions. The result is mal-adaptive behaviours that are inconsistent with age and developmental level. The diagnosis of ADHD is based on a comprehensive history that elicits symptoms specific to the diagnosis, the context in which these symptoms occur and the degree to which these are inconsistent with age and persist to cause impairment. There is strong evidence to support the use of stimulant medication for the management of attention, impulsivity and hyperactivity in school age children. Methylphenidate and dextroamphatamin have consistently shown efficacy and safety when compared with placebo in randomized, controlled trial. Physicians cannot prescribe an educational assessment, but they can support a parent’s request for an assessment when it is indicated by persistent academic problems.

Friedman et al. (2007) suggested that Attention Problems (behavior problems including inattention, disorganization, impulsivity and hyperactivity) are widely thought to reflect deficits in Executive Functions (EFs). They investigated, in an unselected sample, how teacher-rated attention problems from ages 7 to 14 years related to three
correlated but separable EFs, measured as latent variables at age 17. Attention problems at all ages significantly predicted later levels of response inhibition and working memory updating and to some extent set shifting; the relation to inhibiting was stronger than the relations to the other EFs or IQ. Growth models indicated that attention problems were quite stable in this age range and it was the initial levels of problems, rather than their changes across time that predicted later EFs. These results support the hypothesis that attention problems primarily reflect difficulties with response inhibition.

Christiansen et al. (2008) in a study said that common disorders of childhood and adolescence are Attention-Deficit/Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD). For one to two cases in three diagnosed with ADHD the disorders may be comorbid. However, whether comorbid Conduct Problems (CP) represents a separate disorder or a severe form of ADHD remains controversial. They investigated familial recurrence patterns of the pure or comorbid condition in families with at least two children and one definite case of DSM-IV ADHDct (combined-type) as part of the International Multi-centre ADHD Genetics Study (IMAGE). Using case diagnoses (PACS, parental account) and symptom ratings (Parent/Teacher Strengths and Difficulties (SDQ) and Conners Questionnaires (CPTRS) investigators studied 1009 cases (241 with ADHD only and 768 with ADHD + CP) and their 1591 siblings. CP was defined as >/ = 4 on the SDQ conduct-subscale and T >/ = 65, on Conners' oppositional-score. Multinomial logistic regression was used to ascertain recurrence risks of the pure and comorbid conditions in the siblings as predicted by the status of the cases. There was a higher relative risk to develop ADHD + CP for siblings of cases with ADHD +
CP (RRR = 4.9; 95 % CI: 2.59-9.41); p < 0.001) than with ADHD only. Rates of ADHD only in siblings of cases with ADHD + CP were lower but significant (RRR = 2.9; 95 % CI: 1.6-5.3, p < 0.001). Children with ADHD + CP scored higher on the Conners’ ADHDct symptom-scales than those with ADHD only. Our finding that ADHD + CP can represent a familial distinct sub-type possibly with a distinct genetic etiology is consistent with a high risk for cosegregation. Further, ADHD + CP can be a more severe disorder than ADHD only with symptoms stable from childhood through adolescence. The findings provide partial support for the ICD-10 distinction between Hyperkinetic Disorder (F90.0) and Hyperkinetic Conduct Disorder (F90.1).

On the basis of symptoms as identified by psychologist/psychiatrists, it is now possible to diagnose children suffering from ADHD. Since it is a developmental disorder, symptom manifestations are highly individualistic and impulsivity tend to become less apparent as children get older and attentional and cognitive problems move into the foreground. Second symptoms such as perceptual and emotional immaturity, poor social skills and motor co-ordination problems may be observed. Academic under-achievement is often further enhanced by commonly comorbid language and learning disorders. Disruptive and impulsive behaviours often leads to peer rejection and low self-esteem, emotional and social complications frequently are the dominating features by adolescence, whether or not the core symptoms persist. The symptoms of disorder can occur at home, school or may be manifest in the clinic and occasionally. In situation specific hyperactivity, it may occur only in one of the environments (for e.g. school); where as, in pervasive hyperactivity, the symptoms can be seen to occur in multiple situations that the child encounters (Schachar, Rutter et al.1981).
Parents usually complain that the child has always appeared to have excessive energy, needing far less sleep than his siblings and wearing his clothes out more rapidly. Parents and teachers observe a condition of never ceasing restlessness and an inability to sit still. Temper tantrums are frequent but response to pain is diminished most of them being impervious to quite severe injuries. Physical examination is usually normal, although defects of vision or hearing are sometimes present and mild speech disorders may also be found.

ADHD child may climb into dangerous situations and on to do things that are not meant for him. Climbing exposes the ADHD child to dangers and accidents to a much great extent than other children. The lack of reflection appears as lack of patience and an intolerance of others. The child seems to be thoughtless and in-considerate. ADHD children appear to be poorly organized, immature and insensitive to others because of the impulsivity in verbal areas. These children often say the wrong thing and so hurt other people’s feelings. Children with the symptoms of ADHD show high degree of impulsiveness, hyperactivity and inattention that are inappropriate for their developmental level. They usually have some disturbance in each of these three areas of behaviour, although the degree of each may not be the same. Impulsiveness is shown by acting out of turn, starting a task without getting directions and interrupting when others are talking. Hyperactivity include jumping around, fidgeting, constantly manipulating or fiddling with objects, excessive twisting and wiggling when sitting down and an inability to remain seated. Inattention is shown by a failure to follow through on task, frequent shifts from one activity to another and failure to follow rules and to listen to what other say.
Whether a child is ADHD or not, if yes what levels of problems of inattention, hyperactivity and impulsivity are symptomatically found in him which determines the status of the child. The inattention refers to –

1) Easily distracted by extraneous stimuli,
2) Difficulty following through on instructions in the absence of close supervision (e.g. fail to finish school work),
3) Difficulty in sustaining attention in tasks or play activities,
4) Often does not seem to listen to what is being said to him or her,
5) Often loses things necessary for tasks or activities (e.g. toys, pencils),
6) Often fails to give close attention to details in school and other activities,
7) Difficulty in organizing goal directed activities,
8) Often shifts from one uncompleted activity to another.

Another aspect of ADHD includes hyperactivity that refers to symptoms like - often leaves seat in classroom or in other situation in which remaining seated is expected, difficulty in playing quietly, runs about or climbs excessively in appropriate situation, often fidgets with hands or feet or squirms in seat, often interrupts or intrudes on others, often talks excessively.

The impulsivity is another aspect of ADHD that is often showed by the child as they - often act before thinking, difficulty waiting turn in games or group situations, often blurt out answers to questions before they have been completed, often engage in physically dangerous activities without considering consequences (e.g. run into street without looking),
the child may also have deficiencies in visual and auditory discrimination as well as in reading, writing and language development.

Yelich et al. (1994) reviewed the critical literature on Attention-Deficit Hyperactivity Disorder (ADHD) and list the 14 symptoms currently used to identify ADHD. The authors question the assumptions that ADHD can be reliably diagnosed and that it is a neurological disorder. These difficulties with current systems of diagnoses and treatment prompted and have to attempt to develop a constructivist conceptualization of ADHD. This approach suggests that the behaviour of children with ADHD arise from context in which they have not constructed effective methods to moderate their arousal in socially validated ways. This limited construct elaboration may be caused by either a lack or an over-abundance of incongruity between their developing construct system and their environment. The authors described that how self-regulatory and discrepancy resolving constructs develop in children with ADHD and they provided evidence supporting this model.

Berlin et al. (2003) attempted to examine whether inhibition measured as early as pre-school can predict more general Executive Functioning and ADHD symptoms at school age. In contrast to previous studies, the present study was focused specifically on ADHD symptoms rather than general disruptive behaviour problems among boys and girls who were studied separately. The main result was that inhibition was strongly related to ADHD symptoms both in school and at home for girls. Early inhibition was also significantly related to later executive functioning and concurrent relations were found between executive functioning and ADHD symptoms, although in both cases only for boys. Besides this, inhibition added significantly to the variance, beyond that of
executive functioning, which meant that for boys, inhibition and the other executive functioning explained about half the variance in inattention problems. The stronger relation between inhibitions, executive functioning and ADHD symptoms for boys when compared to girls could suggest that either the predictors of ADHD are different for the two sexes, or girls are more often equipped with some factors that protect them from developing ADHD symptoms, despite poor Executive Functioning.

Muris et al. (2003) examined the validity of Attention-Deficit Hyperactivity Disorder (ADHD) and Hyperkinetic Disorder (HKD) symptom domains in a sample of Dutch school children aged 10 to 14 years (N = 558). Confirmatory Factor Analysis indicated that the symptom of inattention, hyperactivity and impulsivity were satisfactorily represented in various models. Psychopathological correlates of ADHD/HKD. Symptom domains were examined through their associations with the Child Behaviour Checklists (CBCL) and the Youth Self-Report (YSR). As expected, all three symptoms domains were strongly associated with externalizing problems. Furthermore, inattention and hyperactivity were more strongly related to CBCL/YSR attention problems, where as impulsivity was more strongly associated with symptoms of aggression and delinquency.

Attention-Deficit Hyperactivity Disorder sub-types according to DSM-IV have been divided into three sub-types: Attention-Deficit Hyperactive Disorder predominantly inattentive type, Attention-Deficit Hyperactive Disorder predominantly hyperactive-impulsive type and Attention-Deficit Hyperactive Disorder combined type. The first sub-type is characterized primarily by difficulty in keeping attention focused on tasks, a problem that interferes not only with learning but also with
correctly completing assignments in school and work because of failure to listen to instruction or pay attention to details. Children in this group were cognitively sluggish. They seemed to have problems in focusing attention, were socially withdrawn and were likely to have symptoms of depression and anxiety. The second type is marked by over-active and sometimes impulsive behaviour. They are more likely to have concurrent conduct disorder than children with the predominantly inattentive type without hyperactivity. Disorder involving reading, arithmetic, language and co-ordination may occur in association with ADHD. Children in this group were more aggressive, were likely to have difficulty in dealing with authority figures and were more likely to be rejected by their peers than children in the first group and the third combined type, include both difficulties that are more likely to be placed in classes for children with emotional disturbances, to be referred for psychological treatment.

There are three types of ADHD, predominantly inattentive type, hyperactive-impulsive type and combined type.

A - Either (1) or (2)

1- Six or more of the following symptoms that includes inattention is persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level. The inattention include -

a) Often fail to give close attention to details or make 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 failures to understand instructions);

e) Often has difficulty organizing task and activities;

f) Often avoids, dislikes or is reluctant to engage in tasks that require sustained mental efforts (such as schoolwork and homework);

g) Often losses 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 6 months to a degree that is maladaptive and inconsistent with developmental level:

a) The hyperactivity as observed in their behaviour include the following: Often fidgets with hand or feet or squirms in seat;

b) Often leaves seat in classroom or in other situations in which remaining seated is expected;

c) 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);

d) Often has difficulty playing or engaging in leisure activities quietly;

e) Often ‘on the go’ or often acts as if ‘driven by a motor’;

f) Often talks excessive and the impulsivity include the following;
g) Often blurts out answers before questions have been completed;

h) Often has difficulty awaiting turn;

i) Often interrupts or intrudes on others (e.g. butts into conversation or games).

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

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 or a personality disorder).

The criteria for the identification of ADHD are also based on its types:

Attention-Deficit Hyperactive Disorder, combined type: If both criteria A1 and A2 are met for the past 6 months. ADHD, predominantly inattentive type: if criteria A1 is met but criteria A2 is not met for the past 6 month ADHD, predominantly hyperactive-impulsive type: criteria A2 is met but criteria A1 is not met for the past 6 months (DSM-IV 1994).

Marshall et al. (1997) investigated the relationship between Attention-Deficit Hyperactivity Disorder (ADHD) and academic underachievement by comparing 24 students with ADHD and 20 students with Attention Deficit Disorder without Hyperactivity (ADD) referred to
a university based diagnostic clinic for comprehensive neuropsychological assessment. Subjects (aged 6 to 8 years) completed 5 measures of academic achievement. Consistent with previous reports, this study found that math achievement test scores for Subjects with ADD were significantly lower than those for Subjects with ADHD. These findings support previous research and suggest that ADD may represent a distinct ADD sub-type. It was hypothesized that inattention always interferes with students' ability to master abstract symbol systems especially in the acquisition of basic arithmetic skills in the primary grades.

Houghton et al. (1999) examined differential pattern in executive function of children with Attention-Deficit Hyperactivity Disorder (ADHD) according to sub-type and gender and identified instrumentation sensitive to executive function in children aged 6-12 years with ADHD. Ninety-four children diagnosed with ADHD (predominantly) inattentive n = 32, ADHD combined n = 62 and from 28 controls. Subjects with ADHD, who were unmedicated at the time of testing, were administered 5 test (the Wisconsin Card Sorting Test, The Stroop Color-Word Test, The Matching Familiar Figures Test, The Trial Making Test and The Tower of London) multivariate analysis of covariance with age as the covariate and sub-type and gender as the independent variable was conducted on all of the test administered. While children with ADHD predominantly inattentive and those with ADHD combined differed from controls, it was only the later sub-type that differed significantly in perseveration and response inhibition. The absence of diagnosed comorbidity in the children with ADHD at the time of test administration demonstrates that the impairments in executive function are clearly located in ADHD particularly in the ADHD combined type.
Maedgen et al. (2000) compared 16 children with Attention-Deficit Hyperactivity Disorder (ADHD) combined type (ADHD-C) 14 children with ADHD predominantly inattentive type (ADHD-I) and 17 controls on parents and teachers ratings of social knowledge and performance and observation of behaviour on an emotional regulation task. The age of the subjects ranged 8-11 years. Analyses revealed distinct pattern of social dysfunction between ADHD sub-groups. Children with ADHD-C were rated as showing more aggressive behaviour; furthermore they displayed emotional dysregulation characterized by high intensity and high levels of both positive and negative behaviour. In contrast, children with ADHD-I were perceived as displaying social passivity and showed deficits in social knowledge on the self-report measure but did not evidence problems in emotional regulation. Regression analyses revealed that social performance, emotional regulation and to a lesser degree, social knowledge, were predictive of social status. The application of these findings to understands the nature of the social deficits in the ADHD sub-type.

According to Chen et al. (2008) Attention-Deficit Hyperactivity Disorder (ADHD) is a discrete clinical syndrome characterized by the triad of inattention, hyperactivity and impulsivity in the context of marked impairments. Molecular Genetic studies have been successful in identifying genetic variants associated with ADHD, particularly with DSM-IV inattentive and combined sub-types. To investigate the appropriateness of Quantitative Trait Locus (QTL) approaches, investigators tested the familial association between 894 probands with a research diagnosis of DSM-IV ADHD combined type and continuous trait measures among 1,135 of their siblings unselected for phenotype. The sibling recurrence rate for ADHD combined sub-type was 12.7 %,
yielding a sibling recurrence risk ratio (lambda (sib)) of 9.0. Estimated sibling correlations around 0.2-0.3 are similar to those estimated from the analysis of fraternal twins in population twin samples. Investigators showed that there was no threshold effects on the sibling risk for ADHD among the ADHD probands and that both affected and unaffected sibling contributed to the association with ADHD trait scores. In conclusion, these data confirm the main requirement for QTL mapping of ADHD by demonstrating that narrowly defined DSM-IV combined type probands show familial association with dimensional ADHD symptom scores amongst their siblings.

Asherson et al. (2008) in an International Multi-centre ADHD Genetics Project completed an affected sibling pair study of 142 narrowly defined Diagnostic and Statistical Manual of Mental Disorders, fourth edition combined type Attention Deficit Hyperactivity Disorder (ADHD) proband-sibling pairs. No linkage was observed on the most established ADHD-linked genomic regions of 5p and 17p. They found suggestive linkage signals on chromosomes 9 and 16, respectively, with the highest multipoint non-parametric linkage signal on chromosome 16q23 at 99 cm (log of the odds, LOD = 3.1) overlapping data published from the previous UCLA (University of California, Los Angeles) (LOD>1, approximately 95 cm) and Dutch (LOD>1, approximately 100 cm) studies. The second highest peak in this study was on chromosome 9q22 at 90 cm (LOD = 2.13); both the previous UCLA and German studies also found some evidence of linkage at almost the same location (UCLA LOD = 1.45 at 93 cm; German LOD = 0.68 at 100 cm). The overlap of these two main peaks with previous findings suggests that loci linked to ADHD may lie within these regions. Meta-analysis or
re-analysis of the raw data of all the available ADHD linkage scan data may help to clarify whether these represent true linked loci.

There is much evidence which indicates that ADHD is more common in boys than girls but exact figures depends on whether the sample is taken from clinic referrals or from the general population. Boys are more likely to be referred to clinics because of the higher likelihood of aggressive and anti-social behaviour. Recently very few carefully controlled studies of girls with ADHD were conducted. One research group examined a large and ethically diverse sample of girls with and without ADHD (Hinshaw et al., 2002) and it was found that girls with ADHD were more likely than other girls to have been adopted (Simmel et al., 2001). Similar to findings with male samples, girls with the combined type had more disruptive behaviour symptoms than girls with the inattentive type. And the girls with the combined types were more likely to have a comorbid diagnosis of conduct disorder or oppositional defiant disorder than girls without ADHD. Girls with ADHD were likely to be more anxious and depressed than were girls without ADHD. Girls with combined type were viewed more negatively by peers than girls with the inattentive type and girls without ADHD. Girls with the inattentive type were also viewed more negatively than girls without ADHD. Girls with ADHD exhibited a number of neuro-psychological deficits, particularly in executive functioning (e.g. planning, solving problems) as compared with girls without ADHD, replicating other findings (Castellanos et al., 2000).

Some children showed reduced severity of symptoms in adolescence (Hart et al. 1995) 65 to 80 percent of children with ADHD still meet criteria for the disorder in adolescence. Adolescents with
ADHD are more likely to drop-out of high school and develop anti-social behaviour than are their peers.

It was also found that the parents of ADHD children gave them more commands and have negative interactions with them (Anderson, Hinshaw and Simmel, 1994, Heller et al., 1996), so as these children have been found to be less compliant and more negative in interactions with their parents. (Barkley, Karlsson and Pollard, 1985; Tallmadge and Barkley, 1983).

De Quiros et al. (1994) examined whether inattentiveness, impulsivity and hyperactivity vary independently and if so, whether there are multiple syndromes, multiple presentations of the same syndrome or multiple levels of severity of the same syndrome. 116 children (aged 6-16 years) with Attention-Deficit Disorder (ADD) were divided into 3 groups: 60 hyperactive, inattentive and impulsive (HII); 26 inattentive and impulsive (II); and 30 inattentive (I). The three groups are similar in mean age, gender ratio, prevalence and pattern of associated learning disabilities, family history of psycho-pathology and probability of favorable response to methylphenidate. Group I differed from Group HII and II in frequency of externalizing relative to internalizing comorbid psycho-pathology. The preponderance of similarities in associated characteristics suggests that the 3 groups were differently found in clinical presentations of an ADD spectrum.

Herbani, et al. (2007) assessed the impact of gender on comorbid disorders with Attention-Deficit Hyperactive Disorder (ADHD). Children and adolescents were selected from Sheikh Hospital clinic. Two-stage ascertainment procedure was used to select the subjects. The first stage was the patient’s referral to a psychiatric clinic resulting in clinical diagnosis of ADHD by a child psychiatrist. A second stage confirmed the
diagnosis of ADHD made on face-to-face structured interviews with the mother. Only patients who received a diagnosis of ADHD at all two stages were included in the final analysis. The clinical interview and the schedule for Affective Disorders and Schizophrenia for school-age children present and lifetime version (K-SADS-PL) were used for making diagnosis according to DSM-IV. Results showed that there were no meaningful statistically significant differences in the sex of probands, the proportion of male was 48.3% (n = 71) and female 51.7% (n = 76). The majority of probands were between 7-12 years old (68%). Although mood disorders (depressive disorders and bipolar), anxiety disorders and enuresis were more common in males but there were no significant differences between them. OCD and Learning Disorders were more prevalent in girls but the difference was not statistically significant.

It has been reported that the children having ADHD symptoms are found to show high rate of comorbidity for many types of disorders. Most of the disorders such as conduct and oppositional are found to occur in most of the ADHD children and they are also prone to internalize disorders such as anxiety disorder and more often show the tendency of depression, learning disorder. Moreover the children suffering from ADHD referred from treatment having more than one comorbid disorder. The risk factors which are statistically associated for ADHD found to be related with family history, alcoholic or anti-social male relative and female relative which with Briquet’s syndrome, lower socio-economic status, marital or family divorce neglected or parental deprivation, abuse, mental retardation, Conduct Disorder, low birth weight minor physical anomalies and various kind of brain insult. So far as the cause of ADHD is concerned there is no single one satisfactory account for all cases. After several researches, it was suggested by the investigators that no specific
etiology of ADHD was found. It may be the cause of complex set of factors such as function in several brain regions and level of neurotransmitter activity. One case may be due to one factor but in the other case more than one factor may contribute. So there may be several causes leading to ADHD problem. So far as genetic factor is concerned, attempt has been made to identify that to what extent this factor leads to ADHD.

The Tourette's disorder is caused by a dominant gene related to one's family and the patient having this type of disorder, half of them also have the ADHD problems. But it is not clear that specific genetic association with ADHD. This proband have higher rate of alcoholism and antisocial personalities among fathers and Briquet's syndrome among mothers. The link with anti-social personality disorder appears mediated by the comorbidity of conduct disorder because parents with anti-social personality disorder also had a history of ADHD and conduct disorder in their childhood. It is also reported that there is a link of ADHD with anxiety and depression.

There is also a greater concordance in monozygotic than in dizygotic twins. The siblings of hyperactive children have about twice the risk of having the disorder as does the general population. One sibling may predominantly have hyperactivity symptoms; biological parents of children with the disorder have a higher risk for ADHD than to adoptive parents. Goodman and Stevenson (1989) reported 51 percent monozygotic concordance as compared to 33 percent in dizygotic twins. Biederman et al. (1987) observed that parents, siblings and first degree relatives of hyperactive subjects were more likely to have a history of hyperactivity in childhood than the relatives of normal subjects. It has also been found that the father of ADHD child had a troubled childhood,
was a school dropout and remains restless and short tempered (Whalen, 1989). It is reported that there is high rates of anti-social personality disorder in male relatives (Rie and Rie, 1980). Studies conducted on parents have also supported the idea that ADHD is transmitted in families, because both mothers and fathers of children with ADHD are much more likely to be classified in this category than are parents of children in the control group and siblings of children with ADHD are two to three times as likely to be diagnosed with ADHD as controls (Faraone and Biederman, 1994). Second degree relatives (aunts and uncles) of those with ADHD diagnoses have also shown higher rates of hyperactivity diagnosis than did relatives of a control group.

Even biological relatives who did not meet the criteria for an ADHD diagnosis were found to have higher rates of school failure, learning disabilities and intellectual impairment. It is observed that the adoptive relatives of a child with ADHD are less likely to have ADHD than the children’s biological relatives.

Family and twin studies suggested that ADHD may have a stronger genetic component for girls than boys. It is found that in two-thirds of the families who had a girl with ADHD, at least one parent had a life time diagnosis of ADHD while in boy’s family less than half contained a parent with this diagnoses (Smalley et al., 2000). This may be because boys are more likely to receive this diagnosis because of high activity levels, which may be characteristic of this developmental stage rather than be a true indication of a disorder.

Biederman et al. (1995) used an approach in evaluating the familial nature of adult Attention-Deficit Hyperactive Disorder (ADHD) is through a high risk design aimed at estimating the risk for the disorder in children of parents with childhood onset ADHD. Children at risk for
ADHD were ascertained from the study group of 84 referred adults with clinical diagnoses of childhood. Onset of the disorder, confirmed by structured interviews diagnostic information on the disorder was derived from the ADHD module of the schedule for effective disorders and schizophrenia for school age children-epidemiologic version, supplemented with information on treatment for ADHD and school history of the 84 children at the risk, 48 met criteria for ADHD of the 48 ADHD children of parents with the disorder, 36 were treated for it. Result support the validity of the adult form of this disorder may have stronger familial etiological risk factors than its pediatric form.

Thapar et al. (1999) reviewed research evidence for a genetic contribution to Attention-Deficit Hyperactive Disorder (ADHD) reported that ADHD is a familial disorder. Available adoption evidence suggests genetic influences are important. Twin studies have primarily focused on trait measures which have consistently been found to be highly heritable. Molecular studies of clinical disorder so far have suggested the involvement of the dopamine DRD-4 receptors gene and dopamine transporter gene.

Cook (1999) reported that Attention-Deficit Hyperactivity Disorder (ADHD) is a syndrome in which hyperactivity, inattention and impulsivity are present. It is a relatively frequent disorder of childhood onset. Several decades of genetic research have suggested genetic factors interacting with environmental factors. This review is focused on the data that suggest molecular genetic approaches may assist in learning about the patho-physiology of ADHD. Current molecular genetic findings and future directions for elucidation of the molecular basis of the genetic risk for ADHD are emphasized.
Faraone et al. (2000) assessed the familial transmission of Attention-Deficit Hyperactivity Disorder (ADHD) in families ascertained through girls. Interviewers who were blind to diagnosis administered structured psychiatric interviews to 140 girls with ADHD (mean age 11.2 years) and their 417, 1st degree relatives (mean age 31.9 years) and to 122 girls with ADHD and their 369 1st degree relatives. The relatives of the ADHD girls had a significantly higher prevalence of ADHD, (according to either the DSM-III-R or DSM-IV definition) than the relatives of the comparison girls.

Faraone et al. (2000) tested the hypothesis that the clinical severity of sub-types paralleled a gradient of familial severity. 140 children with Attention- Deficit Hyperactivity Disorder (ADHD) and 120 normal control children and their biological relatives were studied. The first prediction from the hypothesis was true rates of ADHD among relatives of each sub-type group were greater than rates among relatives of controls. But the second prediction did not hold rates of ADHD were not significantly higher among relatives of combined typed probands compared with relatives of other probands. The ‘gradient model’ also predicted that sub-types would not ‘breed true’ (i.e., the sub-type of the relative would not be the same as that of the probands) the prediction of non specificity was refuted for the inattentive and combined sub-type, but hyperactive-impulsive ADHD was found almost exclusively among relatives of hyperactive-impulsive probands.

Faraone et al. (2003) in their study concluded that within families, co-occurring Attention-Deficit Hyperactivity Disorder (ADHD) in parents and children may be common. The authors evaluated the hypothesis that parental ADHD may lead to a reporting bias of ADHD symptoms in offspring. They combined 2 family case controlled rates of
maternal report ADHD symptoms among 3 groups of ADHD children: no parental ADHD (n = 231), mother with ADHD (n = 63), and father with ADHD (n = 57). With the exception of one symptom, the rates of reporting between groups did not differ. There is no evidence that the discrepancy between maternal reports and self-reports of symptoms differ by parental ADHD. Results were similar across child gender or referral status. These results do not support the notion that parental ADHD affects maternal reports of offspring ADHD.

Voeller (2004) approaches to the diagnosis and treatment of Attention-Deficit Hyperactivity Disorder (ADHD) are undergoing a major change as a result of information from studies related to genetic factors of ADHD and the use of new neuro-imaging technologies. Moreover, pharmacogenomics, although it is still in infancy, will provide a basis for much more sophisticated treatment strategies for ADHD; particularly once more information is available about the genetics of ADHD. Even at this point of time, there is some pertinent information available that although not ready for application in clinical settings, nonetheless provides a broader perspective for the clinician. In terms of the etiology, it is viewed that ADHD is a neuro-psychiatric disorder. There is a genetic basis in about 80 percent of the cases, involving a number of different genes and in about 2 percent of the cases, ADHD is the result of an acquired insult to the brain. Some individuals likely have both genetic and acquired forms. Although medication works well in many cases of ADHD, optimal treatment of ADHD requires integrated medical and behavioural treatment. The family plays a crucial role in the management of children with ADHD. Because there is often a very high degree of comorbidity between ADHD and Learning Disabilities, teachers also have a great deal to contribute in the day-to-day
management of these children. Early recognition and treatment prevent the development of more serious psycho-pathology in adolescent and adulthood.

Biederman (2005) Attention-Deficit Hyperactivity Disorder (ADHD) is a disorder of inattention, impulsivity and hyperactivity that affects 8-12 percent of children worldwide. Although the rate of ADHD falls with age, at-least half of children with the disorder have impairing symptoms in adulthood. Twin, adoption and molecular genetic studies show ADHD to be highly heritable and other findings have recorded obstetric complications and psycho-social adversity as predisposing risk factors. Converging evidence from animal and human studies implicates the dysregulation of frontal-subcortical-cerebellar catecholaminergic circuits in the pathophysiology of ADHD and molecular imaging studies suggest that abnormalities of the dopamine transporter lead to impaired neurotransmission. Studies during the past decade have shown the safety and effectiveness of new non-stimulant drugs and long-acting formulations of methylphenidate and amphetamine. Other investigations have also clarified the appropriate role of targeted psycho-social treatments in the context of ongoing pharmacotherapy. Further attempt were made to identify the other causes of ADHD. With this proposition some researchers hypothesized that there is catecholamine abnormalities in the ADHD children. Studies conducted on humans showed that the abnormalities found in ADHD children are primarily in catecholamine pathways initial urinary, Serum and Cerebrospinal Fluid (CSF) concentration of the metabolites of norepinephrine and dopamine have led to tentative conclusions that there is a decreased turnover of dopamine and possibility of norepinephrine in ADHD children. CSF studies have indicated that there is either a decreased turnover of dopamine or that
there is a super sensitivity to dopamine released, in effect giving a hypodopaminergic state. Studies have shown the association of ADHD with Tourette’s Disorder (TD), which is caused by excessive dopamine turnover and ADHD being one of decreased turnover because many TD patients also have ADHD symptoms. There is much clinical and treatment (pharmacological) evidence that suggest this continuum in one neuro-chemical substrate. There may be possibility that there may be a dopamine lesion in individuals with ADHD with maturation. The hyperactivity diminished but the learning deficit persist a pattern often observed in ADHD children as they mature. Neuro-chemical researches were conducted to examine the differences in specific monoamine systems that would differentiate ADHD individuals from others, have revealed conflicting results.

According to Ronald et al. (2008) high levels of clinical comorbidity have been reported between Autistic Spectrum Disorders (ASD) and Attention-Deficit Hyperactivity Disorder (ADHD). This study takes an individual differences approach to determine the degree of phenotypic and aetiological overlap between autistic traits and ADHD behaviours in the general population. Methods: The Twins Early Development Study is a community sample born in England and Wales. Families with twins born in 1994-6 were invited to join; 6,771 families participated in the study when the twins were 8 years old. Parents completed the Childhood Asperger Syndrome Test and the Conners' DSM-IV sub-scales. Teacher data were also collected on a sub-sample. High scores on the Conners' sub-scales were used to identify possible ADHD cases. Potential ASD cases were interviewed using the Development and Well-Being Assessment. Multivariate structural equation model-fitting was employed, as well as DeFries Fulker extremes
analysis and liability threshold model-fitting. Results: Significant correlations were found between autistic and ADHD traits in the general population (.54 for parent data, .51 for teacher data). In the bivariate models, all genetic correlations were >.50, indicating a moderate degree of overlap in genetic influences on autistic and ADHD traits, both throughout the general population and at the quantitative extreme. This phenotypic and genetic overlap still held when sex, IQ and conduct problems were controlled for, for both parents and teachers data. There was also substantial overlap in suspected cases (41% of children who met criteria for an ASD had suspected ADHD; 22% with suspected ADHD met criteria for an ASD). These results suggested that there are some common genetic influences operating across autistic traits and ADHD behaviours throughout normal variation and at the extreme. This is relevant for molecular genetic research, as well as for psychiatrists and psychologists, who may have assumed these two sets of behaviours are independent.

It has been found out that many neurotransmitters have been associated with ADHD symptoms. The locus ceruleus, consisting of mainly noradrenergic neuron, plays a major role in attention. The peripheral noradrenergic system may be of more importance in ADHD. The noradrenergic system consists of the central system (originating in the locus ceruleus) and the peripheral sympathetic system. Thus, a dysfunction in peripheral epinephrine which causes the hormone to accumulate peripherally could potentially feed back to the central system and ‘reset’ the locus ceruleus to a lower level. In part, hypotheses about the neuro-chemistry of the disorder have risen from the impact of many medications that exert a positive effect on it. Drugs were studied in the treatment of ADHD and it was found that the stimulants, affect both
dopamine and norepinephrine, leading to hypotheses that include possible dysfunction in both the dopaminergic and the norepinephric systems. Stimulants increase catecholamines by promoting their release and by blocking their uptake. Stimulants and some tri-cyclic drugs, such as desipramine (Norpramin), reduce urinary 3-methoxy-4-hydroxyphenylglycol (MHPG), which is a metabolite of norepinephrine. Clonidine (Catapres), a norepinephrine agonist, has been helpful in treating hyperactivity. Overall, no clear-cut evidence implicates a single neurotransmitter in the development of ADHD, but many neurotransmitters may be involved in the process. A study was conducted for CBF abnormalities in ADHD children and demonstrated hypoperfusion in the frontal cortical areas compared with their normal siblings. When these children were treated with methylphenidate (Ritalin), blood flow increased to the basal ganglia and the mesencephalon, but there was a blood flow to frontal cortical and especially motoric, region of the brain. Other studies, utilizing brain-imaging techniques, have demonstrated cortical atrophy in young adults with a childhood history of ADHD. Although previous Computed Tomography (CT) studies of hyperactive children have not demonstrated differences when compared with controls, newer imaging techniques appear to be consistently showing cortical changes, especially in frontal areas. These findings are important because of the functions of the frontal and motoric cortical areas in maintaining attention and impulse control and regulating aggression and motoric activity. Researchers have shown that the human brain normally undergoes major growth spurts at several ages: 3 to 10 months, 2 to 4 years, 6 to 8 years, 10 to 12 years, and 14 to 16 years. Some children have a maturational delay in the sequence and manifest symptoms of ADHD which appear to normalize by about age 5. A physiological correlation is the presence of a variety of non-specific
abnormal Electro-Encephalo-Gram (EEG) patterns that are disorganized and characteristic of young children. In some cases the EEG findings normalize over time. A recent study of quantitative EEG in children with ADHD, in children with undifferentiated attentional problems and in normal controls indicates that both groups with attentional problems evidence increased beta band relative percentages and decreased rate tone P3000 amplitudes. Increased beta band percentage or decreased delta band percentage is associated with increased arousal. Computed Tomography (CT) head scans in children with ADHD shows no consistent findings. Studies using Positron Emission Tomography (PET) have found decreased cerebral blood flow and metabolic rates in the frontal lobe areas of children with ADHD compared with controls. PET scans have also shown that adolescent family with the disorder have globally reduced glucose metabolism compared both with normal control females and males and males with the disorder.

It has found out that the large numbers of patients with a mutant, hypo-sensitive thyroid target-tissue receptor, half of the adults and two thirds of the children had a symptomatic behavioural profile compatible with a diagnosis of ADHD with thyroid replacement therapy some of the behavioural symptoms improved, leading to speculation that the mutant thyroid receptor might explain a significant proportion of the genetic contribution to ADHD. However, screens of ADHD sample have not yielded a significant proportion of mutant receptors. One screen of several hundred ADHD subjects found no mutant receptor but did find a 2 to 3 percent incidence of other thyroid abnormalities.

In a study conducted by Drake (1968) examined 12 years old boy with fits and severe reading disability who died suddenly from a haemorrhage from a cerebellar arteriovenous malformation.
Abnormalities of gyrus formation were noted in both parietal lobes and the related areas of the corpus callosum were thinned. The cerebral cortex in the affected regions showed disorganization of structure and ectopic neurons in white matter.

An autopsy on 20 years old boy with a history of fits and developmental dyslexia that died from a fall showed a consistently wider left cerebral hemisphere an area of polymicrogyria in the left temporal speech area and evidence of control cortical dysplasia in limbic primary and association areas (Galaburda and Kemper, 1979). Various studies using Positron Emission Tomography (PET) have demonstrated developmental changes in dopamine receptors density. Specific changes in the density of dopamine receptors have been identified, showing that a maturational phenomenon occurs up until the late teenage years. In ADHD individuals, areas that appear to be most affected are the frontal lobe dopaminergic pathways. Neuro-psychological studies tend to provide behavioural support suggesting frontal lobe dysfunction in ADHD individuals. The orbito frontal cortex had been previously identified as the area most likely to be involved with the impulsive and aggressive behaviour characteristic of Conduct Disorder and ADHD behaviours. CBF studies indicate that two sites are primarily affected - the frontal lobes and the caudate nuclei. These studies also demonstrate that with medication, blood flow increases to the basal ganglia and the mesencephalon. Where as motoric cortical areas show a decreased blood flow. These finding may explain the function of methlphenidate that causes a decrease in motoric behaviour and increases attention span, impulse control and fine and gross motor coordination.

Other studies have focused on the hypothalamus, reticular activating system and medial forebrain bundle. Neuroendocrinological
differences have also been shown in ADHD individuals as compared with normal controls. A number of studies have demonstrated that ADHD individuals hyper-secrete growth hormone in response to either methylphenidate or dextroamphetamine. Whether this over-secretion represents a hypothalamic catecholamine-mediated release is difficult to determine at the present time. At the very least, however, it may represent a biological marker that differentiates ADHD children from normal children.

Similarly, studies examining arousal level, either through galvanic skin response or evoked potentials, have tended to demonstrate that these children generally exhibit an under aroused response to stimuli. Under arousal has previously been associated with a greater likelihood of anti-social and conduct disorder behaviour in childhood. The failure in ADHD children to learn from previous experiences indicates that because of their under arousal, behavioural reinforcers fail to be incorporated at a physiological level and so do not necessarily register as a psychological reinforcement or modifier of subsequent behaviours. At psychological level, it has been demonstrated that ADHD children have an elevated threshold for reinforcement. This indicates that ADHD children do not perceive either positive or negative reinforcement because the physiological reinforcement threshold by which the reward or punishment is registered has not exceeded. It has also been demonstrated that with the administration of methylphenidate or other sympathomimetic medication, the threshold is lowered and therefore, either a positive or a negative reinforcement can register. These psychological, physiological and pharmacological observations provide a theoretical framework to explain the ADHD individuals' inability to learn from life events. This situation can lead to academic problems and difficulties with the law and
interpersonal or social problems. It has been reported that some children affected by ADHD received minimal and subtle brain damage to the CNS during their fetal and perinatal periods. The brain damage may also have been caused by adverse circulatory, toxic, metabolic, mechanical and other effects and by stress and physical insult to the brain during early infancy caused by infection, inflammation and trauma, non-focal (soft) neurological signs are frequent.

As it appears from research review that at one time brain damage was believed to be the cause of hyperactivity. When it become clear that no brain damage could be demonstrated in most hyperactive individuals the hypothesis was modified; a functional rather than organic disturbance was postulated and since no measurable brain pathology could be found, the disorder was called Minimal Brain Dysfunction (MBD). The most widely definition of MBD was given by Clements (1966) described that Minimal Brain Dysfunction affects children of near average, average or above average general intelligence with certain learning or behavioural disabilities ranging from mild to severe, which are associated with deviations of function of the central nervous system. These deviations may manifest themselves by various combinations of impairment in perception, conceptualization, language, memory and control of attention, impulse or motor function. These aberrations may rise from genetic variations, bio-chemical irregularities, perinatal brain insults or other illness or injuries sustained during the years which are critical for the development and maturation of the central nervous system or from unknown cause. During the school years, a variety of learning disabilities is the most prominent manifestation of the condition which can be designated by this term. Most children receiving the MBD diagnosis did not the show the evidence of brain damage. A small number of some
irregularities were found in their EEG traces, but no connection has been found between such traces and any known brain pathology. When a learning disability is present, it is believed to be caused not by any deficit in intelligence or general ability but by the child’s behaviour problem. However, learning disabilities are not always present and some of these children do well academically. And the behaviour problem may be over-activity, under-activity, slowness in work, sleep abnormally light or deep, socially bold and aggressive, physical development normal or advanced for age, possibly negative and aggressive to authority, sweet and even-tempered, cooperative and friendly or any of 91 others listed in Clement’s monograph. Prevalence estimates for MBD vary from 3 to 40 percent of the school-age population. A hypothesis aroused from a study of pain tolerance has some interesting possible implications for the study of hyperactivity.

Petrie (1960) stated that some people seem to consistently reduce the intensity of their perceptions while others consistently augment the intensity of their perceptions. People who reduce sensory inputs tolerate pain well and are more extraverted, less tolerant of sensory deprivation and more mesomorphic than those who augment sensory inputs. Reducers also tend to judge time as passing more slowly and are more likely to be delinquents. So far as the developmental factors are concerned it refers to some evidence that September is the peak month for the birth of ADHD children with and without comorbid learning disorders. The implication is that prenatal exposure to winter infections during the first trimester may contribute to the emergence of ADHD symptoms in some susceptible children.

It is observed that the children in institution are frequently over-active and have poor attention span. These signs result from
prolonged emotional deprivation and they disappear when derivational factors are removed, such as through adoption or placement in a foster home. Stressful psychic events, a disruption of family equilibrium and other anxiety including factors contribute to the initiation or perception of ADHD. Predisposing factors may include the child’s temperament, genetic familial factors and the demands of society to adhere to a routinized way of behaving and performing.

Maag et al. (1994) postulated that cultural and societal factor have exerted a powerful force on the current conceptualization and treatment of Attention -Deficit Hyperactivity disorder (ADHD). The clinical utility of ADHD for identifying problem areas related to overt behaviours and bio-psychosocial model was examined to illustrate the limitations a diagnosis of ADHD has for selecting appropriate intervention targets and techniques. An alternative conceptualization that was based on functional approach to the assessment and treatment of ADHD is presented as well as a model for classifying performance problems that can be used to guide the selection of appropriate intervention technique.

Yeschin (2000) in his paper explores alternate concepts of the intra/interpersonal difficulties that are observed in those with Attention-Deficit Hyperactivity Disorder (ADHD). Language theory in correlation with under-inhibition of responses, (not inattention, impulsivity and hyperactivity) is explained and demonstrated how those with ADHD are more vulnerable for developing intra/interpersonal struggles. Comorbidity is examined as the resulting psycho-pathological symptomatology possibly caused by untreated psychological, social and cognitive distress. This is indistinct diagnoses. The psychoanalytic theories of object relations and affect attunement are linked to under inhibition of responses through dynamic intra/interpersonal processes and
the presenting psychological, social and cognitive problems. Interventions are proposed that are behavioural and psychopharmacological, with a systems approach. Two cases (a male 14 and 16 years old) illustrate how these treatment techniques translate into actual practice by addressing the potential that individuals and families with ADHD experience under inhibition of responses with accompanying mal-adaptive intra/interpersonal functioning.

Other factors for ADHD include a number of perinatal and prenatal complications. For example; Low birth weight, is a quite specific predictor of the development of ADHD (Breslau et al., 1996; Whitaker et al., 1997) However, the impact of low birth weight on later symptoms of ADHD can be mitigated by greater maternal warmth (Tully et al., 2004).

Although some evidence suggest that lead poisoning may be associated to a small degree with symptoms of hyperactivity and attentional problems. (Thompson et al., 1989), But most children with lead poisoning do not develop ADHD and most children with ADHD do not show elevated levels of lead in the blood. Nicotine specifically, maternal smoking is an environmental toxin that may play a role in the development of ADHD. Since 1980 several studies conducted on animals indicate that chronic exposure to nicotine increases dopamine release in the brain and causes hyperactivity (Fung and Lau, 1989; Vaglenova et al.2004).

Tuormaa (1994) examines the effects of Food Additives (FAs) on health, and surveys of the literature, especially studies of childhood hyperactivity (CH) B.F. Feingold’s theory relating CH to FAs and natural salicylates in food is discussed side effects of colorants, preservatives and sweeteners are presented. FAs are also discussed in relation to Juvenile psychotic disorders or crime. Prepared foods, which form a large part of
children's diets, are typically high in salt, Sucrose, fat and FAs. Since the human body is unable to eliminate even minute amounts of many mutagenic and carcinogenic compounds, it is recommended that all non-essential FAs, especially cosmetic colorants, be banned. Also, all foods and drugs produced for infants and young children should be free from FAs.

1.2 RATIONALE AND OBJECTIVES

On the basis of the literature reviewed on Attention-Deficit Hyperactivity Disorder it was observed that the children who suffered from ADHD were mostly treated with medication because the problems of such children was undertaken by the psychiatrist and they administered drugs on these children. The medication is found to be necessary for the treatment of identified and severe cases of ADHD because it improves impulse control and enhanced reflection, decrease restlessness and fidgetiness, improves social skills and interaction, permits better cognitive organization and improves fine motor coordination. However, these medications have various side effects on the health of the child. The problem of ADHD undertaken in this research is related to the moderate cases that show the resemblance of the symptoms of Attention-Deficit Hyperactivity Disorder (ADHD). But in actuality they are not the declared cases, so the present investigator cannot use medication to deal with such type of children. In this study an effort is made to ascertain the effect of counselling of the teachers to adopt educational strategies as a follow-up action in teaching-learning process of these children in classroom setting and counselling of their parents in handling the problems in home to improve the scholastic performance and behaviour of such type of children. In fact the school going children have to spend 4 to 5 hours in the school and rest of the time in the home with their parents.
Realizing the importance of teachers and parents for the purpose of counselling, the investigator felt it necessary to train teachers and parents through counselling techniques in order to deal with these children to bring some desirable change in their performance and behaviour. The purpose of Counselling is specifically according to the need of problem and also under some conditions it is required. So as counselling is now given to the employees, students and also to the family members. In every setting the mode of counselling may be different but the objectives of using counselling techniques are somewhat specific as per the requirement of the problem. The major objectives of counselling in dealing with the problems of children showing the symptoms of ADHD are to understand the emotional problems of these children and empowering them to develop the habit of doing their work in integrated and somewhat desirable manner. So as it seems to be much helpful in performance related problems because it becomes a strong source of help for those who suffer with such type of problems or crises, it is a conscious effort to create and maintain an environment in which such type of children helped in modifying the behaviour, thinking and performance. It is widely accepted fact that the counselling is found to be highly effective under the following conditions:

- When a person performs poorly;
- When a sensitive situation arises;
- When a change occurs such as, redundancy, redeployment, retirement etc;
- When a crisis needs to be managed;
- When someone’s need to acts or works becomes an obstacle, in the smooth performance of others;
- When someone is unable to solve his/her problems;
- When confusion exists (this hampers the process of decision making);
- When quick decision making is being deliberately delayed or is totally non-existent;
- When a response to the usual motivation is absent;
- When someone is engaged in an act of self-destruction;
- When someone is very excited;
- When a behavioural change occurs;
- When there is a total disregard of the behaviour (with reference to the consequences);
- When someone is very moody or tense;
- When there is a scope for empowering a member of the workforce.

As the present study is related with the symptoms of Attention-Deficit Hyperactivity Disorder (ADHD) in children, keeping in view the requirements of the present study the investigator selected the parents and teachers to train them through counselling how to deal with these children because they may be more helpful in changing their behaviour. It is intended that the counselling of parents and teachers could be directly effective on children behaviour. In dealing with the problems of such type of children the investigator can not give them direct counselling because they can not be followed-up. Parents trained for counselling may evaluate their own behaviour, with the child and they better understand the problem of a child, through these techniques they may manage the troublesome situation created by such type of children, they can be helpful for the child in his/her study and through these techniques they can understand that how they should behave with the child when he/she creates some problem, how the performance of the child improves, in what ways they should teach their children, which may be most suitable way to teach them because the child is impulsive, hyperactive and inattentive. Teachers can also help their students who are showing the symptoms of ADHD. With the help of counselling techniques they can help them in a better way to facilitate their studies and improve scholastic
performance because such types of children are need in special care for their development. If parents and teachers ignore these children and do not apply these techniques then the child may become severe case of ADHD which can’t be treated without medication which has many side effects. Keeping in mind the significance of these counselling techniques, the present investigator tries to see that to what extent they are effective in improving the performance of children. These proposed counselling techniques are as stated below:

Almost all parents need to be taught the general principle of structuring the child’s environment to include regular routines and proper limits set on the child’s behaviour. When children are helped to structure their environment, their anxiety diminishes. Therefore, parents should set up a predictable structure of reward and punishment. They should use a behaviour therapy model and apply it to the physical, temporal and interpersonal environment. They should also be made aware to recognize that, in spite of their children’s deficiencies in some areas, they should face the normal tasks of maturation, including the need to take responsibility and to develop a sense of mastery. Parents must willingly help the child in his/her study it help to maintain the relationship and understanding between parents and the child. Children with the symptom of ADHD are always in need of help in organizing therefore, having the same routine every-day, from wake-up time to bed-time. The schedule should include homework time to play time. Organizing needs everyday items - have a place for every-thing and keep every thing in its place. This includes clothing, backpacks and school supplies.

The way you talk with your child has a direct impact on the way your child talks to you and his/her behaviour. The more you can improve the relationship and the communication between you and child, the more
you help your child’s who shows the symptom of ADHD to mature into a healthy responsible adult.

Parents and children interact naturally and without much thinking about it. This kind of communication has its positive and negative sides. On the one hand, when relationships are calm, close and respectful, feelings are considered and conversations flow easily. But when there is conflict, resistance and disobedience then relations seem to strain between the parent and child. One of the best ways to break out of a cycle of negative interaction is to change the way you and your child talk to each other. When situation is tense, negative emotions like anger, fear and defensiveness can undermine what you and your child want to say each other. The feelings show up in your tone of voice, your posture, your actions and the words that come out of your mouth. That is why, before you do anything else, take a second to say to ‘stop’ what is really happening here, than look at your child, notice your child’s body language, facial expression, tone of voice, rate of speech and choice of words, pay attention to their emotions and your emotions, see what is ‘really going on’. Now, you are ready to communicate your real feelings and you can do it in a calm, non-threatening and positive way, use as few words as possible, Keep your message short and to the point All this you have to do because the sound of your voice has a direct impact on the response of your children showing the symptoms of ADHD.

The more you and your child can have positive interactions will provide more opportunities to play together, share interest and hobbies, in doing so you and your child will be enjoying each other’s company. Parents should manage their own frustration and anger so that they can be in a state to help their children to change daily patterns.
When the problem is noxious, the parent is usually taught to use some form of reductive procedure: timeout (Flanagan et al. 1979); response-cost (Miller, 1975); punishment, such as a spanking (Bernal, 1969); or extinction (Engeln et al., 1968). Usually, those procedures are to be paired with the positive reinforcement of alternative behaviours. These might include attention (Wahler, 1969a); access to preferred activities (Hopkins, Schutte and Garton, 1971); money (Clark et al., 1977); or other material reward (Wiltz and Gordon, 1974).

When the problem of the child is a having skill deficit such as dressing, toileting or following a health routine (such as using an inhalator) parents are taught to reinforce successive approximations and segments of the chain of responses. For instance, parents are taught how to present instructions and depending on the child’s response what consequences to deliver and when (Peed et al., 1977).

Parents may be encouraged to imitate the modeled behaviour, rehearsing it repeatedly until a particular level of performance is met. Often their children are also involved and the parents are given immediate feedback (Green, Forehand and McMahon, 1979) or a tone (Bernal, 1969).

Fraizer and Schnieder (1975) described a procedure carried out by parents to eliminate inappropriate hyperactive behaviour during and following mealtime by employing a multiple-base line procedure using contingent attention and time-out. The parents were trained to give positive attention to appropriate behaviour and to ignore inappropriate behaviour. Time-out was employed for inappropriate behaviour. The rate of inappropriate behaviour decreases significantly and remained low for approximately 5 weeks thereafter.
Parents need to acquire new skills to handle the unique problems presented by their child; they must learn to anticipate the situation that can allow behavioural problems to appear (for e.g., visits to the market; visitors coming home) and to plan ahead so as to minimize disruption and stress through management strategies.

Encourage the parents to screen the peer relationships of their child in order to protect the vulnerable child from influence of peers’ who may themselves be inclined to activities favoring quick stimulation and quick gratification.

First of all select few behaviour you would like to target than select some appropriate rewards e.g. TV time, a new toy, a treat etc. First reward the child for performing some or apart of the behaviour you are trying to teach; then gradually increase your expectations of the child until he performs all of the desired change in his/her behaviour. Make sure that the child fully understands the expectation define and demonstrate the appropriate behaviour to him.

Create a contract with the child and let him know how you will reward him for success. Parents should collaborate with his/her teacher about necessary modifications and also look for opportunities to support and celebrate his/her strengths, especially in the non-academic areas. They 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 parents look for opportunities to notice and point out what the child does well and praise his/her strengths and abilities. Recognizing the attentional difficulties of the child and tailoring the work expectations by reducing the length and complexity of assignments.

They must Establish reward system, use of point or star chart, issuing clear commands, establishing clear house rules, response-cost and
implementing a daily report card (in collaboration with the teacher). In addition learning, practicing and implementing good behavioural management to bring structural change to the child’s life, the parents usually derive considerable peer support from the group.

Parents should reduce the gap between the child’s behaviour and their consequences (whether rewarding or negative in nature). They have to learn strategies where by they may focus on correct and deserved behaviour and to learn not to comment on the negative behaviour observed and must learn how to be directive and to set appropriate limits, parents also learn a consistent, positive reinforcement program that may be effective in modifying the child’s behaviour, praise good behaviour, tolerance, tempered with consistent discipline, speaking nicely and the use of visual cues to reinforce verbal explanations.

A well-structured calm and consistent routine for eating, play and bed-time are also important. The general principle for educating a hyperactive child include the use of multiple sensory cues and novel and creative ways to engage the child’s attention, avoidance of extraneous distractions and long periods of teaching which exceed the child’s short attention span.

The parents were apprised of the limitations of the mental capacities of the child and of the necessity of a more regularized discipline. The child needs firm, cool and sensible handling to make him to develop control and to realize that it is not always so easy and good to have everything. Child should be encouraged to concentrate on their daily tasks like dressing, serving or other household related works.

Parents should also learn to ‘catch the child being good’ while trying to ignore, as much as possible the behaviour to eliminate. The child’s frequent demands for attention will decrease as parents learn to be
aware of times when the child’s behaviour is appropriate and to give him/her attention at that time. Basically, ‘say what you mean and mean what you say’, make eye contact with the child and give your command in a firm voice. Don’t ask the child to follow a command, follow through your direction with immediate supervision of the child’s behaviour. Do not plead or argue with the child or resort to name-callings or labeling of behaviour and don’t give too many commands at once. If a task is complicated, break it down into smaller then give only one step at a time. Cut down on distractions, loud music, computer games and television can be over stimulating to your child. Make it a rule to keep the T.V. or music off during meal time and while your child is doing home work. Whenever possible, avoid taking your child to places that may be too stimulating, like busy shopping malls, crowded public places etc.

Set small reachable goals, aim for slow progress rather than instant results. Be sure that your child understands that he can take small steps toward learning to control himself. Help your child stay on task, keep instructions brief. Offer frequent, friendly reminders. Many children with the symptoms of ADHD hear the word ‘no’ so often it does not even register until it has been said over and over again. There are many alternatives. It just takes a bit of thought and practice. For example give another option (use crayons on paper only), provide information (that diverts their attention), give encouragement, say stop, anticipate before no or stop.

They should adapt patience listening habits, try to find the positives in your child what is being said and try to truly understand child’s point of view.
When giving instructions, stand or sit close to your child and keep the list of instructions very short, consistent, provide structure, believe in and support your child.

The counselling of teachers with regard to educational strategies is given to teachers, that how they can teach the child who shows the symptom of ADHD and their help to such type of child will be a great help to make him effective. So they can improve the scholastic performance and his/her over all desirable change in behaviour and how the teachers can manage with that type of children in the class because they are different from other children. Counselling is found to be useful for teachers in dealing with the problems of these types of students and help them to increase the academic performance of these children.

Counselling programs strive to create a positive school environment for students in the following ways:

- Counselor provides in-service training for teachers in hope of preventing serious problems among children or minimizing the impact of such problems.
- Provide consultation for teachers to help them build a healthy class-room environment.
- Work with parents to promote understanding of childhood growth and development.
- Cooperate in identifying and referring children with developmental deficiencies or handicaps.
- Direct children’s awareness to the relationship between school and work.

Educational strategies to be used to improve the performance of the child with the symptoms of ADHD are as follows:
Pay attention to a child while he is doing an approved act or giving him a treat after him reading lesson satisfactorily. These reinforcements tend to insure that the behaviour will return, although the schedule for reinforcing must be planned to insure this repetition.

Mitchell and Crowell (1973), use candy, praise and contingent to increase attending behaviour and to decrease ‘hyperactive’ behaviour. Such reinforcement procedures have also been effectively applied in groups (Schofield, Hedlund and Worland, 1974; Pratt and Fischer, 1975).

ADHD children tend to do better in one-to-one or small group situations; that they attend and concentrate better sitting in the front row than in the rear and that work assignments need to be tailored to the attentional capacities of the child and improving the communication between teachers and parents in the context of instituting behavioural strategies will also be of value. Some useful class-room management tactics include extra structure, pairing with a selected good-model student rather than working in large groups.

There should be daily report card on which several target behaviour are traced over several intervals during the day. Parent check the card each day and signature on it with home rewards based on percentage of success. As the child improves, the threshold for success is raised or additional targets are selected.

Kirby and Kirby (1994) pointed out that the individuals with ADHD often receive a substantial amount of negative feedback, it is important to structure the school day so that the chance for successful and positive feedback is increased.

Discipline and behaviour are primary issues for students with the symptom of ADHD and their teachers should understand that ADHD
students are often surprised by their own behaviour and don’t intend on ‘acting out’ in the class-room. Behaviour modification techniques when administered with patience and repetitiveness can be beneficial in improving class-room behaviour. These techniques involve withholding privileges, rewarding positive behaviour, using checklists and implementing punitive action that is designed to class rules and attention to positive behaviour as well as time-out and response-cost program must be use in class.

Close attention to schedules and routines should be given so that the fluctuation in energy presented by the child can be accommodated. For e.g. it would be unwise to spend too much time in low energy activities. A mixture of low and high energy activities would be more desirable. Scheduling difficult subjects in the morning and mixing class-room lectures with brief periods of physical activity such as, washing the black board or going to the bathroom.

Direction needs to be given clearly, concisely and through multiple channels. For instance, the teacher should clearly state the directions orally and repeatedly as well as there should be written directions or a pictorial list of directions available and complex directions need to be simplified. Teacher should patiently repeat directions if necessary. Make sure the student understands the directions before proceeding to the task and ask them to repeat the directions back.

The teacher can help the child with the symptoms of ADHD feel comfortable asking for assistance. Develop and discuss with the student private cues that can be used when the student get off the task. For instance, the teacher can quietly touch the student’s arm to remind him/her to refocus on the task.
Establish eye contact with students prior to giving instructions to the class. When verbal reprimands are necessary move comfortably close to the student and use a soft firm voice to specifically describe the behaviour that is required and to avoid publicly criticize student. Find opportunities to use his/her strengths and talents at school. Work collaboratively and communicate regularly with parents.

Allow the child extra time to answer questions or complete tests and other assignment. Teach in an interactive manner and tell him/her how to take notes. Make sure the student correctly writes down all assignments each day. Sign the note book daily to signify completion of home-work assignments. Encourage students to pause a moment before answering questions and give immediate feedback and rewards for desired behaviour or for desired achievement. Give close supervision with frequent positive cues to stay on task.

The children with the symptom of ADHD don’t like change, so avoid transitions, physical relocation, changes in schedule. Encourage parents to create a similar study space at home, with set times and routines established for study, parental review of completed home work and periodic notebook.

Gradually reduce assistance over-time but remember children with the symptoms of ADHD need more help for a longer period of time than others. Determine specific strengths and weakness of child. Have a tutor or aid in school help the student gain academic mastery of a specific subject. Remember children with ADHD are easily frustrated, stressed, pressurized and fatigue can lead to poor behaviour.

Pre-establish consequences for misbehaviors and administer them immediately. Reward more than you criticize. Change rewards if not effective in motivating behavioural change.
Antecedent behaviour should be observed by the teachers to evaluate what events trigger emotional or lack of attention behaviour. Modifications for periods of silent or oral reading such as taking notes, drawing while listening to a story or sitting on an rug area during reading, underlining, taking notes, highlighting in the books should be modeled to help focus the child’s attention on the reading and details of the passage.

Homework should be modified for the child with attention problems. Teachers should work with parents to decide how much work can be expected to be completed in a thirty minute period which is adequate for elementary grades. Never intentionally embarrass or put down the student.

Set firm, clear-cut limit, provide non-harsh discipline and regular feedback with some helpful concrete suggestions for appropriate behaviour and enforce rule consistently.

Set predictable intervals of ‘no-work period’ which the child may earn as a reward for effort. This will help increase his attention span and impulsive control through a gradual training process. Providing the area where the child can move around to release excess energy.

Notice whether or not the child with the symptoms of ADHD withdraws during noisy, stimulating recreational situations. This may signal coordination or auditory processing difficulties which may require additional intervention.

After providing the above mentioned counselling tips to parents and teachers, it is expected that these counselling tips will be effective in improving scholastic performance of children showing the symptoms of ADHD.