

## HYPERACTIVITY IN CHILDREN. A REVIEW

Maryam Sharafi<sup>1,2</sup>, Elham Yavari Barhaghtalab<sup>2</sup>, Abbas Paknahad<sup>1</sup>, Seyed Shojaalddin Namazi<sup>1</sup>

1. Student Research Committee, Hormozgan University of Medical Sciences, Bandar Abbas, Iran.

2. Farhangian fars University, Salman farsi higher education center, Shiraz, Iran.

Corresponding author email: Abbas Paknahad, Student Research Committee, Hormozgan University of Medical Sciences, Bandar Abbas, Iran Arg.abbas@yahoo.com

**ABSTRACT:** Attention Deficit Hyperactivity Disorder is one of the most prevalent problems among adolescents and children. Its prevalence among the public varies from 4 to 12 percent. This psychiatric disorder is accompanied by such improper symptoms as hyperactivity, attention deficit and impulsiveness. For diagnosis, the symptoms should continue to be seen for at least six months, appearing for the first time after the age of three and before the age of seven. This disorder can expose a child to depression, education failure, drug abuse and smoking, delinquencies, driving law disobedience and accidents. Some symptoms of this disorder can continue up until adulthood. Perusals of the related literature as well as that of highly valid academic websites have been used in this research to collect the required data. The results obtained in this study show that attention deficit hyperactivity disorder which is highly common among children might expose the child to such hazards as depression, crime, drug addiction and educational problems. Therefore, it should be diagnosed early in order to be treated on time.

**Key words:** child, attention deficit hyperactivity disorder (ADHD), prevalence

### INTRODUCTION

Attention deficit hyperactivity disorder is a neural/developmental disorder mainly characterized by: attention deficit, hyperactivity and impulsiveness (1, 2). In order to diagnose this disorder, at least two of these symptoms should be observed (3, 4). Some of these symptoms should be seen at least in two contexts (e.g. school and home) (5, 6). The symptoms are usually not noticed in new and unfamiliar environments. This would make specialists observe these symptoms before any diagnosis and clinical questioning. They should not suffice to parents' information (6, 7).

Once these symptoms are witnessed in an individual, in order for a full diagnosis, they should persist for at least six months. Their appearance is supposed to be after the age of three and not later than the age of seven (8, 9). This disorder is considered as one of the most prevalent neural/developmental disorders in childhood. It afflicts 3 to 7% of children (1, 2). Studies conducted in Iran have reported its prevalence to be 4.14-6.17% (2). Moreover, epidemiological studies estimated its prevalence among the public to be 4 to 12% of children (9, 10).

There are five times as many boys as the girls afflicted with ADHD. For this reason there are more boy visitors to specialists than girls (11, 12).

Although a vast majority of girls are suspected of ADHD, the sources of ADHD are mainly in boys. Moreover, the girls afflicted with ADHD could have been left undiagnosed and untreated. This is indicative of a cross-gender difference in the visiting cases, clinical samples and clinical populations (13-15).

Reports have indicated that children suffering from this disorder are in danger of depression (16, 17), behavioral problems (18), drug abuse and smoking (19, 20), crime (17, 21), disobeying driving regulations and accidents (22). Furthermore, children afflicted with ADHD pay twice as much as their healthy counterparts for medical costs (23). Yet another disadvantage would be the negative effect of this disorder on child's academic achievement (16) and would lead to renewal of the course, drop-outs, cold family and friend relationship. There is also the danger of occurrence of other disorders such as stubbornness and disobedience (12, 24). On the whole, these behaviors would cause severe problems for the child and would lower his/her self-confidence and feeling of inefficiency (25, 26).

Therefore, in order to reduce the above-mentioned problems, an early intervention at home and school seems to be essential. Such interventions are in great need of epidemiological

information including its correlation with age, gender and socio-economic status(12, 27)

Different studies have revealed that in their research those hyperactive children often indicate minor neurological symptoms such as unnatural muscular tone, balance disorder, imbalanced foot/hand motion, and unnatural sensory perception in comparison to children without such symptoms(28).

A number of investigations have also been conducted with regard to these children's writing ability. Barkley's (1990) investigation revealed that ADHD children face difficulty in writing (28, 29). Marmer (1995) found out that ADHD patients are poor at the writing skill, and also have a bad or illegible handwriting(30).

ADHD children have a high tendency towards irrelevant and redundant information(31). This can be one reason why they have a low concentration on instructional materials and homework. Besides that, defects in attention and processing can occur at the initial learning stages and memory formation. They might face difficulty in learning and memorizing(32).

The side effects of hyperactivity can be more severe when accompanied by another disease. For instance, children afflicted with epilepsy and ADHD are in a higher danger. They would be faced with more undesirable side effects as compared to peers only suffering from epilepsy(33, 34). A great body of research has reported the prevalence of ADHD among epileptic children, and has announced that ADHD is more common among epileptic population than the ordinary public (34-41). Although the correlation of ADHD and epilepsy is far from simple and rather vague, a number of probable mechanisms have been reported concerning the high prevalence of ADHD among the epileptic. Among these factors are genetic tendencies, lack of harmony among neurotransmitters, side effects of anti-epileptic medications or psychological factors(34, 42). Different studies have revealed that the prevalence of ADHD among epileptic children has varied from 8 to 77%(34, 43).

It had been long imagined that ADHD children would leave their problems behind once they reach teenage or young adulthood. This assumption, however, was not approved as the results of longitudinal studies showed(44).

For example, the body of research in recent decades(6, 45)indicates that this disorder especially the attention problem continues up until adulthood Lara and et al(6, 46) indicated in

their research that about 50% of children afflicted with ADHD would later show a full array of symptoms in adulthood(5, 6).

Once ADHD children reach adolescence or adulthood there would be a reduction in the frequency and severity of symptoms. Yet they are dissimilar to their peers of the same age group(44). In fact, one-third of ADHD children have with them the symptoms of the disorder to its full range up until adulthood. The remaining two-third would also carry with them some other untreated symptoms while they grow up(44, 47).

A child would spend a great deal of time in school. Since a teacher gains a good deal of information about children's learning and behavior, many researchers on teachers' accounts in their studies to diagnose a child are ADHD(12, 48, 49). They are widely believed to know a lot about children's daily behavior. The reason why a teacher's information is of a higher validity than that of a parent's is that they often know enough about a child's behavior as corresponding to his/her typical age development (6, 19). However, social researchers believe that teachers' reports can be influenced by such factors as the number of students in each class, their instructions and experiences as well as the discipline method and attitude. These latter factors can be conceptualized or termed as the 'correspondence between child, teacher, context and family' (6, 50).

As for its underlying causes, researchers have referred to different genetic factors, biological issues, brain aphasia, prenatal factors such as mother's addiction with alcohol, and natal problems such as premature birth(28, 30). The development of this disorder is, however, very unstable. Hyperactivity is generally the first symptom to disappear while deficient attention is usually the last(28).

On the one hand, children who are later diagnosed with ADHD show to have considerable problems since the age of three as related to hyperactivity, disobedience and deficient attention. Firstly, complaints made by other caretakers such as teachers or relatives attract parents' attention(28).

An ADHD Child's interaction with parents is more disrupted than his/her normal peers. Many mothers retreat to aggressive behavior in order to suppress such rebellious behavior(26, 51).

An investigation conducted by Suwanne et al. revealed that depression and other psychological disorders are more prevalent among families with hyperactive children (26, 52-55).

Mothers' depression leads them to use more punishment methods especially physical punishment to control these children(26, 56). Evaluating and treating mothers' depression can play a key role in treating such a child and raising a pre-awareness of this disease(26, 57).

Treating these children involves medical as well as non-medical interventions (behavioral therapy, psycho-therapy and diet adjustment). A vast majority of researchers such as August & Stuart (1981) and Barkley(1990) also believe that some ADHD symptoms (e.g. impulsiveness, hyperactivity and disobedience) come to the surface within the pre-school years or even infancy(28, 58).

#### METHODOLOGY

In this research, the body of previous research has been reviewed. Highly valid scientific articles have been perused and the required data were gathered.

#### CONCLUSION

Findings of this research indicate that ADHD is a prevalent disorder among children. It can expose the child to depression, crime, drug abuse and academic failure. Their families are usually more stressed; An ADHD Child's interaction with parents is more disrupted than his/her normal peers. Many mothers retreat to aggressive behavior in order to suppress such rebellious behavior if Evaluating and treating mothers' depression can play a key role in treating such a child and raising a pre-awareness of this disease. The symptoms of this disorder could continue up until adulthood. Therefore, it should be diagnosed early and treated on time, of cruse in order to reduce the above-mentioned problems, an early intervention at home and school seems to be essential. Such interventions are in great need of epidemiological information including its correlation with age, gender and socio-economic status

#### REFERENCES

Sadock BJ, Kaplan HI. synopsis of psychiatry: behavioral sciences/clinical psychiatry.2003.  
Nejati V SS, Shiri E, Khoshhalipanah M. Comparing explicit and implicit memory in children with attention deficit- hyperactivity disorder and their typical developing

counterparts. J Res Rehabil Sci. 2014;10(1):1-8.  
Kaplan HS, Benjamin J. Kaplan & Sadock's Comprehensive Textbook of Psychiatry (17 Volume Set): Lippincott Williams & Wilkins. 2001.  
Talebian A. Frequency of Attention Deficit Hyperactivity Disorder in 50 children with epilepsy. KAUMS Journal (FEYZ). 2007;11(4):56-60.  
Lara C, Fayyad J, de Graaf R, Kessler RC, Aguilar-Gaxiola S, Angermeyer M, et al. Childhood predictors of adult attention-deficit/hyperactivity disorder: results from the World Health Organization World Mental Health Survey Initiative. Biological psychiatry. 2009;65(1):46-54.  
Bakhshi S, NAJATI V, Rezayi S, Hekmati I. Epidemiology of attention deficit/hyperactive disorder among third grade primary school students of Rasht, 2007-2008. HAKIM. 2012.  
Zametkin AJ, Ernst M. Problems in the management of attention-deficit-hyperactivity disorder. New England Journal of Medicine. 1999;340(1):40-6.  
Kaplan H SBC, Sadock B, SadockV. Comprehensive textbook of psychiatry eight edition. New York: Lippincott Wilkins & Wilkins. 2005.  
Khoshbi k FA, Moradi Sh, Mohammadkhani P. Review the risk factors Hyperactivity Disorder / Attention Deficit. Tavanbakhshi J. 2006.7(3):6-10.  
Marks AS, Nichols M, Blasey C, Kato PM, Huffman LC. Girls with ADHD and associated behavioral problems: Patterns of comorbidity. North American Journal of Psychology. 2002;4(3):321-32.  
Klassen AF, Miller A, Fine S. Health-related quality of life in children and adolescents who have a diagnosis of attention-deficit/hyperactivity disorder. Pediatrics. 2004;114(5):e541-e7.  
Shahim S, Mehrangiz L, Yousefi F. Prevalence of attention deficit hyperactivity disorder in a group of elementary school children. Iranian Journal of Pediatrics. 2007;17(Suppl 2):211-6.  
Shaffer D, Fisher P, Dulcan MK, Davies M, Piacentini J, Schwab-Stone ME, et al. The NIMH Diagnostic Interview Schedule for Children Version 2.3 (DISC-2.3): Description, acceptability, prevalence rates, and performance in the MECA study.

- Journal of the American Academy of Child & Adolescent Psychiatry. 1996;35(7):865-77.
- Arnold LE. Sex differences in ADHD: conference summary. *Journal of abnormal child psychology*. 1996;24(5):555-69.
- Habrani P, Bahdani F. Gender differences in comorbid disorders with attention-deficit/hyperactivity disorder (ADHD). *Ofoh-e-Danesh Journal*. 2006;11(4):55-61.
- Kendall J, Hatton D. Racism as a source of health disparity in families with children with attention deficit hyperactivity disorder. *Advances in Nursing Science*. 2002;25(2):22-39.
- LeFever GB, Butterfoss FD, Vislocky NF. High prevalence of attention deficit hyperactivity disorder: Catalyst for development of a school health coalition. *Family & Community Health*. 1999;22(1):38-49.
- Ruchkin V, Lorberg B, Kuposov R, Schwab-Stone M, Sukhodolsky DG. ADHD symptoms and associated psychopathology in a community sample of adolescents from the European north of Russia. *Journal of attention disorders*. 2008;12(1):54-63.
- Barkley RA, Lombroso PJ. Genetics of childhood disorders: XVII. ADHD, Part 1: The executive functions and ADHD. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2000;39(8):1064-8.
- Molina BS, Pelham Jr WE. Childhood predictors of adolescent substance use in a longitudinal study of children with ADHD. *Journal of abnormal psychology*. 2003;112(3):497.
- Gordon JA, Moore PM. ADHD among incarcerated youth: An investigation on the congruency with ADHD prevalence and correlates among the general population. *American Journal of Criminal Justice*. 2005;30(1):87-97.
- Fischer M, Barkley RA, Smallish L, Fletcher K. Hyperactive children as young adults: Driving abilities, safe driving behavior, and adverse driving outcomes. *Accident Analysis & Prevention*. 2007;39(1):94-105.
- Guevara J, Lozano P, Wickizer T, Mell L, Gephart H. Utilization and cost of health care services for children with attention-deficit/hyperactivity disorder. *Pediatrics*. 2001;108(1):71-8.
- Dauids E, Gastpar M. Attention deficit hyperactivity disorder and borderline personality disorder. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*. 2005;29(6):865-77.
- Sadock BJ, Kaplan HI, Sadock VA. Kaplan & Sadock's synopsis of psychiatry: behavioral sciences/clinical psychiatry: Lippincott Williams & Wilkins.2007.
- Shafaat A, Tirgari A. Prevalence of Depression Symptoms among Mothers of Children with Attention Deficit Hyperactivity Disorder.
- Jonsdottir S, Bouma A, Sergeant JA, A Scherder EJ. The impact of specific language impairment on working memory in children with ADHD combined subtype. *Archives of Clinical Neuropsychology*. 2005;20(4):443-56.
- A Dadkhah SAH, Behnia F, Karimlo M, Madni M. Compare the writing skills of children with attention deficit disorder with hyperactivity and normal children 6-4 years old boy in Arak city. *Tavanbakhshi J*. 2005;6(2).
- Tannock R, Brown TE. Attention-deficit disorders with learning disorders in children and adolescents. 2000.
- Reed KL. Quick reference to occupational therapy. 2003.
- Reber AS, Walkenfeld FF, Hernstadt R. Implicit and explicit learning: Individual differences and IQ. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. 1991;17(5):888.
- Clare L, McKenna PJ, Mortimer A, Baddeley AD. Memory in schizophrenia: what is impaired and what is preserved? *Neuropsychologia*. 1993;31(11):1225-41.
- Reilly CJ. Attention deficit hyperactivity disorder (ADHD) in childhood epilepsy. *Research in developmental disabilities*. 2011;32(3):883-93.
- A Jamshidifar ST. Attention Deficit Hyperactivity Disorder-sectional prevalence of epilepsy in children. *Medical Journal of Mashhad University of Medical Sciences*. 2013;(4):219-25.
- Schubert R. Attention deficit disorder and epilepsy. *Pediatric neurology*. 2005;32(1):1-10.
- Dunn DW, Kronenberger WG, editors. Childhood epilepsy, attention problems, and ADHD: review and practical considerations. *Seminars in pediatric neurology*. 2005: Elsevier.
- Jones JE WR, Sheth R, Caplan R , Koehn M , Seidenberg M, et al. Psychiatric comorbidity in children with new onset epilepsy. *Develop Med Child Neurol*. 2007;49:493-7.
- Torres AR, Whitney J, Gonzalez-Heydrich J. Attention-deficit/hyperactivity disorder in pediatric patients with epilepsy: review of

- pharmacological treatment. *Epilepsy & Behavior*. 2008;12(2):217-33.
- Bennett-Back O, Keren A, Zelnik N. Attention-deficit hyperactivity disorder in children with benign epilepsy and their siblings. *Pediatric neurology*. 2011;44(3):187-92.
- Parisi P, Moavero R, Verrotti A, Curatolo P. Attention deficit hyperactivity disorder in children with epilepsy. *Brain and Development*. 2010;32(1):10-6.
- Talebian A, Khodaparast H, Sediqi H, Taqaddosi M, Mousavi SG. Frequency of ADHD among 3-17 year old epileptic children at Kashan in 2005. *KAUMS Journal (FEYZ)*. 2008;11(4):56-60.
- Kaufmann R, Goldberg-Stern H, Shuper A. Attention-deficit disorders and epilepsy in childhood: incidence, causative relations and treatment possibilities. *Journal of child neurology*. 2009;24(6):727-33.
- Dunn DW, Austin JK, Harezlak J, Ambrosius WT. ADHD and epilepsy in childhood. *Developmental Medicine & Child Neurology*. 2003;45(01):50-4.
- Ghazaei M HN, Mehrabizadeh Honarmad M. The effect of CBT on / hyperactivity disorder, attention-deficit symptoms in students. . Psychological consequences of Shahid Chamran University. 2012;4(2):63-80.
- Association AP. Diagnostic and statistical manual of mental disorders: DSM-III draft/prepared by the Task Force on Nomenclature and Statistics of the American Psychiatric Association: American Psychiatric Association.1978.
- Clark L, Blackwell AD, Aron AR, Turner DC, Dowson J, Robbins TW, et al. Association between response inhibition and working memory in adult ADHD: a link to right frontal cortex pathology? *Biological psychiatry*. 2007;61(12):1395-401.
- Young S, Bramham J. ADHD in adults: A psychological guide to practice: John Wiley & Sons. 2006.
- Sauver JLS, Barbaresi WJ, Katusic SK, Colligan RC, Weaver AL, Jacobsen SJ, editors. Early life risk factors for attention-deficit/hyperactivity disorder: a population-based cohort study. *Mayo Clinic Proceedings*. 2004: Elsevier.
- Berry C, Shaywitz S, Shaywitz B. Girls with attention deficit disorder: a silent minority? A report on behavioral and cognitive characteristics. *Pediatrics*. 1985;76(5):801-9.
- Rowland AS, Umbach DM, Catoe KE, Stallone L, Long S, Rabiner D, et al. Studying the epidemiology of attention-deficit hyperactivity disorder: screening method and pilot results. *Canadian Journal of psychiatry*. 2001;46(10):931-40.
- Tully E, Iacono W, McGue M. An adoption study of parental depression as an environmental liability for adolescent depression and childhood disruptive disorders. *American Journal of Psychiatry*. 2008;165(9):1148-54.
- Suwanne P, Patcharee P, Tanita P, Manus S. A Depression in Mothers of Children with ADHD. *Journal of the Psychiatric Association of Thailand*. 2006;51(3):61.
- Segenreich D, Fortes D, Coutinho G, Pastura G, Mattos P. Anxiety and depression in parents of a Brazilian non-clinical sample of attention-deficit/hyperactivity disorder (ADHD) students. *Brazilian Journal of Medical and Biological Research*. 2009;42(5):465-9.
- McCormick LH. Depression in mothers of children with attention deficit hyperactivity disorder. *Family medicine*. 1995;27(3):176-9.
- Ghanizadeh A, Mohammadi MR, Moini R. Comorbidity of psychiatric disorders and parental psychiatric disorder of ADHD children. *Journal of Attention Disorders*. 2008.
- Shin D-W, Stein MA. Maternal depression predicts maternal use of corporal punishment in children with attention-deficit/hyperactivity disorder. *Yonsei medical journal*. 2008;49(4):573-80.
- Gerdes AC, Hoza B, Arnold LE, Pelham WE, Swanson JM, Wigal T, et al. Maternal depressive symptomatology and parenting behavior: Exploration of possible mediators. *Journal of Abnormal Child Psychology*. 2007;35(5):705-14.
- Shepard B, Carter A, Cohen J. Attention-deficit/hyperactivity disorder and the preschool child. *Attention-deficit disorders and comorbidities in children, adolescents, and adults*. 2000:407-36.