Institute of Postgraduate Childhood Studies
Department of Medical Studies

Study the Attention Deficit Hyperactivity Symptoms in a Sample of Primary School Children

A thesis submitted for fulfillment of Ph.D. Degree in childhood studies
(Special Needs Children)

By
Tahany Abd El Kader Mohammed
Master Degree in childhood studies
Egyptian Board of pediatric

Supervised by

Prof. Howida Hosny El Gebaly
Professor of Pediatric
Institute of postgraduate childhood studies
Ain Shams university

Asst. Prof. Soheir Helmy El ghonemy
Assistant Professor of Psychiatry
Faculty of medicine
Ain Shams university

Ain Shams University

2015

Acknowledgements

First of all and above of all, greatest thanks to **ALLAH** The Most Merciful whose blessing on me cannot be counted .

I am deeply grateful to **Dr/ Howida Hosny El Gebaly** Prof .of Pediatrics, Institute of postgraduate childhood studies Ain Shams University for her valuable supervision and endless cooperation and guidance throughout the work

It is my great pleasure to seize this opportunity to express my gratitude to **Dr/ Soheir Helmy El ghonemy** Asst. Prof . of Psychiatry Faculty of medicine Ain Shams University for her valuable supervision and direction as well as for always having time for me throughout the work. Scientific guidance and valuable remarks wise comments. She has been a continual source of support and encouragement. Interest in the progress and performance of this study.

My deepest gratitude to **Dr/ Mona Medhat Reda** , Prof. of Psychiatry Institute of postgraduate childhood studies Ain Shams University for her care in advising and helping me . Her inspiring guidance, valuable assistance and continuous encouragement has helped me throughout this study.

My great pleasure to **psychologist / Ahmed Abd El Gawad** , Faculty of medicine Ain Shams University for his comprehensive training to obtain experience in assessing children for the purpose of the study using determined assessment tools.

My warmest, deepest and loving thanks belong to my family for their patience and love throughout this study.

Tahany Abd El Kader

Contents

Abbreviations

AACAP	American Academy of Child Adolescent Psychiatry
AAP	American Academy of pediatrics
APA	American Psychiatric Association
ADHD	Attention deficit hyperactivity disorder
ADH-P C	Attention Deficit Hyperactivity - predominant Combined
ADH-P HI	Attention Deficit Hyperactivity - predominant Hyperactivity-Impulsivity
ADH-P I	Attention Deficit Hyperactivity – predominant Inattentive
ASD	Autism spectrum disorders
BD	Bipolar disorder
CDC	Centers for Disease Control and prevention
CBT	Cognitive behavioral therapy
CD	Conduct disorder
CTRS	Conners' Teacher Rating Scale
CPRS-R:S	Conners' Parent Rating Scale–Revised: Short Form
CPT	Continuous performance test
DSM-IV	Diagnostic and statistical manual of mental disorders , 4th edition
DSM-5	Diagnostic and Statistical Manual of mental disorders , Fifth edition
EMA	European Medicines Agency
EF	Executive function
FAO	Food and Agriculture Organization of the United Nations
FDA	Food and Drug Administration

ID	Intellectual disability
IQ	Intelligence quotient
ICD-10	International Statistical Classification of Diseases and Related Health Problems 10th Revision
LD	Learning disorders
MDD	Major depressive disorder
MPH	Methylphenidate
NICE	National Institute for Health and Clinical Excellence
OCD	Obsessive-compulsive disorder
ODD	Oppositional defiant disorder
PBD	Pediatric bipolar disorder
PDD	Pervasive developmental disorders
SPSS	Statistical Package for Social Science
SUD	Substance use disorders
TD	Tourett's disorder
WISC	Wechsler intelligence scale for children
WHO	World Health Organization

List of Tables

List of Figures

Abstract

Background: Attention Deficit Hyperactivity Disorder (ADHD) is the most commonly seen and studied neurodevelopmental disorder, with significant impacts on the child's social, psychological, and scholastic functioning.

Aim of this study :to identify the prevalence of ADH symptoms among a sample of primary school children and to recognize the psychiatric morbidity among the studied group

Patient and Methods: A cross sectional descriptive study was conducted on 566 students , aging 6 to12 years old ,both sex, from 6 primary schools ,3 governmental and 3 private schools , from Giza area , through the academic year 2013/2014, sample was selected by systematic random sampling , all students were subjected to: Full history taking , Full child psychiatric sheet , Conner's teacher rating scales (CTRS-39) , Wechsler intelligence scale for children (WISC), The "Mini International Neuropsychiatric Interview" (MINI- KID) for children for Screening for the psychiatric morbidity

Results: The prevalence of ADH symptoms was 9.2 % ,with a higher % of ADH-PHI (5.5%), followed by ADH-PC (2.1 %) then ADH-PI (1.6 %) . Male represented a higher % of ADH symptoms than female (6.5% , 2.6% respectively). Mean age of ADH symptoms students was 9.15 ±1.55, there was a higher % of ADH symptoms in governmental (6.4%) than private (2.8%) School, students who had some problem(hyperactivity , Conduct problem, Emotional overindulgent, Anxious- passive , Asocial and Attention problem) (score 56- 65) were (6.7%,4.4%, 6.2% , 6.2% , 4.4% and 3% respectively), 44.2% , 40.3% ,19.2% 17.3% , 28.8% , 9.6% and 7.7% of cases with ADH symptoms had LD, ODD ,CD, depression, anxiety, OCD, and PDD respectively . one co-morbidity present in 30.8% , 21.2 % in two co-morbidity, negative correlation between Performance and verbal subscale of WISC and different results of the CTRS – 39 test, the predictors affecting ADH symptoms were the male sex, attending governmental school and maternal employment

Conclusion: High prevalence of ADH symptoms and psychiatric co morbidities in primary school children , CTRS is an important tool for assessment of the common behavioral problems in school students, negative correlation between subscale of WISC and different results of the CTRS – 39 test, the predictors affecting ADH symptoms were the male sex, attending governmental school and maternal employment

Keywords: Attention Deficit Hyperactivity Disorder, Conner's teacher rating scales, Wechsler intelligence scale for children, ADH predominant hyperactive/impulsive, ADH predominant inattentive, ADH combined

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is the most commonly seen developmental disorder, with significant impacts on the child's social, psychological, and scholastic functioning (***Davies ., 2014; Wamithi et al ., 2015) .*** It is the most common neurobehavioral disorder of childhood , affecting school-aged children, and the most extensively studied mental disorder of childhood ***(Sharma and Couture ., 2014) .*** ADHD is a complex disorder that can affect individuals across the lifespan ***(Tarver et al ., 2014) .***

ADHD affecting about 3-5 % of children globally ***(Czamara et al ., 2013; Ramos-Quiroga et al ., 2014)***. It is a childhood-onset disorder that has a relatively high prevalence worldwide, ranging from 2.2% to 17.8% ***(De La Fuente et al ., 2013; Gold et al ., 2014)***.

Extension of the age-of-onset criterion from 7 to 12 years led to an increase in the prevalence rate of ADHD from 7.38% (DSM-IV) to 10.84% (DSM-5). Youth with later age of onset did not differ from those with earlier age of onset in terms of severity and patterns of comorbidity. ***(Vande Voort et al ., 2014).***

ADHD is a multifactorial disorder, in which many genes, all with a small effect, are thought to cause the disorder in the presence of unfavorable environmental conditions ***(Nigg et al ., 2010) .*** No single factor determines the expression of ADHD. It may be a final common pathway for a variety of complex brain developmental processes ***(David and Urion ., 2015).*** The biochemical abnormalities and genetic factors play significant roles in the etiology of this disorder ***(Caylak ., 2012)***. Behavioral traits emerge from complex interactions between multiple genes and environments, and that the brain bases of both personality and

psychopathology are distributed across complex neural networks and are usually not caused by single loci ***(Beauchaine et al ., 2008).*** Genetic and environmental interactions may be the reason for the phenotypic complexity of ADHD. The disorder might have its origins in genes, but the course of the disorder is probably influenced by the way these genetic factors interact with and affect an individual's response to the environment ***(Reddy., 2013; van Mil et al ., 2014)*** .

ADHD is described as "a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with development, has symptoms presenting in two or more settings (e.g. at home, school, or work), and negatively impacts directly on social, academic or occupational functioning". The American Psychiatric Association's Diagnostic and Statistical Manual, Fifth edition ***(DSM-5., 2013)***, is used by mental health professionals to help diagnose ADHD. There were some changes in the DSM-5 for the diagnosis of ADHD: symptoms can now occur by age 12 rather than by age 6; several symptoms now need to be present in more than one setting rather than just some impairment in more than one setting; new descriptions were added to show what symptoms might look like at older ages; and for adults and adolescents age 17 or older, only 5 symptoms are needed instead of the 6 needed for younger children. DSM 5 has moved back to a nonaxial documentation of diagnosis with separate notations for important psychosocial and contextual factors as well as level of functioning and disability ***(Eapen and Črnčec ., 2014).***

Three presentations of ADHD according to DSM-5 :

1. Predominantly Inattentive Presentation .
2. Predominantly Hyperactive-Impulsive Presentation .
3. Combined Presentation .

Motor hyperactivity, especially regarding size and variability of movements, seems to be a core feature of both the combined type and the

hyperactive-impulsive type of ADHD ***(Wood et al ., 2009) .*** Children with ADHD show increased physical activity both during the night and especially during structured school activities. On the other hand children appear to be less likely to engage in regular vigorous physical activity and organized sports (***van Egmond-Fröhlich et al ., 2012)***. Key symptoms, such as inattentiveness, hyperactivity, and off-task behavior, may be more pronounced in school settings ***(Barkley, 2006).***

ADHD is often difficult to diagnose in preschoolers because distractibility and inattention are often considered developmental norms during this period. The diagnosis is made primarily in clinical settings after a thorough evaluation, including a careful history and clinical interview to rule in or to identify other causes or contributing factors; completion of behavior rating scales; a physical examination; and any necessary or indicated laboratory tests. It is important to systematically gather and evaluate information from a variety of sources , including the child , parents , teachers ,physicians, and when appropriate , other caretakers ***(Burger ., 2011 , Cunningham and Jensen .,2012)***

Medical conditions must be excluded as causing the ADH symptoms include : hypothyroidism , anemia , lead poisoning , chronic illness , hearing or vision impairment , substance abuse , medication side effects , sleep impairment ,and child abuse ***(Smucker ,Hedayat ., 2001) .***

Although ADHD is believed to result from primary impairment of attention , impulse control , and motor activity , there is a high prevalence of comorbidity with other psychiatric disorders ,15-25 % have learning disabilities , 30-35 % have language disorder , 15-20 % have coexisting anxiety disorders . Children can also have co-occurring diagnoses of sleep disorders , memory impairment , and decreased motor skills ***(Willcutt et al., 2012; Chen et al ., 2013; Xiao et al ., 2013)***. The

prevalence of psychiatric comorbidities in ADHD subjects was 62.5% ***(Amiri et al ., 2013; Czamara et al ., 2013)***.

Several questionnaires and rating scales were developed to differentiate between ADHD and comorbid disorders, and to detect coexisting conditions in ADHD children**.** Questionnaires and rating scales add important data to the clinical diagnostic process but cannot serve as a single reliable diagnostic tool ***(Burger ., 2011)*** .

Early recognition and management of children with ADHD can redirect their educational and psychosocial development ***(Ambuabunos et al ., 2011)***. Psychosocial treatment, behaviorally oriented treatment, and psychostimulant medication with careful monitoring of medication and regular medication follow up visits ***(Sharma and Couture ., 2014)*** . Benefits of non-stimulant medication and alternative treatment modalities , which include diet, herbal medications, iron supplementation, and neurofeedback. With the goals of improving treatment of patients with ADHD ***(Gold et al ., 2014)***.

Aim of the study

- To identify the prevalence of Attention Deficit Hyperactivity symptoms among a sample of primary school students.
- To recognize the psychiatric co-morbidity among the studied group.

CHAPTER I

Attention Deficit Hyperactivity Disorder

Definition :

Attention Deficit Hyperactivity Disorder (ADHD) is a neurobehavioral disorder, it is the most commonly diagnosed neurodevelopmental disorder in childhood. ADHD is characterized by developmentally inappropriate behaviors of inattention, and/or impulsivity and hyperactivity. These behavioral manifestations contribute to diminished academic, occupational and social functioning, and have neurobiological bases ***(Warikoo and Faraone ., 2013, De La Fuente et al ., 2013; Sharma and Couture ., 2014 ; Davies ., 2014; Wamithi et al ., 2015; David and Urion ., 2015).***

ADHD is always being singled out as a problem for psychiatrists, psychologists, parents and teachers, because the behavioural characteristics of children with disabilities, such as the inhibition of motor behaviour, attention deficits, learning disabilities, aggression, academic problems and multiple arousal and agitation, are considered to be the biggest problem for the parents, the peers of the children and school administrators ***(Sherman et al ., 2008).***

Prevalence

ADHD affecting about 3-5 % of children globally ***(Jenahi et al ., 2012)***. The prevalence of ADHD was 7.6% ***(Ramos-Quiroga et al ., 2014; Ndukuba et al ., 2014 ; Pham et al ., 2015; Zorlu et al ., 2015).*** The prevalence of ADHD in Arab countries is comparable to reports in North America, Africa, and other countries of the Middle East ***(Alhraiwil et al ., 2015)*** . ADHD rates in Arab populations were similar to those in