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Co-morbid Depression in Children with Attention Deficit Hyperactivity Disorder (ADHD)

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INTRODUCTION

ADHD is a common psychiatric disorder in children, adolescents, and adults with good treatment responses (i.e., medication, psychosocial, and educational interventions). Approximately 8 to 10 percent of boys and 3 to 4 percent of girls under the age of 18 have ADHD, and about 80 percent of children with ADHD continue meeting the diagnostic criteria for ADHD into adolescence. **(atilla et al., 2006)**

Attention deficit hyperactivity disorder (ADHD) is a neurobiological syndrome that affects an estimated 5% of school-aged children, has been recognized under different names for more than a century **(Gordon, 2008).**

Attention deficit hyperactivity disorder (ADHD) is an early-onseth disorder, with genetic, environmental, and biologic etiologies, that persists into adolescence and adulthood in a sizable majority of afflicted children of both sexes **(spencer et al., 2007).**

Patients with ADHD are significantly more likely to have mood disorders (Major Depression: 3 times; Dysthymia: 7 times; Bipolar Disorder: 7 times), Anxiety Disorders (Generalized Anxiety Disorders, PTSD and Panic Disorder: 3 times) and Substance Use Disorders (alcohol dependence: 3 times and drug dependence: 8 times) **(kessler et al 2006)**

Youths with attention deficit hyperactivity disorders (ADHD) frequently have comorbid major depressive disorders (MDD) sharing overlapping symptoms. Our objective was to examine which depressive symptoms best

discriminate MDD among youths with ADHD. **(rasim Somer et al 2007).**

Attention-deficit/hyperactivity disorder (ADHD) is prevalent, chronic, and often comorbid with major depressive disorder from childhood through adolescence and adulthood. **(lucy cumyn, et al 2009)**.

A majority of children, adolescents, and adults with ADHD are affected by other comorbid psychiatric conditions, the type of comorbidity varies and includes learning problems, anxiety disorders, unipolar and bipolar mood disorders, conduct disorder, antisocial personality disorder and substance use v disorders **(jensen et al., 2001). Adler and colleagues (2006)** reported data from the National Comorbidity Study Replication, indicating that 32% of ADHD patients meet criteria for unipolar depression.

Even-though not all behavioral symptoms are alleviated by medications, so behavior modification, and educational interventions are important in the process of treating symptoms of ADHD **(olfson et al., 2007).**

The results of a large randomized controlled trial suggested that medication alone is superior to behavioral therapy alone, but that the combination of behavioral therapy and medication has additional benefit over medication alone **(Jensen, 2005).**

There are many options available to treat people diagnosed with ADHD. The option with the greatest scientific support is a variety of medications **(Foster, 2007).**

EPIDEMIOLOGY

Epidemiology and prevalence of ADHD

ADHD has been found to exist in every country and culture studied to date **(Sergeant, 2003).**

Attention-deficit/hyperactivity disorder (ADHD) is the most common neurodevelopmental disorder of childhood. However, basic information about how the prevalence of ADHD varies by race, sex, age, and socio-economic status remains poorly described. One reason is that the diagnosis depends heavily on parent and teacher reports; no laboratory tests reliably predict ADHD. Prevalence estimates of ADHD are sensitive to who is asked what and how information is combined. The diagnosis of ADHD is complicated by the frequent occurrence of comorbid conditions such as learning disability, conduct disorder, and anxiety disorder. Symptoms of these conditions may also mimic ADHD. Nevertheless, we suggest that developing an adequate epidemiologic case definition based on current diagnostic criteria is possible and is a prerequisite for further developing the epidemiology of ADHD **(rowland et al., 2002).**

I. Prevalence rate

Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood onset psychiatric disorders, affecting 5-12% of children worldwide **(rowland et al., 2002).**

In Korea, Chac et al., (2003) found that 9.4% of children in their study had AD/HD. Leung et al., (2008) claimed that the prevalence of ADHD in Chinese adolescents 3.9%.

While in a German study on 7,569 boys and 7,267 girls aged 3-17 ADHD had been diagnosed in 4.8 % of the children and adolescents altogether **(schlack et al., 2007).**

In Canda, **(baydala et al., 2006)** examine Seventy-five Aboriginal children using standardized parent and teacher questionnaires, they found that seventeen of the 75 aboriginal children have symptoms associated with ADHD.

(bener et al., 2006) conducted an study in Qatar on 2000 primary school students, ages 6 to 12, they found that the prevalence of children who have ADHD was 9.4%. In another study in the Gulf region, **(al-sharbati et al., 2008)** at Oman, published the results of an epidemiological study of hyperactivity among schoolboys, finding that 7.8 % of the sample exhibited hyperactivity.

In Egyptian studies, the prevalence rat of ADHD in Damietta primary schools was 2.4% as assessed by DSMIII with male to female ratio of 4:1. (**Khater & AbdEl- Ghafar, 2002**).

Another study by **(magda et al., 2004)** estimated the prevalence of ADHD among the children attending the pediatric-outpatient clinic in Suez Canal University Hospital to be 13.6%, rating it as the third most common mental disorder among children.

While in a German study conducted by **(rosier et al, 2009)** decline of the prevalence of persisting ADHD with age from 17.9% (age <25 years) to 10% (age 26-45 years) and 0% (age >45 years) was observed.

II- Gender differences of ADHD

Attention-deficit/hyperactivity disorder (ADHD) has now been recognized to exist in both males and females, albeit the literature supports a higher prevalence in males **(Rucklidge, 2009).**

The individual symptoms of ADHD can be found in a large percentage of normal children. For instance, in study surveyed a large population of school children found that teachers rated 30% of the boys and 12% of the girls as overactive, 49% of the boys and **27%** of the girls as restless, and 43% of the boys and 25% of the girls as having a short attention span **(Barkley, 2007).**

In a German sample, the prevalence rate for boys: 7.7 % and girls: **1.8** % **(schlack et al., 2007)**

The study made by **(Barakat, 2008)** on Egyptian sample, the study revealed that the ratio was 2.8:1.

Females present more often with less disruptive symptoms, more attention problems and more internalizing problems such as depression and anxiety while boys present with more disruptive behavior leading to clinical referral **(Biederman et al., 2005).**

III-Socioeconomic difference of ADHD:

Few studies have examined the relationship of ADHD to social class, and those that have are not especially consistent. The studies found only slight differences in the prevalence of hyperactivity across social class when parent, teacher, and physician all agreed on the diagnosis. However, social class

differences in prevalence did arise when only two of these three sources had to agree, with their generally being more ADHD children in lower than higher social classes. For instance, when parent and teacher agreement (but not physician) was required, 18% of those identified as hyperactive were in the- high social class, 36% in the middle, and 45% in the low social class. Where only the teacher's opinion was used, the percentages were 17%, 41%, and 41%, respectively **(Barkley, 2007).**

(Trites, 2001) found that rates of ADHD tended to increase with lower socioeconomic class. However, low socioeconomic status was no longer associated with rates of ADHD when other comorbid conditions, such as conduct disorder were controlled.

An opposite relation to socioeconomic status was suggested in another study when an ADHD screen was administrated to respondent aged 18-44 years in ten countries in the America, Europe and Middle East. Estimates of ADHD prevalence averaged 3.4% (range 1.2-7.3%) with lower prevalence in lower income countries (4.2%). Adult ADHD often co-occur with other DSM-IV disorders and is associated with considerable role disability **(Fayyad & De Graaf, 2007).**

ETIOLOGY

Etiology of ADHD

Attention-deficit hyperactivity disorder (ADHD) is a clinically complex and multifactorial psychiatric disorder of inattention, hyperactivity and impulsivity. Family, twin and adoption studies suggest a biological influence in the etiology of ADHD **(gabriela et al., 2009).**

1. Biological causes:

The early onset of the symptoms of ADHD and their relatively persistent nature over time, their association with other developmental disorders believed to arise from neurological impairment (i.e., learning disabilities, language disorders and motor abnormalities), their relatively dramatic improvement by stimulant medication have served to repeatedly focus research attention on possible causal biological factors **(thapar et al., 2005).**

While multiple etiologies may lead to ADHD, neurological and genetic factors likely play the greatest role in causing this disorder. These two areas, along with the associated field of the neuropsychology of ADHD, have witnessed enormous growth in the past decade, further refining our understanding of the neuro-genetic basis of the disorder (**Nigg, 2006**).

I-Genetic factors

Study of **(swanson et al., 2001)** reported that 25 percent of the close relatives in the families of ADHD children also have ADHD, whereas the rate is about 5 percent in the general population. Many studies of twins now show that a strong