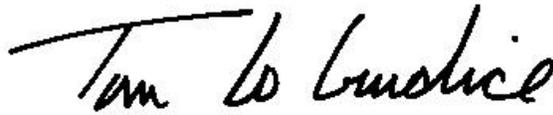


THE EFFECTS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER
(ADHD) ON ADULTS AND THEIR EDUCATION IF UNTREATED IN
EARLY CHILDHOOD

A handwritten signature in black ink that reads "Tom Lo Guicciolo". The signature is written in a cursive style with a long horizontal stroke at the beginning.

Approved:

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Abstract

THE EFFECTS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER
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Under the Supervision of Tom Lo Guidice, PhD

A review of Attention Deficient Hyperactive Disorder (ADHD) when left untreated, people's misperceptions, diagnostics, and ways to manage ADHD. A sampling of studies based on the search engine "PsychINFO" are provided; and then questions that confront the patient are answered using lay resources.

Suggested content descriptor keywords:

Attention- deficit hyperactivity disorder (ADHD)
Stimulant medications
Hyperactivity
Impulsiveness

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Chapter One: Introduction

It was previously thought that children eventually outgrow ADHD. Recent studies suggest that 30-60% of affected individuals continue to show significant symptoms of the disorder into adulthood. Children with this disorder are at a greater risk for longer term negative outcome, such as lower educational and employment attainment (Harpin, 2005). Seventy- nine percent with ADHD who were not treated as children experience symptoms of anxiety, depression, and physical ailments compared with fifty- one percent of adults without ADHD (Kessler, 2013). It is very important for parents to get their children diagnosed if any symptoms of ADHD are suspected.

Pediatricians often suggest treating ADHD in children with medication. Medication for ADHD can be useful however, it is not always the answer. Behavior modification is often recommended as a part of a treatment plan can be very effective. Working on behavioral modification, social skills, and providing tutoring services can be beneficial. When this disorder is noticed it is very important to get immediate help, so that there will not lead ongoing problems. When ADHD is left untreated and unmanaged every aspects of life can be negatively affected. In fact, research shows that untreated ADHD is one of the most impairing disorders for people to live experience (Kessler, 2013).

Purpose of the Study:

The purpose of this study is to give the reader a sense of the specialty literature on ADHD and to provide a summary of the commercial and easily available literature that is available.

Significance of the Study

Awareness of the specialty literature and the lay-person literature are important tools for the professional working with parents and adults.

Statement of the Problem:

The problems to be addressed as followed

- What are the effects of ADHD on an individual from early childhood to adulthood if not treated early on?
- How ADHD affects a person's education?
- Why perceptions of ADHD medication are so negative?
- What causes the disorder ADHD?
- What happens psychologically to an adult if left untreated?

Definition of Terms:

Attention deficit hyperactivity disorder (ADHD): Attention deficit hyperactivity disorder is a chronic condition that affects millions of children and often persists into adulthood (Mayo Clinic staff, 2013). Stimulant medications: commonly used to treated ADHD, increased dopamine and nor epinephrine, neurotransmitters in the brain. It's generally accepted in the medical community that a low level of dopamine in the prefrontal cortex contributes to symptoms of ADHD (Bailey & Haupt, 2010).

Hyperactivity: The physical state in which a person is abnormally active (Chandler, 2010).

Impulsiveness: acting before thinking. Interrupting others while talking or answer questions before they even finish it. Other may impulsively spend money causing financial problems at home (Bailey & Haupt, 2010).

Subjective: Refers to the patients' self-evaluation of their cognitive abilities and impairments.

Objective: Refers to the measurement of cognitive functions with neuropsychological test procedures.

DSM: The references to DSM are made by various researchers. The DSM refers to the The Diagnostic and Statically Manual of Mental Disorders. The DSM is the standard classification of mental disorders used by mental health professionals under the guidelines of the American Psychological Association and the American Psychiatric Association

Delimitations of Research:

The specialty literature was located using the Search Engine PsycINFO and the terms ADHD and Adults. The Lay-person literature was located using Google and limiting the search so that easy to locate resources may be found.

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Chapter Two: Review of Related Literature

The review of Literature provides a review of samples of the specialty literature based on a PsycINFO search that provided over 1000 references. Three samples were chosen to reflect recent research and give the reader a feeling of how specialized the topic has become. The second section of the review provides the reader answers to commonly asked questions by the lay-person.

Specialty Literature on ADHD

Cognitive Impairment for Adults with ADHD

An interesting study done by Fuermair et al. (2014) is illustrative of recent research done on cognitive impairments in adults. The researchers' objective was to see on how well a subjective and objective assessment would predict the neuropsychological impairments on adults with ADHD. They used American Psychological Association (APA) resources to guide their work. "Subjective" refers to the patients' self-evaluation of their cognitive abilities and impairments, whereas "objective" refers to the measurement of cognitive functions with neuropsychological test procedures (2014). There were one-hundred twenty-one adults who participated in the study. Fifty-five adults had the ADHD disorder and sixty-six adults were healthy. The participants with ADHD were self-referred or referred from their local psychiatrists or neurologist. They were chosen according to their age, diagnosis, intelligent functions, and willingness to participant in the study. The healthy participants were considered adults who had no history of any neurological or psychiatric disease. They were chosen by the public, word of mouth, and announcements. For the subjective measure of cognitive functioning the participants

had to do five self-report scales for ADHD symptoms. The five self-report scale consist of the following:

- attention deficits (FEDA)
- memory self-efficacy questionnaire (MSEQ)
- comprehensive assessment of prospective memory (CAPM)
- Dysexecutive Questionnaire (DEX)
- Questionnaire of complaints of cognitive disturbances (QCCD)

On the FEDA scale the adult answers the questionnaire on their experiences with attention deficit. The adult answers questions that pertaining to how often certain problems of attention occur in their daily life. For the MSEQ scale there were two domains that were assessed. The first domain was their remembrance of a grocery list. The second domain was their remembrance of a short story. For CAPM scale the adults had to remember failure in their everyday life. The researchers rated how often the participant experienced memory lapses for each item on a scale of five points.

During the DEX scale administration the adults had to answer question that described symptoms of the dysexecutive syndrome. The last questionnaire that the adults participated is the QCCD which consist of their complaints on cognitive disturbances. The objective aspect of the cognitive functioning assessment focused on of nine different areas including the following:

- Word recognition
- Story recall
- Delay task execution
- Inhibition, flexibility
- Word fluency

- Intellectual functions.

The result of the subjective and objective assessment revealed differences in the two group of participants. The subjective self-reported scales assessment results show the participants with ADHD had impairment in each aspect of cognitive functioning. The objective neuropsychological assessment found that the participant with ADHD showed impairment in each individual cognitive functioning. According to American Psychological Association, subjective as well as objective measures were sensitive in detecting cognitive dysfunctions of adults with ADHD, even though effects were considerably larger in the subjective assessment than in the objective assessment. However, subjective complaints failed to predict objectively defined impairment and, likewise, objectively defined impairment failed to predict self-reported impairment, indicating a poor association between both approaches (2014). According to American Psychological Association, the comparison between subjective and objective measures of cognitive functioning in adults with ADHD demonstrated that patients reported more severe cognitive impairments than actually found in the objective assessment (2014). It was concluded that both assessment were beneficial for clinical practices; however, it only detected certain parts of functioning. Therefore because of the severe cognitive impairments in adults with ADHD it is important to get diagnosed.

Importance of Diagnosing ADHD in Young Adults

A study on the diagnosis of ADHD in young adults using data of childhood-diagnosed sample was completed by Kessler (2013). The researcher used the self-informant rating to examine the current and childhood functioning. The method was to compare adult-specific items to diagnostic and statistical manual of mental disorders (DSM). The majority of young adults who received a diagnosis as a child continue to experience ADHD symptoms and clinical

impairments. Also the researcher noticed young adults who had ADHD do not report their symptoms compared to the adults without the symptoms. The results showed no significant incremental benefit beyond parent report alone to combining self-report with parent report. It is clear that child who experience ADHD without being diagnosed the disorder continues throughout adulthood if not treated.

However, there is controversy related to the outcomes on the effects of ADHD during adulthood. The reason is due to lack of evidence on identifying ADHD in adulthood. In the study there were 200 participants who had ADHD and 121 control participant without ADHD. The participants who had ADHD ages ranged from 5 years to 15years. The researcher used interview based on APA DSM-III-R or DSM-IV descriptors for ADHD, oppositional defiant disorder (ODD), and conduct disorder (CD) with supplement probe questions regarding situational and severity factors (2012). The entire participant had to do an 8-week intervention treatment program that consisted of behavioral modification, parent training, and psychoactive medication training. There are two measurement tactics that the researcher used, which consisted of Childhood ADHD symptomatology and Adult ADHD symptomatology. The Childhood ADHD symptomatology is measured by baseline and retrospective report and the Adult ADHD symptomatology is measured by 91 items of assessments. During the follow up appointments, the clinicians created an impairment rating scale to parents and young adults. According to American Psychological Association, Respondents indicated the degree of impairment a young adult displayed in seven domains that included academics, relationship with others, job performance, and overall performance (2013).

The researcher used some samples of young adults with childhood-diagnosed ADHD to examine the methods and symptoms of related issues on ADHD. The results of the study shows a

low percentage of the self-and parent report, however, continues to meet the DSM-IV-TR count threshold in young adults. The researcher discussed how diagnoses was low. However, the study shows young adults continues to show clinically significant impairment in daily functioning. ADHD has been often seen in young boys because of their hyper activeness. However, there have been significant studies that appearance in girls as well.

Prospective Follow Up On Girls with ADHD

An interesting study on ADHD using girls as the subject has been reported by Hinshaw et al. (2012). The study was motivated because of the earlier finding of girls due to the high risk of self-harm in girls and the lack of evidence on the symptoms and impairment in their adulthood. The girls were between the ages of 6 and 12 years old. They were recruited from mental health center, different schools, advertisement, and pediatric practices. The study was for duration of 10 years. The studies consist of follow-up appointments, academic testing, and computerized structured interviews. Some of the assessment was done over the phone at home, or out of town. The researcher used a 3 wave measurement scale which includes symptomatology, functional impairment, and self-perspectives/well-being. The symptomatology scale consisted of the following:

- Diagnostic interview schedule for children
- Swanson, Nolan, and Pelham rating scale
- Adult behavioral checklist and adult self-report
- Self-repot delinquency
- Beck depression inventory-II
- Substance use questionnaire

The second wave scale functional impairment consisted of the following:

- Columbia impairment scale
- Wechsler individual Achievement test
- Self-perception profile for adolescents
- Service utilization and educational attainment

The third wave scale self-harm consisted of the following:

- Barkley suicide questionnaire
- Self-injury questionnaire
- Driving behavior questionnaire
- Covariates
- Data analytics plan

The Wave Scale was used to compare previous assessment point's overtime. In results, these assessment lead the researcher to conclude that childhood- diagnosed girls with ADHD continues to show greater psychiatric symptoms. According to American Psychological Association, participants with childhood-diagnosed ADHD and comorbid symptoms, showed more serious impairment (both global and specific), and had higher rates of suicide attempts and self-injury than the comparison sample, with effect sizes from medium to very large; yet the groups did not differ significantly in terms of eating pathology, substance use, or driving behavior. In conclusion, girl with ADHD in early childhood symptoms spreads from symptoms into serious risk for self-harm. It is important to provide many of diagnoses to determine adults ADHD and their common life impairments.

The three specialty studies discussed here give the reader the sense of the depth of the literature. For the lay-person encountering ADHD as a parent or as an adult with ADHD a lay-persons' guide is important. Of course, the professional working with ADHD clients needs a background as well.

Lay-Person Information on ADHD

The parent or adult faced with ADHD has many concerns including what is ADHD, what can be believed about the myths and theories of ADHD, how things will change over the stages of life, the causes, the role of medication, and of course, management of daily life.

Understanding ADHD

ADHD used to be considered a childhood disorder. Only recently did researchers and the lay public begin to understand that symptoms of ADHD frequently continue into adulthood. Some experts believe 4 out of 100 adults in the United States have ADHD, and rather than being over diagnosed, adult ADHD is under diagnosed (Bailey & Haupt 2010). According to Bailey and Haupt, ADHD is now recognized as a medical diagnosis. Meaning that person may have mild symptoms and another may have more serious symptoms. ADHD includes a combination of problems, such as a difficulty sustaining attention, hyperactivity and impulsive behavior (Mayo clinic, 2013). No matter how mild or severe the symptoms of ADHD are treatment should be done.

Adults with ADHD often have other conditions, such as depression, anxiety, or bipolar disorder. These symptoms develop as a result of dealing with ADHD. According to Bailey and

Haupt (2010), many times ADHD is diagnosed in childhood and depression later, in the teen or adult years. (p. 32). It is important for an adult with ADHD to answer the inquiries of the professional when being diagnosed because other conditions may be present.

It is also important for the adult with ADHD to become aware of useful propositions and myths associated with ADHD. The adult needs to know the difference between informed propositions and myths. This information is also important for the parents of ADHD children.

Myths and Propositions Related To ADHD

Television: A Useful Proposition. One useful proposition is that children with ADHD who watch a lot of television have decreased attention span. According to Ashley (2005) researchers have found a connection between early television exposure at age one to three years and later attention problems at seven years. The attention problems in 10 percent of the 2,600 children studied were not indicative of ADHD, but suggestive of problems with difficulty concentrating, becoming easily confused, impulsive, restless, and troubled by obsessions. Children who watched the most television had a 28 percent higher chance of having later problems with attention later in life (2005).

Myths about ADHD. There are several myths about ADHD (Bailey & Haupt, 2010) that include the following:

- ADHD is not a real disorder;
- Bad parenting causes ADHD
- Diet or too much sugar causes ADHD,
- ADHD is only a child disorder,

- ADHD medications cause addictions
- ADHD is a learning disability
- Only the hyperactive have ADHD,
- ADHD is a male disorder
- People with ADHD are not smart
- ADHD is over diagnosed.

Perhaps as important as understanding unreasonable and reasonable explanations of ADHD is understanding how ADHD is related to the stages of life.

ADHD and the Stages of Life

A person or child with ADHD may need special monitoring depending on the severity of the disorder. Someone with ADHD may have a hard time sitting down, be quiet, or waiting their turn to speak. A toddler with ADHD symptoms may run from their parents out in public, climb and jump on chairs, and scream loud at gatherings. No matter wherever they are, it can be hard for the child to be quite, be not as loud especially in place where they should be quiet.

Preschoolers, have a hard time listening to their teacher, they run around the class continuously and never seems to be tired out. At the preschool level it is norm for an individual to have poor concentration and have a high activity level; however, a child with ADHD would stand out from the rest of students. According to Harpin (2005) in this age group there is often unusually poor intensity of play and excessive motor restlessness. Associated difficulties such as delayed development, oppositional behavior, and poor social skills, may also be present (Harpin, 2005). In elementary school the children with ADHD is very disruptive. ADHD often bother other children, are talkative, and wander around the classroom.

The primary school level is when the student starts to learn new skills and become more mature. Students with ADHD often have a hard time doing well in school because they may experience academic failure, low self-esteem, and rejection from their peers. ADHD in adolescence increases the risk of several aspects of life and is associated with academic failure, dropping out of school, teenage pregnancy, and criminal behavior.

According to Harpin (2005) in the workplace, adults with ADHD experience more interpersonal difficulties with employers and colleagues. Further problems are caused by lateness, absenteeism, excessive errors, problems with organization, time management, retaining information, and prioritizing, and inability to accomplish expected workload (2005). An adult who suffer from ADHD and who have not been receiving medication is more at risk of drug and substance abuse.

An adult who is hyperactive may have problems concentrating or interacting with others. Many adults who are hyperactive most likely choose a job that involves movement so they do not get bored. An adult who is experiencing impulsiveness often acts without thinking and may take on a project without thinking. Task may be too hard for them to complete and they may end up quitting. The symptoms of distractibility may cause an adult with ADHD the inability to focus for a long period of time, follow directions, or pay attention, but these are just symptoms of the disorder.

Causes of ADHD

There are other thoughts on what causes ADHD; however there is not an exact answer. There have been many lines of inquiry.

Many health-care professionals believe that ADHD arise from excessive sugar intake, food additives, excessive television viewing, inadequate limit setting, or social and environment factors such as poverty of family chaos (Gordon & Chang,. 2008). However, ADHD is caused by the chemical imbalance in the brain. The explanation is that the chemical receptors in the brain not working to their full potential. It is a delay in the thinking part of the brain that causes imbalances.

Still other researchers have tried to focus on different areas including genetics, brain structure, and vaccines .Initially they thought these factors linked to various neurodevelopment disorder. Research findings have been inconclusive. They also looked into the mental health of mothers which they suspected maybe the cause of ADHD. They focused on the mother who had a chronic and serious mental disorder and were raising children. The two were somewhat connected; however, more results and further studies are needed. Some believe that mother who smoke during pregnancy injure themselves during birth, or exposure to environmental contamination may have some effect to the cause of ADHD. However, these researchers did not have clear results .Therefore, more studies have to done. ADHD, like other common medical and psychiatric disorders (e.g., asthma, schizophrenia), is influenced by multiple genes, non-inherited factors and their interplay. There is no single cause of ADHD and exposure to a risk factor does not necessarily result in disorder (Thapar, Cooper, Jefferies, & Stergiakouli, 2011).

ADHD Medication

Some critics say parents rather give there children medication than deal with their playfulness. This kind of information prevents many people to not seek treatment. Medications used to treat ADHD do not cause later addictions. . As a matter of fact, some studies have shown

that children treated with stimulant medications may be at less risk of substance abuse during adolescent years than those with untreated ADHD ((Bailey & Haupt, 2010). There are studies that have shown if you combined ADHD medication with complimentary treatment it is more effect then medication alone. Medication alone only treats inattention, hyperactivity, and impulsiveness, instead of helping the person develop a new way of thinking and behaving.

Adults who have not been treated in their childhood dealt with certain symptoms all their life. The symptoms from ADHD may have taken a toll in their life. This can cause failures in their relationships and jobs. These failures can lead to substance abuse, anxiety, depression, and complication in both diagnosis and treatment. Medication for ADHD is highly debated, and it is not right for everyone. However, studies show stimulant medication to be effective in 70 to 75 percent of adults with ADHD. For some ADHD medication may interfere with other medications. For these people and the 25-30 percent who do not find medication effective it is critical to use behavioral and other therapeutic measures (Bailey & Haupt, 2010).

Managing ADHD in Daily Life

ADHD symptoms typically persist over time and rarely occur in isolation children. The disorder has been found to be more likely than their typical counterparts to exhibit defiant or aggressive behavior across home and school setting, to attain lower than expected levels of academics performance and achievement, and to develop poor peer relationships (DuPaul and Kern, 2011). In high school the teacher inform should inform parents of failing grades. However, adults do not have monitoring. Someone with ADHD would struggle with simple tasks.

An Individual with ADHD may have problems linking events that happen today with events not happening for several months (Bailey & Haupt, 2010, p. 215). Students with ADHD, whether they are in elementary school or in college, have a more difficult time in school than

students without ADHD. According to Bailey and Haupt (2010), a report compiled by researchers at Florida State University identified five specific area adult students with ADHD experience. The five areas are time management, focusing, concentrating, identifying main ideas, and test preparation.

An individual with this disorder should sit in the front row of the class, take breaks when studying, and take notes while in class. Students with ADHD have a hard time finding main ideas; therefore note taking, highlighting, or underlining important topics should help. Also finding strategies for studying could be very difficult as well, which leads a person with ADHD to be less prepared for a test. According to Bailey and Haupt (2010), students with ADHD may know and understand the strategies needed to study; however, because of lack of concentration, follow through, and internal motivation skills, they cannot utilize these strategies effectively.

Chapter Three: Conclusions and Implications

In closing, it should be emphasized again that many think that children outgrow the disorder however, studies have shown if not treated or diagnosed early on ADHD could have a negative effect in adulthood it can cause a person to lose their job, not able to focus in school, tobacco use, relationship issues, and traffic problems. An adult who have not been diagnosed early on in life can also experience other symptoms from different disorders which could be detrimental to their life. As children get older they look forward to independence; therefore, monitoring symptoms of ADHD will be important in order to become successful. Adults sometimes lack structure in their life it is often better to have external help outside which could make their life better. Research shows that ADHD, like other common medical and psychiatric disorders (e.g., asthma, schizophrenia), is influenced by multiple genes, non-inherited factors and their interplay. There is no clear single cause of ADHD and exposure to a risk factor does not necessarily result in disorder (Thapar, Cooper, Jefferies, & Stergiakouli, 2011). There are reasons to believe that that ADHD is associated with chemical imbalance. For the best results medication and a behavioral plan seems to work best for children and adults.

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