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Honors Capstone

The Efficacy and Ethical Issues of ADHD Medication in Young Children

and Alternate Methods of Management
Since its recognition as a clinical disorder, over 6 million children have been diagnosed with Attention-Deficit/ Hyperactive Disorder, or ADHD. Advancing towards my career in the education system, I have had the opportunity to work with and observe a number of children with ADHD. What I have found most commonly, is that it can be genuinely heart-breaking working with children that are heavily medicated for this neurological disorder. In one instance I was assisting with a first-grade class in which one child in particular struggled with ADHD. This child, though occasionally difficult to manage, was always a very positive and energetic student to have in the classroom. Because of this behavior his medication was altered, and I found the results to be devastating. This otherwise lively student would now arrive to class with qualities that mimicked a person who has been sedated. He no longer had a drive to learn or interact with his classmates and showed no enthusiasm for the world around him. What may be viewed as a successful prescription by some educators and medical professionals, is in my opinion absolutely avoidable and unnecessary. In recent years, parents are quick to medicate their children once diagnosed with Attention-Deficit/ Hyperactivity Disorder before considering other options. In place of medicating young children with this disorder, there are countless alternate methods parents and teachers can utilize to aide in their child’s management of ADHD.

What is ADHD?

Only receiving its name in 1987, Attention-Deficit/ Hyperactivity Disorder is a relatively “new” neurological disorder with which millions of children and adults struggle. Similar to other learning disorders of its kind, ADHD greatly disadvantages children in a classroom environment. Because educational institutions require students to maintain high levels of focus
and attention, engage in patient interaction with classmates, and limit movement for long periods of time, children with ADHD cannot perform to the same standard as an “average” student.

Those diagnosed with this disorder commonly struggle with hyperactivity, impulse control, and inattention, and are often perceived to be irresponsible, careless, or unprofessional. (Lawson 277) Most impulsivity in this disorder is a direct link to flaws in the executive functions of the brain. These skills are heavily responsible for short-term memory, self-regulation, and flexible thinking. Therefore, when a person’s executive skills are functioning properly, they are able to maintain attention, focus on tasks at hand, control their emotions, organize, and self-assess. (Driga 95) Even though ADHD is widely diagnosed and is assumed to be a well-learned disorder, there is still much that remains unknown. Realistically Attention-Deficit/ Hyperactivity Disorder is under researched, allowing for many inconsistencies in the understanding of the way it affects each individual.

**Causes of ADHD**

Research has shown that there are a number of factors that may contribute to the development of ADHD in children. Influences such as genetic background, prenatal activity, socioeconomics, and even electronics can be gateways to developing ADHD. As a parent it can be intimidating to consider the uncontrollable factors may lead to their child acquiring this disorder, however it is crucial to acknowledge each possible cause.

In fact, parents may have no prior knowledge to the genetic history of Attention-Deficit - Hyperactivity Disorder. Recent research has proven that ADHD can be hereditary similar to hypertension or major depression. In fact, if a parent has ADHD, their child is 50% more likely to also develop the disorder. Also, if one child in a family has been diagnosed with ADHD, both
future and existing siblings are over 30% more prone to experience ADHD symptoms. (Driga 96) These statistics are clear indicators that the genetics behind this disorder are the most common and most impactful cause if its development. Often times, however, the degree to which a child struggles with ADHD is a combination of genetics and other environmental, psychological, and developmental influences. With this knowledge, it is clear that environmental modifications can be utilized to help manage behavior influenced by ADHD.

Birth complications can also contribute to the occurrence of ADHD. For example, research has shown that there may be significant links between premature or preterm birth and childhood ADHD. There is no doubt that there are significant differences in premature brains when compared to those of children born without complications. In a recent study, interesting results through researching both brains of average adolescents and those born prematurely. Adolescents born prematurely did not perform as well in areas widely associated with Attention-Deficit/ Hyperactivity Disorder and demonstrated other cognitive risks. Along with prematurity, low birth weight may affect the likelihood of a child being diagnose with ADHD. In fact, as birth weight of an individual decreases, their risk of ADHD increases. According to Anna-Maria Driga’s findings, “ADHD the Early Years: Pre Natal and Early Causes and Alternative Ways of Dealing”:

There are three groups of newborns with low-birth-weight according to the severity of weight deficiency. In specific, the first group, extremely premature/extremely low birth weight individuals, have 4 times higher ADHD risk than ones born with normal weight. The second group, very premature/very low birth weight presents 2 times higher risk. In those cases, it is advised to get expert help as early as possible to have the ability to gain control of the symptoms. (Driga 96-97)
Therefore, the prior knowledge of this research can be invaluable to new parents, especially if they are aware of any genetic presence of ADHD in their family.

In addition to these uncontrollable factors, there are several influences expecting mothers should be aware of to prevent the neurological disorder in their children. It has been thoroughly proven that smoking, alcohol, and preexisting mental health disorders can impact pregnancy and the health of a fetus. It is now known that these same dangers can determine whether or not a child has ADHD. Whether a woman smokes during her pregnancy or is exposed to tobacco beforehand, she risks significant cerebral dysfunction for her child. The parts of the brain affected by tobacco and nicotine use during pregnancy are the same parts linked to symptoms of ADHD. In regard to alcohol consumption, children diagnose with fetal alcohol syndrome are more likely to be diagnosed with ADHD later in life. (Driga 97) Even the slightest consumption of alcohol during pregnancy can damage the cognitive ability of the fetus and cause it to later demonstrate slow-processing, hyperactivity, inattention, and impulsivity. Driga also outlines a study conducted in Italy researching the connection between mothers with mental illnesses and their children with ADHD. The results of this study explained that mothers who had experienced depression, anxiety and sleep disorders when pregnant had a higher probability to bear children with ADHD than mothers who have never experienced mental struggles, (Driga 97) Other studies have reported symptoms of depression in mothers during pregnancy are a likely cause of later ADHD symptoms in their children. Also, even though it has less of an impact, post-partum depression has similar effects on children.

Socioeconomically, there can also be significant factors that contribute to the development of Attention-Deficit/ Hyperactivity Disorder. A study recently conducted in
Sweden proved this relationship by researching socioeconomic status and access to medication. These statistics reported,

Children being cared for by a single parent were more than 50% more likely to be on ADHD medication, women with secondary education had a 130% chance of their children being treated for the disorder, [and] families on welfare had a 135% chance of having their kids on medication. (Driga 98)

Therefore, children of low socioeconomic standing are significantly more likely to develop traits of ADHD and are more likely to seek medication as a treatment option. Though electronic use is a separate factor, it can also coincide with socioeconomic influences. As years and advancements progress, young children grow more and more technologically adept. While this may seem like a positive trend, increased electronic use is another direct cause of ADHD.

Because instant gratification is the backbone of many video games and other applications, they hinder the development of long attention spans in young children. Even the average adult may scroll past a video they may not find interesting within a few seconds and move on to the next input of information. This phenomenon, therefore, can be especially harmful to children with ADHD, and in turn may intensify their symptoms. Increased electronic use may also raise a socioeconomic concern. Children of low socioeconomic standing may not have the same access to technology as children of wealthier families. This may become a future concern because the advancement of, and addiction to, technology and may expose an entirely new demographic to a high risk of ADHD.

In addition to these pressing causes of Attention-Deficit Hyperactivity Disorder, there are several measures that can be taken to effectively diagnose a child. A diagnosis of any mental disorder must be rooted in the principles of the Diagnostic and Statistical Manual of Mental
Disorders, also known as the DMS. However, the DSM is not always reliable when attempting to make a correct diagnosis because there is room for interpretation with each diagnostic criterion. For example, according to the DSM, if a child often lacks close attention to details then they have ADHD. The manual merely states a list of categories or characteristics an individual with the disorder may possess, and it is then up to a medical professional to make an ethical diagnosis. Another tactic often used is the Test of Variable of Attention (TOVA). This method is argued to be one of the most objective tests for ADHD as it is a continuous performance test. It is also given to children who are already considered to have the disorder by the DSM standards. The TOVA offers a computerized task that is able to evaluate omissions, commission reaction times, variability, and post-commission response times. (Perez-Alverez, 2017) Looking forward into future ADHD testing, virtual reality tests are being highly considered and researched. Virtual reality tests would require the diagnostic input of the DSM and would then test children and demonstrate sensitivity. Each test is useful in its own way evaluating reaction time, attention skills, and precision. (Perez-Alverez, 2017) Both correct diagnosis of ADHD and a firm grasp on its causes are crucial to understanding the most effective ways to treat and manage it, especially in young children.

**ADHD Medication and its Effects**

In recent years there has been a rapid increase of ADHD diagnoses. Following this trend is the increase of stimulant medications used to treat the disorder. Medications such as Ritalin or Dexedrine are becoming household names for many families with children that exhibit symptoms of ADHD. When a child is diagnosed, treatment will include a type of stimulant drug that may be paired with behavior therapy. There are two forms of stimulants that are prescribed
to children with attention disorders: immediate-release medications or extended release medications. Immediate-release medications are taken only when the child needs them, which tends to be every four hours. Extended-release medications are taken once in the morning and are usually more expensive than immediate-release stimulants. Serving as a large advantage of extended-release medications, because children only take them once each morning, they are able to avoid taking medication during or after school. Similar to any prescription, there is a spectrum of side effects for these stimulants. Some of the most frequent side effects experienced include decrease appetite or weight loss, issues sleeping, and social withdrawal. On the more severe end of the spectrum, side effects may include a minor growth delay, transient muscle movements or sounds, and increased activity or irritability as the medication wears off. (American Academy of Pediatrics).

When researching any medication, it is vital to be aware of its benefits, disadvantages, and larger risks. Many have found that medications that target neurotransmitters and the prefrontal cortex of the brain are extremely helpful in managing the disorder. (Lawson 281) While these medications have proven to be effective in treating specific symptoms of ADHD, extensive research shows that the cons greatly outweigh the pros.

Today, concerns regarding the efficacy and ethical nature encompassing the medication of young children with Attention-Deficit/ Hyperactivity Disorder have surfaced. When children are diagnosed with the disorder, it is in the hand of their parents or teachers to decide the best method of treatment. Whether or not these children have a choice, pharmacotherapy is the most common and controversial avenue selected. While drug therapy targets and treats symptoms of ADHD, it has also been found to cause other emotional disorders to emerge. Often times children practicing drug therapy continue to take these medications through adulthood, placing
them at a higher risk for developing other emotional disorders. In turn, a majority of patients on ADHD drugs eventually are led to take multiple medications to treat emotional disorders as well. (Driga 99) In addition to this long-term effect, childhood drug therapy has been linked to later complications such as increased risk of cardiac malfunction, liver damage, psychotic events, and even sudden death. (Driga 99) In fact, The National Institute for Health and Care Excellence issued instructions in 2008 that medication should be a last-resort option for children with ADHD. It was also stated that medication should only be used for unstable children that exhibit very severe symptoms.

There are a number of other legal and legislative drawbacks regarding ADHD medication. It is a growing concern that when educators suggest treatment for any disorder, they may not have the child’s best interest at heart, but rather desire a return to normalcy in their classroom. Educational institutions can encounter legal consequences if they are suspected of coercing its students to seek out medical aid for their academic shortcomings. Though this situation may seem like an extenuating circumstance, public schools today frequently face such instances. In fact, drastic cases have been reported around the country in which children have been required to take Ritalin as a condition of enrolling or attending school. (Berntsen 1568)

There have been several legislative responses to these issues including the Child Medication Safety Act and the Individuals with Disabilities Education Act. (Berntsen 1569) However, such responses cannot override the intrinsic legal and ethical flaws of youth ADHD medication.

Other ethical inconstancies regarding ADHD drug therapy include the safety and efficacy studies for the medications themselves. A recent study conducted in 2014 examined each ADHD medication approved by the Food and Drug Administration (FDA) and investigated the trials conducted to determine the safety of the medications. The statistics of this study concluded
that of the 17 ADHD medications available for children at the time, only 6 have be approved by the FDA. Though these medications are designed for chronic use, the average trial length prior to approval is 4 weeks and only 3 of the drugs have been examined for its long-term effects in safety trials. (Bourgeois Kim and Mandl 5) When asked about the safety of ADHD drugs, the National Institute of Health, the Committee for Medicinal Products for Human Use, and the FDA all voiced concerns. Due to many reports outlining negative effects of ADHD medication, the FDA made mandated that drug manufacturers are to provide Medication Guides describing all possible adverse side effects as well as the steps parents and medical professionals can take to avoid them. In addition, all stimulant medication for ADHD pharmacotherapy must include warning labels listing all possible risks. (Bourgeois Kim and Mandl 5)

**Alternate Methods of Management**

After closely evaluating the dangers concerning ADHD medication for children, alternative approaches evolve from an attractive option to a necessity. As more information is discovered about Attention-Deficit/ Hyperactivity Disorder, additional avenues of treatment are also being uncovered. One method commonly utilized is brain training. Extended research on this approach used a practice called neurofeedback to collect data on patients using brain training. Neurofeedback manipulate the use of electrodes to uncover activity in various sections of the brain. This practice of neurofeedback uses brain training games, targets specific areas of the brain, and acts according to the responses of the patient’s brain. (Driga 99) Because the disorder highly impairs an individual’s working memory, training targeting this area of the brain has proven to be highly successful in easing ADHD symptoms. Children implementing brain training into their behavior therapy show great improvements in their working memory itself, as
well as attention, hyperactivity, and impulse control. (Driga 99) Studies conducted with and without neurofeedback have found brain training to be more or equally as effective as the use of stimulants.

Mindfulness and mediation are also popular strategies used both inside and outside the classroom to help children manage their ADHD. In various studies analyzing progress in patients of all ages, meditation has proven to be an invaluable tool in treating ADHD. These studies reported drastic improvement in common ADHD symptoms, as well as substantial alleviation from depression, stress, and anxiety. (Driga 99)

In addition to mindfulness and mediation, teachers can utilize various tools to ensure the success of their students struggling with Attention-Deficit/ Hyperactivity Disorder. Due to differentiated learning and retention styles of students with ADHD, teachers should be equipped with various techniques that help their struggling students while maintaining a stable learning environment. Unfortunately, general education teachers are left to their own devices when it comes to ADHD training and accommodation. Organizations such as Children and Adults with Attention-Deficit/ Hyperactivity Disorder (CHADD) offer resources for teachers without formal special education training. This organization in particular is one of the most prevalent resources on ADHD. CHADD provides support, training, education, and advocacy for the 17 million individuals in the United States struggling with ADHD, as well as accommodations for their families, educators, and health care professionals. (Gower-Getz, 2019) The organization also offers an online program called Teacher to Teacher through which educators are able to learn logical strategies and proven techniques that create a fulfilling and rich classroom atmosphere for all students. The program is also a vehicle for the empowerment of teachers so that they are able effectively educate each and every student. (Gower-Getz, 2019)
Coinciding with recent advancements, researchers are reimagining technology as a medium to assist children with ADHD. For example, one impressive study developed an iPad application with which children are able to monitor and improve their behavior in the classroom. The app itself is called iSelfControl and offers a variety of accommodations such as teacher and student interfaces and targeted goals for classroom behavior. Within the app the day is broken down into thirty-minute periods, during which the student can earn points for demonstrating specific behavior for the entire period. Some of these targeted goals include “Following Directions”, “Getting Along with Others”, “Staying on Task”, and ‘Following Rules’. (Schuck, Sabrina et al, 2016) With both teachers and students possessing their own login information, iSelfControl calls for a cooperative effort from both parties. Teachers are responsible for awarding points after each period, and the students are expected to give themselves points based on how well they believe they performed. After reflecting and rating themselves, students are able to view the scores their teachers gave and consider what needs improvement. Therefore, this app allows students to keep track of their progress as well as strengthen their self-awareness and regulation. (Schuck, Sabrina et al, 2016)

The results of the research testing the efficacy of iSelfControl were quite positive. The study itself ran over the span of six weeks consisting of 28 total school days, but ultimately only 19 of those days were included in the conclusive data. Generally, the results were both qualitative and quantitative in nature:

Qualitatively, the prototype application described above was well received by both the classroom staff and students, and was consistently used in the classroom over a 6-week period. Quantitatively, the data gathered demonstrated that iSelfControl provided
scheduled opportunities for self-reflections that are an important adjunct to conventional cognitive-behavioral interventions in the classroom. (Schuck, Sabrina et al, 2016)

Reports from the children also showed widespread approval of the app. A majority of the students responded “yes” when asked if they liked the app and if it helped them manage their symptoms. The educational interest and scientific investment in this application is proof that there is so much information yet to be discovered about ADHD treatment. Looking ahead, it is clear that methods excluding medication will prove to be more successful in treating children with the disorder and will be ultimately, preferred to pharmacotherapy.

**Effects of Covid-19 on Learning**

Educational systems have suffered globally from the emergence of the Coronavirus Pandemic. Parents, teachers, and students alike have had to adapt to a new way of learning. In many cases some form of distanced or remote learning is being implemented across all grade levels. It is common knowledge that students tend to fall behind over summer breaks due to the separation from their institution. With the pandemic and the necessity for remote learning, students are now demonstrating more drastic trends. Because of extended remote learning, the average student risks losing as much as a third of their projected cumulative progress and half of that progress in math when beginning the new school year. (Goldstein, 2020) As the pandemic persists, concerns are rapidly growing regarding students with learning disabilities and other disorders such as ADHD. One special education teacher expressed her concerns regarding her students with neurological disorders because they already have difficulty in any average school year. She is now concerned that those students in particular will fall considerably behind. (Goldstein, 2020)
In these unconventional and unprecedented times there are measures teachers and parents can take to create a stable and successful learning environment for children with ADHD. The pandemic presents countless issues for any parent, teacher, or person who is trying to assume both roles. However, it is more important than ever to shift focus to students that require additional assistance navigating their education. As a parent, it is of utmost importance to fully understand the experiences of their child struggling with this disorder. Children with ADHD have grown quite comfortable with their former learning environment, and remote has learning most likely up-rooted their entire routine. Dr. Verduin of New York University’s Department of Child and Adolescent Psychology support when he claims that children with ADHD cannot fully grasp their current circumstance and are having trouble determining how to react. (NYU Langone Health, 2020) In a standard classroom environment, children are able to enhance their learning by collaborating with others and relying on an educator for support. Because remote learning lacks these assets, many children – and especially those with ADHD – will most likely experience a sense of confusion or disorientation. This sensation, in turn, may cause students to experience a decrease in academic drive and motivation (NYU Langone Health, 2020) Parents are then encouraged to look for signs of agitation or stress in their child and work alongside them to foster academic and mental progress.

Students with Attention-Deficit/ Hyperactivity Disorder are often hyper-focused on the world around them. Due to this tendency, Dr. Verduin urges parents to create separate, consistent learning conditions for their child in their home. Establishing this space will reduce a sense of irregularity and will yield an increase in attention and positive behavior. Along with a separate environment, it is crucial to develop concrete learning plans and methods. Collaboration with the student in creating schoolwork plans and fun activities for each day will provide them
with the structure needed to succeed. Also, Verduin encourages parents to observe their child’s attention span, specifically how long they are able to get schoolwork done in one sitting. Therefore, it is highly suggested for parents to schedule breaks that model those normally given at school. Physical activity is also often necessary for the maintenance of focus in children with ADHD, proving both indoor and outdoor movement breaks to be extremely useful in managing remote learning. (NYU Langone Health, 2020)

Lastly, as results are important with any student, parents must be aware of how they are reacting to their child’s academic achievements. Considering when to give critical feedback can be a determining factor to whether or not a student stays on task. Rather than offering blatant critiques, it is key that parents offer their child a compliment on their work before criticizing it. Coupling with constructive criticism, Dr. Verduin advises parents to celebrate what their child does accomplish. Distanced learning can foster a tense and aggravating atmosphere for both the parent and the child, however, noticing and rewarding achievements will create a positive climate and reinforce good behavior. (NYU Langone Health, 2020)

**Conclusion**

Each year, there is an increasing number of young children diagnosed with the neurological deficiency known as Attention-Deficit/Hyperactivity Disorder. Even though this disorder affects individuals of all ages, backgrounds, and ethnicities there is still much to be discovered about its management and treatment. When children are diagnosed with ADHD, their parents or teachers will often opt for the use of pharmacotherapy as a main treatment option. However, with the advent of new research and alternate methods, the efficacy behind medications is being called into question. The analysis of the disadvantages and risks behind
childhood ADHD medication, exposes the true necessity of these drugs. When such risks are taken into consideration, it is indisputable that the alternative techniques are a much safer and more ethical option for any child struggling with ADHD.
Works Cited


