

Children with Attention-Deficit Hyperactivity Disorder (ADHD) commonly struggle with focus and attention, so how does this disorder impact their learning abilities? ADHD is often diagnosed at an early age, and because ADHD is a learning disability, a lot of children with this disorder tend to need additional help in school to accommodate their challenges with learning and paying attention. How does ADHD change the way a child learns and interacts with their environment? What causes a child to not be able to focus in the classroom? How can those who struggle with ADHD be helped to learn and focus better? Finding solutions to such questions are essential to gain a better understanding of what ADHD is and how ADHD works as a neurodevelopmental disorder. The purpose of this literature review is to examine ADHD to gain insight into the struggles that come with this condition as well as how those with ADHD can cope to ensure better learning and attention within the school system.

ADHD, one of the most common childhood disorders, affects 3-5% of children globally and disrupts normal and necessary functioning. Inattention, hyperactivity, and impulsiveness are all prominent traits of ADHD (Weyers et al., 2019). According to Coelho et al. (2017), ADHD comes in three different forms: ADHD/I (predominantly inattentive), ADHD/H (hyperactive and impulsive), and ADHD/C (combined). Executive functioning and maladaptive behavior are both hindered by ADHD (Weyers et al., 2019). Processing speed and working memory are affected by ADHD by making cognitive processes slower as well (Kofler et al., 2020). These issues can lead to difficulties affecting academics, social interaction, and the home environment.

Diagnosis of ADHD

To diagnose a condition such as ADHD, The Diagnostic and Statistical Manual for Mental Disorders (DSM-5) is used to assess and identify symptoms of ADHD within an individual under psychological evaluation. Prominent symptoms of ADHD include inattentiveness, impulsivity, hostility, hyperactivity, trouble focusing, and so on. The DSM-5 defines ADHD as a consistent pattern of inattention, hyperactivity, and actions of impulsivity that disrupt normal development in two or more environments which negatively impact social, academic, and occupational functioning (Zulueta et al., 2019). Symptoms must appear prior to the age of 12 for an appropriate diagnosis; however, diagnostic procedures may vary depending on the clinician.

Clinical interviews are conducted with a child to test for ADHD. Sometimes third-party observations, such as teachers and caregivers, will be conducted to help assess the child; however, third-party observations are usually tested using various ADHD scales of measurement. Clinical interviews typically include the patient, but can include parents, guardians, or relatives of the patient who will be able to contribute information to further the diagnosis. Interviews can be done in-person, on paper, or in rare circumstances, over the phone or computer. An accurate diagnosis for ADHD is essential because the disorder can be difficult to diagnose, depending on the individual. Diagnosis can be difficult because the personalities and attention span of young children can change very rapidly. Symptoms can appear subtle and resemble other disorders that affect attention, hyperactivity, and impulsivity. There has been little research conducted on the frequency of diagnosis in children with ADHD; however, some research has shown that there is a continuing trend displaying the overdiagnosis of the disorder as more children are diagnosed (Zulueta et al., 2019). Some clinicians may not strictly follow diagnostic guidelines, resulting in the misdiagnosis of ADHD.

Neuropsychological testing has become more popular over the years for diagnosing ADHD in children. Neuropsychological testing includes tasks that can be used to test for cognitive deficits as well as to observe attention span and impulsivity. In more recent years, Virtual Reality (VR)

has been introduced into the clinical setting to provide new and unique opportunities for assessments of ADHD. Individuals can use VR to simulate real-life by interacting with objects in a 3D landscape. Clinicians can use 3D objects in a virtual world to assess the cognitive processes in patients and gather results to help support an ADHD diagnosis (Zulueta et al., 2019).

ADHD Comorbidity

Like ADHD, there are other mental disorders that play a role in inattentiveness and hyperactivity. Autism Spectrum Disorder (ASD), another neurodevelopmental disorder that impairs normal functioning, is commonly comorbid with ADHD as both disorders share 50-72% of the same genetic factors (van Stejin et al., 2012). ASD is defined by diminished communication and motor skills as well as the presence of odd behavior and movement such as the repetition and restriction of certain behaviors. Those with ASD and ADHD tend to be distracted easily and have trouble focusing. Those with ASD who are also diagnosed with ADHD may also find it difficult to learn new things as their attention is always shifting. Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD) are two childhood disorders that are also commonly comorbid with ADHD. These are two behavioral disorders that cause a child to be impulsive, restless, and rebellious. Both behavioral disorders are linked to problems involving hostility and aggression, which can lead to disobedient and defiant behaviors towards authority figures. In addition to ODD and CD, depression and anxiety are relatively common. Depression and anxiety can enhance defiant behaviors by increasing hyperactivity and impulsivity (Weyers et al., 2019). Medication and therapy can help lower and prevent defiant behaviors that may appear in some ADHD children, whether the medication and therapy is designed for ADHD or for comorbid disorders such as depression and anxiety.

Behavioral Problems of Children with ADHD

Those with ADHD can struggle with behavioral problems, making them unable to have a satisfactory life. For children who suffer from ADHD, engaging with parents and peers can pose a major problem. In the classroom, a child with ADHD may have trouble forming relationships, keeping relationships, coping with peer pressure, and may be subject to peer rejection and neglect as they try to interact with their environment (Kofler et al., 2020). Normal social skills are significantly diminished in those with ADHD, so those with ADHD will often run into trouble at school. A child with ADHD who struggles socially may be hyperactive or impulsive, making them unable to restrain themselves from certain actions considered to be respectful in the classroom. Children with ADHD may have trouble staying still in the classroom; therefore, they feel the need to be constantly moving around since they cannot sit for extended periods of time resulting in interruptions that effect learning (Kofler et al., 2020). A lack of control is commonly seen in those with ADHD as they are impulsive and may engage in deviant acts such as stealing, vandalizing, bullying, etc. Children with ADHD who are unable to control their behavior may react to threatening situations in hostile or antagonistic ways as a means of coping; however, from previous studies, hostile behavior observed in children with ADHD can be learned or taught by parents who are abusive or dysfunctional (Weyers et al., 2019).

Learning Difficulties in Children with ADHD

Learning is a huge problem for those with ADHD and the parents of children with ADHD. Children with ADHD are known to struggle academically as they find extreme difficulties in paying attention and learning new material in the classroom. When sitting at a desk, children with

ADHD are typically restless and cannot help themselves from moving around, so they remain unable to sit still and listen. Due to difficulties learning and paying attention in academic institutions, children with ADHD will find difficulty completing homework on time or at all. According to Breaux and colleagues (2018), students with ADHD may have complications managing schoolwork, working on homework, and organizing materials necessary for good academic achievement. In the school system, individuals with ADHD may have a challenging time achieving academic success. Some children with ADHD may find it difficult to maintain an appropriate, stable structure to help push them to complete adequate schoolwork. Furthermore, some children with ADHD can struggle with slower processing speeds and slower working memory, so in a classroom setting it may be more difficult for a child with ADHD to fully comprehend information compared to other students (Kofler et al., 2020). Additionally, many children with ADHD will often need more time to complete a task or an assignment. When more time is given, those with ADHD will have an easier time processing information. Children with ADHD may also benefit from taking more breaks throughout the school day to help improve overall focus during activities. These breaks can be spent outside by extending recess time to temporarily divert attention from the school environment if deemed stressful. Breaks may help children with ADHD work faster and focus better on schoolwork.

Brain Activity Differences in ADHD

Over time, more research has been done on how the brains of those with ADHD differ from those without ADHD. Through brain-imaging techniques, some studies have shown that children with ADHD have altered brain patterns in certain lobes of the brain compared to their neurotypical counterparts. The frontal lobe of the brain in those with ADHD have shown significantly altered levels of different neurotransmitters (Rollins, 2004). Researchers found that children with ADHD had significantly more glutamate, an excitatory neurotransmitter, than those who did not have ADHD. Data gathered by researchers also showed that children with ADHD had decreased levels of gamma-amino butyric acid (also known as GABA), an inhibitory neurotransmitter. With the increased levels of glutamate and the decreased levels of GABA, children with ADHD may appear to be very hyperactive, spontaneous, and impulsive. Stimulants, such as caffeine and prescription ADHD medication, can help reduce hyperactivity in ADHD by lowering levels of glutamate and increasing levels of GABA (Rollins, 2004).

Treatments for Children with ADHD

Ways to treat ADHD can vary among patients and how effective some treatments are. The most common form of treatment to help relieve symptoms of ADHD is through medication. Stimulants are one class of ADHD medication that help improve symptoms of attention and hyperactivity. Research has been found in literature that stimulants enhance cognitive processes and classroom behavior (Hawk et al., 2018). Stimulants also increase academic performance, on-task behavior, and the amount of homework completed. Non-stimulants, another class of ADHD medication, can be used when stimulant medication does not work. The use of medication can help those with ADHD in the school system who are striving for substantial academic achievement. Additionally, medication will help those with ADHD by reducing behavioral problems and help relieve symptoms of other disorders that are comorbid with ADHD (Coelho et al., 2017).

Children with ADHD can also be helped through Cognitive Behavioral Therapy (CBT), which is a form of treatment that is goal-oriented to change one's behavior or demeanor. There are many ways one can be treated with CBT, but children with ADHD can be treated via social skills

training and behavioral management practices to boost academic performance and better social interaction by minimizing the ability to become distracted and inattentive (Coelho et al., 2017). This form of therapy can teach ways to organize and plan future events for those with ADHD. Depression and anxiety can also be managed through CBT as children with ADHD may face internal issues at home and at school.

Aside from treatment, classroom accommodations are typically offered for children with ADHD to meet their needs academically within the school. Children with ADHD and their parents can have meetings arranged with teachers and counselors to ensure the best support for the child's academic performance. Extended time can be given to children with ADHD for assignments and exams. Children with ADHD can also work in a separate classroom, minimizing distractions, to help better their focus. Homework intervention programs may be set in place to ensure a child with ADHD is completing homework efficiently and effectively (Breux et al., 2019). Students with ADHD should be regularly checked up on through intervention plans to measure their progress and success.

Conclusion

Children with ADHD commonly struggle socially, academically, and psychologically. Hyperactivity, impulsivity, restlessness, and being unable to concentrate are the few core symptoms of ADHD that some children regularly experience on a day-to-day basis. Children with ADHD are more prone to be subject to peer pressure and have behavioral issues that will interfere with their relationships with others, making it difficult to form relationships with peers, teachers, and parents. Mental health can decline if children with ADHD are having trouble forming strong relationships with their peers. With depression and anxiety, it may be difficult for one with ADHD to function properly in an academic environment. When there is a lack of emphasis on focus and control, learning and education can become hindered if those with ADHD are not getting the proper treatment. Learning in the academic environment is a common struggle with children for ADHD as some have difficulties with hyperactivity and restlessness. Many treatments, such as medication and CBT, are available to help children with ADHD with hyperactivity, restlessness, and impulsiveness. Additionally, schools are helping children with ADHD to meet their needs, expectations, and to secure academic stability by implementing classroom accommodations and intervention programs. With proper treatment and regulation, children with ADHD could be able to learn new information without any difficulties in a classroom setting.

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