

Overview of Attention Deficit Hyperactivity Disorder

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This paper aims to provide an effective overview of ADHD (Attention Deficit Hyperactivity Disorder), so that educators and other individuals who may be involved in the treatment of ADHD patients, especially young patients, can effectively obtain basic information about what is ADHD, the causes of ADHD, and the popular treatment methods of ADHD. Various literature and studies were referred to in this paper to review and compare different causes and treatments. Researches held distinct opinions about the causes of ADHD, and the debate focuses on the nature and nurture factors of ADHD. Some studies believe ADHD is inborn and genetic while other studies emphasize the importance of nurture factors during their life, such as the environment that patients grow up in and the lifestyle they have. Depending on distinct arguments, there developed different treatments like using medication to prevent the situation from deteriorating further and changing the environments that patients living in through taking interventions with the family. These arguments and treatments will be discussed in detail in this paper.

Keywords: special education, inclusive education, attention deficit hyperactivity disorder, brain development.

Introduction

With the development of early education for young children in recent decades, children's mental health and additional needs gained increasing awareness in addition to the physical nursery. Children in early education settings are at a high prevalence of ADHD during this age period. If children with ADHD did not receive appropriate treatment, it would have a negative influence on both themselves and society. Some researches indicated that children with ADHD have higher risks of unsatisfactory academic performance, disorder use of the substance (O'Regan, 2019). It might also bring serious negative impacts on children's mental health and lead to self-harm in adolescence (Ward & Curran, 2021). Untreated ADHD can also lead to social instability because there is evidence that untreated patients are more likely to fight and commit juvenile delinquency (Jansen, 2019). Therefore, acquiring basic knowledge, having appropriate attitudes about ADHD, and understanding the role that educators play in the treatment or intervention of ADHD will be significant for the patients.

This paper will briefly introduce ADHD, including different types of ADHD, its symptoms, and hazards. The potential causes from nature and nurture perspectives and popular treatments and interventions from different aspects for ADHD will be discussed at the end. Comparing these causes and treatments, it would assist the readers to develop appropriate attitudes with ADHD and understand their roles toward ADHD treatments which would benefit the patients as well.

What Is ADHD?

Definition

Attention deficit hyperactivity disorder, known as ADHD, is one of the most common neurobehavioral disorders for young children. Therefore, more consideration should be given to early childhood education since school settings play significant roles in children's living contexts. Distractions and short attention span might frequently occur in daily life, especially for young children. However, occasional distractions do not lead to ADHD.

Types of ADHD

To diagnose ADHD, *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2013), 5th edition (DSM-5), Text Revision is widely used. In this scale, two dimensions, the inattentive-disorganized dimension, and the hyperactivity-impulsivity dimension, will be assessed (American Psychiatric Association, 2013).

There are three different types of ADHD according to the behavioral symptoms. If all the symptoms are inattentive and disorganized, they are inattentive (also known as ADD). If all the symptoms are hyperactivity impulses, they are main hyperactivity impulses (ADHD-PH). If the symptoms belong to two dimensions (American Psychiatric Association, 2013), they are associative (ADHD-C). Evidence showed that ADHD is frequently diagnosed in early childhood and adolescence (5.29% from birth to 18 years old) than in adulthood (2.5% from 19 years and more) (Aguiar, Eubig, & Schantz, 2010). Although ADHD could persist in adulthood, the negative relationship between the prevalence and the age was proved (O'Regan, 2019; Aguiar et al., 2010). Gender might also relate to the prevalence of ADHD. Some research showed that more boys (one in every five boys) are diagnosed than girls (one in every 11 girls) and it also raised increasing attention to higher prevalence of ADD in girls (O'Regan, 2019; Jansen, 2019; McGough, 2014).

Consequences of Inappropriate Management of ADHD

Improper treatment of ADHD may have a great negative impact on the patient's future life. Generally speaking, ADHD might lead to poor socialization in both childhood and adulthood, and unsatisfied learning outcomes in school (O'Regan, 2019). According to Jansen (2019), lack of efficient management of ADHD might increase the risk for injury, adolescent pregnancy, dropping out from school, and disorder use of substances. It is also proposed that untreated ADHD might have potential relations with juvenile delinquency and recidivism (Jansen, 2019). Children with untreated ADHD have higher risks for fighting, dropping out of school, and other juvenile crimes because of aggression and inattention along with ADHD (Jansen, 2019). Therefore, developing appropriate attitudes and suitable management for ADHD from early childhood would be significant.

Factors Influencing ADHD

ADHD might be caused by various factors. Vaidya and Stollstorff (as cited in Aguiar, Eubig & Schantz, 2010) believe that ADHD is caused by the dysfunction of catecholaminergic signal transduction, but simply deficit or excess of synaptic catecholamines could not fully explain ADHD (Pliszka, 2005). McGough (2014) divided the factors for ADHD into genetic risk factors and environmental risk factors. Genetic factors and

environmental risk factors will be analyzed in the terms of the causes and contributors of ADHD in both nature and nurture aspects and it will be discussed in detail in the following parts (as shown in Table 1).

Table 1

Comparison of Nature and Nurture Perspective of the Contributions of ADHD

Perspective	Main points	Main argument
Nature perspective	Genetic factors influence ADHD.	ADHD is heritable and related with genes.
Nurture perspective	Environmental factors influence ADHD.	Negative contexts in the society and unhealthy lifestyle from the family will increase the risk of ADHD.

Genetic Risk Factors

For the genetic aspect, ADHD was found heritable [8]. Since ADHD is a neurobiological disorder, there is no doubt that neuro factors, which are closely linked with genes, will definitely influence the risks of ADHD (Klein, Onnink, van Donkelaar, & Wolfer, 2017). In order to control the influences of environmental factors and further explore the relationships between genes and ADHD, comparing monozygotic and dizygotic twins was helpful to investigate the influences of genetic factors because twins will share the same environment like parents' characters and family contexts (Wender, Wolf, & Wasserstein, 2001). With this designed research, higher concordance of ADHD in monozygotic twins was found compared with the dizygotic twins and the estimate of heritability for ADHD is around 64% (Wender et al., 2001).

Environmental Risk Factors

In addition to the nature factors, nurture factors received increasing awareness in recent decades. Some researchers believe that the way children are nurtured and the environments children are positioned play significant parts in the risk of ADHD. For the environmental risk factors, there are various claims among researchers and it could be divided into two main aspects: the family environmental factors and social environmental factors. For the family environmental factors, some researchers argued that diet habits such as excessive sugar consumption and food additives, deficits of vitamins, lack of protein, and other micronutrients would also have a negative influence on ADHD (McGough, 2014; Verma, & Bagchi, 2020).

For the social environmental aspects, some factors in the pregnant periods, such as maternal use of nicotine and alcohol, and childhood traumas, such as domestic violence and lack of parenting might also increase the risk of ADHD (O'Regan, 2019; McGough, 2014; Weissenberger, et al., 2017). It was also argued by some researches that poverty and low socioeconomic status will increase the risks of ADHD which indicated that ADHD might have higher prevalence in developing countries compared with developed countries (Weissenberger, et al., 2017).

Effective Management of ADHD

In order to avoid the negative influence of ADHD, researchers devoted themselves to explore effective treatments for ADHD from different aspects (as shown in Table 2). Based on the nature caused perspective, ADHD is gene determined (Klein et al., 2017). Therefore, some medication treatments were used to impede the further deterioration of ADHD (Wender et al., 2001). Based on the nurture caused perspective, providing positive contexts in the family and school settings might assist to control the ADHD development (McGough, 2014; Verma & Bagchi, 2020).

Table 2

The Comparison of the Treatments for ADHD

Treatment	Involved	Rationale
Medication use	Professional pharmacist	Use stimulant medication and MAO inhibitors to treat ADHD.
Family-focused intervention	Family members	Provide better family contexts and more positive feedback for children to reduce environmental risk factors of ADHD.
School-wide approach	Educators and staffs in education settings	Use strategies like target charts to effectively make curriculum plan and facilitate children's learning in a positive context.

Medication for ADHD

Firstly, medication use explored the treatment of ADHD from the aspect of children, or in the other words, the aspect of patients. It involves stimulant medication and MAO inhibitors (a kind of metabolizes serotonin and norepinephrine) which are evidenced to bring positive impacts of ADHD (Wender et al., 2001). Dopamine agonist stimulant medications has been evidenced to have positive influences on ADHD treatment while clearer links need further study (Wender et al., 2001). The financial budgets for the ADHD treatment are seldom considered in the researches but it would be great issues for the family especially those with economic hardship and it might be a direction when doing more researches on ADHD treatments.

Family-Focused Intervention

Another treatment focused on the aspect of contexts and started with the family. As mentioned before, family context is one of the most significant environmental risk factors and it would have great impact on children's development process and lifestyle formation which were evidenced to have great impact on the treatment of ADHD (McGough, 2014; Verma & Bagchi, 2020). Therefore, some therapies tried to develop family-focused interventions to impede the deterioration of ADHD (McGough, 2014). It might be suitable for children who are too early to take medication or the family refused to use medication for their children. Behavior parent training is one of the most important parts of family-focused intervention (McGough, 2014).

In the behavior parent training, parents are expected to reduce stressful and negative responses for their children and create more positive interactions between them and their children, or in some program, sessions might be held regularly for assisting parents to achieve better outcomes (McGough, 2014). It might also help parent to feel more comfortable and less stressful when facing children with ADHD (McGough, 2014).

School-Based Approach

Moreover, in addition to receive professional treatment, developing appropriate attitudes and efficient management skills in school settings in which young children with ADHD are attending, is also significant for their further development since schools might be another significant context for children other than family. It requires the cooperation with the aspect of teachers and educators in school or early education settings and sometimes needs to plan for school-wide approaches. An example of school-wide approaches might be behavioral classroom management which requires the efforts of teachers and incorporates contingency management procedures (McGough, 2014). Teachers with this approach might use daily report cards, point systems, and reward programs to better facilitate children with ADHD (McGough, 2014).

Some strategies, such as using goal charts, allow children to record and rate their behavior and performance and compare them with their goals (O'Regan, 2019). Through this process, children might experience self-success or being awarded by others, and develop self-regulation (O'Regan, 2019). Sports

activities are also considered to promote the treatment of ADHD, because norepinephrine is a neurotransmitter that increases during exercise to release the symptoms of ADHD (Verma & Bagchi, 2020).

Conclusion

ADHD is a frequently diagnosed disorder disease among young children, and it might persist into adulthood. For children being diagnosed with ADHD, the symptoms need to maintain for six months and professional scales will be used. ADHD is proved highly heritable and environmental factors like unhealthy diet habits, prenatal impairment, and childhood trauma would also increase the risk of ADHD. Young children diagnosed with ADHD might suffer from unsatisfactory socialization, higher risks of injury, and even potentially lead to juvenile delinquency if they do not receive appropriate treatment.

Appropriate treatment not only includes professional treatment, such as pharmacotherapy, but also needs collaboration from different aspects such as family-focused interventions. Some school-based approaches might also be crucial since school setting contexts play great parts in their life considering the young age of patients. In the process of researching the appropriate treatment of ADHD, some slight links between the financial status of the family and the prevalence of ADHD were raised up but not fully evidenced. Moreover, it should be received more attention in the future study that financial budget is one of the main causes leading abundance of professional treatments for young children with ADHD especially for the families experiencing economic hardship.

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