

## Attention-deficit/hyperactivity disorder

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**ABSTRACT:** Studies indicate that Attention Deficit Hyperactivity Disorder (ADHD) appears to result from a combination of genetic, biological, environmental and social factors. In addition, neural tissue changes responsible for regulating executive functions also seem to be part of the etiology. ADHD is a neurodevelopmental disorder defined by inattention, disorganization and/or hyperactivity-impulsivity with genetic participation. Inattention, disorganization and inability to remain on a task, appearance of not hearing and loss of objects at levels inconsistent with age or level of development and is quite characteristic of carriers. ADHD usually persists in adulthood, resulting in social, academic and professional functioning impairments. From the literature review, it is observed that the methods used for the diagnosis of ADHD are efficient. According to their parents and teachers, children older than 6 years diagnosed using the fifth edition of the Diagnostic and Statistical Manual on Mental Diseases (DSM-5) or International Classification of Diseases (ICD-10) showed a significant difference in symptoms. Studies show that there has been a boom in ADHD diagnostic numbers in recent years, probably due to non-adhering to the DSM and ICD-10 criteria. Therefore, The DSM-5 and the ICD-10 should be used to allow an accurate diagnosis. Another point to be considered is that professionals who deal with this situation daily need to be trained to deal effectively with mental health, mainly related to the diagnosis of ADHD.

**Keywords:** ADHD, Diagnosis, Criteria, Attention

## INTRODUCTION

In 1902 George Still, a UK doctor, was responsible for the first description of what is now known as ADHD in a scientific journal. Still presented descriptions of children described as hyperactive, disobedient, and other behavioral changes explained as a defect in moral conduct were expressed only in 1902. However, clinical evidence of the disorder's signs and symptoms was recognized more than 200 years ago. The term ADHD was not used in these reports, but they described children with symptoms and behaviors currently recognized as ADHD (Rohde, 2004).

Attention deficit disorder is a neurodevelopmental disorder defined by harmful levels of inattention, disorganization and/or impulsivity hyperactivity with great genetic participation. Inattention and disorganization involve the inability to remain on a task,

appearance of not listening and loss of materials at levels inconsistent with age or level of development is quite characteristic of carriers. (Barkley, 2008)

Patients present with hiperability and impulsivity, which implies excessive activity, restlessness, inability to remain seated, intrusion into other activities and failure to wait – symptoms are extreme for age or level of development. ADHD usually persists in adulthood, resulting in impairments in social, academic, and professional functioning. It is estimated that this condition is one of the main sources of referral of children to the health system. (Barkley, 2008). Several diseases are associated with ADHD, such as media disorder, autistic disorder, intellectual development disorder and several others (Psychiatric Association, 2013). Other recent studies relate ADHD to behaviors that endanger the patient's health, such as: substance abuse, risky sexual behavior, risk of car accidents, the tendency to crime, unemployment, divorce and suicide. (Chen, 2018). Evidence suggests that these patients present with executive dysfunction, problematic decision-making and deregulation of the reward system as significant and behavioral extrinsic symptoms of ADHD (Egan, 2017; Humphreys, 2018)

Epidemiological and clinical studies report that genetics and risk behavior affecting the structure and functional capacity of the brain work is involved in the behavior and cognition of the etiology of ADHD (Demontis, 2018). Thirds of individuals diagnosed as young continue to manifest patterns of symptoms and behavior in their adult life. (Faraone, 2006). Although ADHD is currently used in clinical, academic, family and social contexts, this nomenclature has undergone significant changes in recent decades, mainly due to a better understanding of its etiological and treatment bases (Santos, 2010). ADHD was placed next to neurodevelopmental disorders in its classification, but the same data also offered strong support to place it along with disruptive disorders, impulse control and conduct (Psychiatric Association, 2013). **GENERAL OBJECTIVES:** To analyze previously published articles and studies regarding the method that applies in the diagnosis of attention deficit hyperactivity disorder. **SPECIFIC OBJECTIVES:** To present the importance of an accurate diagnosis to treat a disease that is difficult to diagnose and easily confused with differential diagnoses.

## EPIDEMIOLOGY

In North American children of school age, ADHD affects 3-7% of these children (Goldman, 1998; Pastor, 2002). In studies in Brazilian lands, school-age children show the same results (Guardiola, 1999; Rohde, 1998; Souza, 2001; Freire, 2005). Attention deficit hyperactivity disorder has a prevalence of 9 girls to 1 boy in studies in children between seven and fourteen years (Barkley, 2002; Rohde, 2004). In adults and adolescents, the prevalence varies between 2.5 – 8% of the general population 11, which is more common in men (Willcutt, 2012). A meta-analysis of 19 studies that sampled 15,000 000 young black people from the United States found a prevalence of 14% in this group and concluded that black individuals are at higher risk than the general population of the United States. Barkley, Biederman and Faraone report that most children with ADHD only have their real diagnosis in adulthood (Cénat, 2021)

## ETIOLOGY

Studies indicate that Attention Deficit Hyperactivity Disorder seems to result from a complex combination of genetic, biological, environmental and social factors. Several locus has indeed been located or are close to the genes that imply the neurodevelopment process and are probably related to the development of ADHD: FOXP2, SORCS3 and DUSP6 22, but also polygenetic transmission a factor to be considered. (Rohde, 2004; Demontis, 2018). The transmission of ADHD by biological factors has been reported in comparative studies using monozygotic and dizygotic twins who do not live in the same city and foster children because these, despite living in the same environment, have different genetics. Family recurrence has revealed a 25.1 to 95% hereditary influence, compared to 4.6% of the general population. A considerable variable is that the studies do not consider cultural, family influences and exposures to stressful events. (Kazdin, 1994; Johnston, 2001).

Neural tissue alterations responsible for regular executive functions also seem to be part of the etiology of ADHD (. Szobot, 2003; Barkley, 1997). According to Barkley, the decrease in ADHD attention occurs due to malfunctioning the brain's executive functions. They were being mainly difficult to inhibit behaviors and control environmental interference. And thus, failure in this inhibition process generates consequences responsible for the clinical picture, such as intolerance of waiting, high need for immediate reward, difficulty in dealing with rules, failure to predict consequences, and inaccurate and rapid responses without elaborate reasoning. Such suggestions are related to neuroimaging studies and cognitive and neuropsychological models (Satterfield, 1971; Sonuga-Barke, 2002). Neurochemically, there is consensus in the literature regarding the predominant participation of dopamine and norepinephrine, mainly because the drugs of choice in treating ADHD are indirect agonists of these neurochemicals. Furthermore, the identified role of norepinephrine in attention and dopamine in motor centres strengthens this idea (Santos, 2010).

## METHODOLOGY

This work focused on bibliographic review through the survey of articles and health manuals, through research in nationally and internationally databases such as Scielo, PubMed, Lancet, The Science, and academic books in the medical field. After reading and analyzing the articles, we determined the relevance of Attention Deficit Hyperactivity Disorder for academic education.

Diagnosis

The diagnosis of attention deficit disorder is fundamentally clinical. 31 In the vast majority of cases, it is based on operational, clinical criteria of classifications, such as the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders), being in its translation called the Diagnostic and Statistical Manual of mental disorders and the International Classification of Diseases.

The DSM-5 criteria include analysis of the intensity, frequency, duration and amplitude of the two prominent symptoms of this syndrome, being:

1. Inattention: The following symptoms should persist for at least six months to the point of being incompatible with the level of development and having a direct negative impact on social activities, academics and professionals. It is worth noting that the symptoms to be described are not only manifestations of opposing behavior, difficulty in understanding tasks or instructions, hostility or challenge.

From 17 years of age at least 5 symptoms are required.

Pays no attention to details or makes mistakes by carelessness in school tasks, at work or during other activities;

b. Has difficulty focusing on recreational or work tasks or activities;

c. You don't seem to listen when they tell you something directly;

d. He does not follow instructions and cannot finish school work, work duties and other tasks. It may even begin, but it hardly ends; and. Most of the time he can't organize tasks and activities and has difficulty meeting deadlines;

f. Avoids engaging in activities that require large and long reasoning.

g. Loses objects needed for tasks and/or activities;

H. It is easily distracted by stimulations unrelated to the main activity;

i. Forget things about everyday life, such as: paying bills, returning calls, paying bills, and scheduled times;

2. Hyperactivity and impulsivity: The following symptoms should persist for at least six months to the point of being incompatible with the level of development and having a direct negative impact on social activities, academics and professionals. It is worth noting that the symptoms to be described are not only manifestations of opposing behavior, difficulty in understanding tasks or instructions, hostility or challenge.

It keeps stirring or making sounds with your hands and/or feet or writhes in the chair.

b. Arises from the bench in situations where it is necessary to wait seated or in cases where there is a need to stay in the same place – prolonged trips;

c. It runs or climbs on objects in situations where you shouldn't do that.

In adults or adolescents, it may be just a feeling of restlessness);

d. Can not play or enter into quiet leisure situations;

and. It's mostly on the move, like it's not turning it off. Can't stand still in meetings and restaurants;

f. Most of the time, he speaks too much;

g. answer before the question is completed, finish other people's sentences, can't wait for the time you're given the word;

h Commonly have difficulty waiting your turn - have difficulty with queues

i. Interrupts or meddles in matters unrelated to your person.

(Diagnostic criteria for attention deficit hyperactivity disorder. Source: Diagnostic and Statistical Manual on Mental Illness, 5th edition)

Several symptoms related to inattention or hyperactivity-impulsivity should be present before 12 years of age (temporal criterion, non-excluding). In addition, symptoms of inattention or hyperactivity-impulsivity are present in two or more environments, such as: school, home, work, leisure activities (contextual criterion), and should also be accompanied by social, academic or professional impairment or that reduce its quality.

It is worth noting that symptoms do not occur during the course of another mental illness, such as schizophrenia or other psychotic disorder and cannot be explained by another mental disorder, such as: mood disorders, anxiety disorder, dissociative disorder, personality disorder or intoxication by illicit or licit substances.

The relationship between inattention, hyperactivity and impulsivity over six months may result in different subtypes of ADHD diagnoses and thus, time marking of six months is essential. According to The DSM-5, three subtypes of the disorder were defined for ADHD, classified according to the predominance expressed, which may be: criterion A1 (inattention) and criterion A2 (hyperactivity-impulsivity).

1. F90.2 - Combined presentation: If both A1 and A2 have been completed in the last 6 months;

2. F90.0 - Predominantly inattentive presentation: If A1 is completed, but A2 is not completed in the last 6 months.

3. F90.1 - Predominantly hyperactive/impulsive presentation: If A2 is filled and A1 is not filled in the last 6 months. (Subclassifications for attention deficit hyperactivity disorder. Source:

Diagnostic and Statistical Manual on Mental Illness, 5th edition)

In addition, the professional must:

1. specify if there was partial remission, which is justified when all criteria that were previously met but in the last 6 months no longer meet; however, the symptoms still present with social, academic and/or professional impairment.

Two of them. Specify the current degree of the disorder:

a. Mild: few symptoms, if any, other than those necessary for diagnosis and symptoms result in no more than minor impairments in social, academic or professional functioning.

b. Moderate: Functional symptoms/impairments are between mild or severe.

c. Severe: There are symptoms beyond those necessary for the diagnosis or several symptoms required for diagnosis, however, in a marked way. This presents great social, functional and professional impairment.

(Degree of the disorder for attention deficit hyperactivity disorder. Source: Diagnostic and Statistical Manual on Mental Illness, 5th edition)

## RESULTS

In the search for theoretical material, 53 publications were read, among these: books, articles and reports on ADHD and of this total, 42 were used in the development of this article in scientific databases (SciELO, PubMed, UpToDate). Of the 42 authors, most authors agree on the need for greater discussion and understanding on the subject in the academic training of these professionals to reduce the time in limbo that ADHD patients remain without their actual diagnosis and those who wrongly have it. In addition, most researchers on this subject also point out that the need to use reliable and non-flexible methods is fundamental to improving this population's clinical, personal and social condition.

The prevalence of ADHD reported in the literature is broad. Some studies show extremely low values, such as 0.5%, while the registration rate reaches 26% for others. As pointed out in the discussion of the DSM standard, ADHD with age may be partly an aspect of the DSM program mainly applicable to young children, reflecting the basic structure of appropriate ADHD at a younger age, but less and less applicable to higher age groups. This can lead to situations where the individual is still harmed on the structures that make up ADHD as they mature and surpass a list of symptoms of the disease, leading to an illusory decline in prevalence. Contrary to what is thought, ADHD is not overcome in adolescence. Symptoms in some cases seem to be minimized at this stage because some people develop strategies to deal with these conditions and thus attenuate the symptoms. Some studies show that a significant percentage of the child population has ADHD, which is often not correctly identified, but this causes great damage and frustration in the performance of learning-building activities; also causing some mental health problems, such as: anxiety and depression, behavioral disorder. Such as aggressiveness, lying and theft.

It is consensus that much of the diagnosis comes from passing medical records. To collect good stories, you need to know what to ask. For this, the complete understanding of normal and pathological neuropsychiatric events for this level of mastery is essential for a substantial study and experience in the field, which is complicated. We all know that initial support for a correct diagnosis begins with semiotics. It doesn't make sense to order multiple tests if we don't have clinical support or if we don't know why we're asking for them. Although the media published, stories and information about ADHD, usually found by someone looking for a professional, were disqualified and did not have enough knowledge to seek relief from their suffering. There are also professionals frustrated with the incorrect handling of ADHD cases, given the difficulty in establishing a differential diagnosis or the absence of achieving treatment adherence. There is a lack of specific guidelines for family members of patients in the literature to make you feel. Often act at your own risk of accidents that could have been avoided. It is important to note that the lives of people with ADHD can be very different if diagnosed but not treated. Since childhood, people with ADHD face various difficulties: Negative until disqualified as a person. Because of this situation, they have developed low self-esteem and begin to believe that they cannot perform tasks properly. Therefore, the problem with ADHD is not only a performance problem. It also a substantial effect on the construction of self-image and self-esteem. However, if ADHD is properly diagnosed and treated, carriers can take a lifetime of satisfaction with the potential to build a promising career, maintain a family and enjoy happy relationships. People who had symptoms of ADHD in childhood were more likely to have problems related to the aggressive challenge, crime, conduct disorders, depression, and anxiety. Recognizing that the effectiveness of treatment is decreasing direct symptoms in people with ADHD. However, researchers believe that relieving symptoms in children with ADHD will not lead to long-term satisfaction. Therefore, people's awareness of the factors that lead to susceptibility has increased the successful life of all children and is especially important for those with ADHD-related problems. People with ADHD need to "balance the balance." Therefore, the treatment is used to relieve symptoms while trying to help people build successful lives. The motto "Make the task fun, let it be worth the effort" seems extremely important for people with ADHD.

## DISCUSSION

It should be emphasized that this literature review was not taken into account in the analysis of variable research such as ethnic, cultural and socioeconomic issues. The reviewed studies show that the highest incidence in children and adolescents is that of the combined type, and in adults, statistical data are lacking in this group. In addition, this group presents the most significant functional impairment concerning the other subtypes. Functional impairments observed in predominantly inattentive ADHD include more intense learning deficits, being more frequent in women. In the group of patients, children have a higher rate of isolation, and emotional retraction, being very incident in these association with other mental diseases, such as depression and anxiety. Combined ADHD has shown to have worse performance in social relationships and may be aggressive in situations that are not in favor, especially in academic contexts. Similarly, the hyperactive ADHD subtype presented a better outcome in social relationships but with higher rates of aggressiveness and conduct disorder (American Psychiatric Association, 2003; Rohde, 2000; Murphy, 2002).

The diagnosis of ADHD has been criticized for ending up with subjective views, mainly because it is not based on biological tests. This criticism, although real, has no scientific foundations. The standard diagnostic criteria of ADHD meet and validity of a mental disorder, based on Robins and Guze (Faraone, 2005).

The diagnostic method is considered valid because One, i'm sorry. Well-trained professionals in a variety of environments and cultures agree on their presence or absence using criteria;

Two of them. Diagnosis is useful for predicting: the. Additional problems the patient may have (e.g., learning difficulties at school);

b. Future patient outcomes (e.g., risk of future drug abuse);

c. Response of the patient to the proposed treatment (e.g., medications and psychological treatments);

d. Features that indicate a consistent set of causes for the disorder (e.g., genetic findings or brain images) (Source: Stephen V. Faraone, 2021, adapted).

A problem in the diagnosis of ADHD is the high rates of comorbidities, which affects half of the diagnoses and can hinder the diagnosis of ADHD and thus also its respective treatment. The most frequent comorbidity of ADHD is Conduct Disorder and Defiant Odhimer disorder, affecting one-third to half of the patients (Barkley, 1998). According to Lahey, children older than 6 years by which they were diagnosed using DSM-IV and ICD-10 methods, regardless of their subtype, according to their parents and teachers, showed a significant difference in symptom control, especially regarding those related to academic and social relationships, even when there were other associated behavioral diseases. Lahey states that all three subtypes are valid when the diagnosis is made using diagnostic criteria. Gilbert states that it would not be appropriate to develop ADHD-focused services in which health professionals would only have experiences with ADHD. As stated earlier, most patients have comorbidities and that, as well as ADHD, require treatment. This statement only reinforces the need for multidisciplinary therapy.

However, any professional working with ADHD would need training in neuropsychiatry. However, other studies have shown that in recent years there has been an almost exponential increase in the number of patients diagnosed with ADHD, possibly due to overdiagnosis of ADHD. Overdiagnosis is the term used to refer to diagnoses made, however, without actually being what the patient presents. Overdiagnosis occurs when people without symptoms are diagnosed using simple imaging or laboratory findings that would not cause symptoms or damage at first (Toscas, 2015).

This happened and probably happens due to non-adoption to diagnose the criteria demonstrated by the Diagnostic and Statistical Manual on Mental Diseases (DSM) or the International Classification of Diseases (ICD10). Hypotheses about overdiagnosis report that therapists diagnose attention deficit hyperactivity disorder not by DSM-5 or ICD criteria<sup>10</sup>, but by a concept of a child with prototypical ADHD and. Thus, these ignore the classification criteria (Bruchmüller, 2012). Overdiagnosis also has a sexist characteristic because, despite being more common in girls, boys are more easily diagnosed because they are more seen as the actual prototype of this mental illness. Bruchmüller also states that therapists in current times do not strictly follow diagnostic manuals; therefore, there are overdiagnoses of ADHD in the clinical routine and that gender greatly influences diagnostic consideration (Bruchmüller, 2012).

## CONCLUSION

Although not a recently discovered disease, ADHD still needs many studies on its etiological, statistical, behavioral and therapeutic bases. Diagnostic methods to identify ADHD have been constructed, reviewed and updated over time to enable and facilitate the clinical identification of a disease of a difficult diagnosis. Therefore, the DSM-5 and the ICD-10 should be used in clinical practice to allow a more accurate diagnosis because, with a clear diagnosis, the treatment is more likely to benefit the patient and may be drug- or both. Another point to be considered is that professionals who deal with this situation daily need to be trained to manage patients diagnosed with ADHD, especially when dealing with comorbidities related to mental health in this group of patients.

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### CONFLICT OF INTEREST:

The authors confirm no conflict of interest.

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