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The challenges in diagnosing Attention Deficit Disorder with Hyperactivity in girls during childhood and adolescence: literature review

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ABSTRACT

OBJECTIVE

To understand Attention Deficit Hyperactivity Disorder (ADHD) in girls to improve their well-being and life quality.

METHOD

Narrative review of scientific articles from 2014 to 2023 available on PubMed, Scopus, Google Scholar and SciELO databases with the main descriptors being "ADHD", "Hyperactivity Disorder", "ADHD in Children and Adolescents", "ADHD in Women" and "Diagnoses and Treatments for ADHD".

RESULTS

ADHD is characterized by persistent difficulty in paying attention and motor control of impulsivity. Clinical diagnosis is challenging due to its heterogeneity. There is a decrease in dopaminergic activity and variations in the noradrenergic system, affecting executive control and attention. The diagnosis must be done by healthcare professionals, along with a multidisciplinary team, and it is based on 18 symptoms of inattention, hyperactivity and impulsivity. ADHD is more commonly diagnosed in boys, but girls often present with more subtle symptoms, making diagnosis difficult. They tend to be less disruptive and more internalized, leading to incorrect diagnoses such as anxiety or depression. Early identification and appropriate support are essential to help girls with ADHD overcome challenges and reach their potential.

CONCLUSION

The diagnosis of ADHD in girls is challenged by the predominance of the inattentive subtype and less evident symptoms, leading to under-diagnosis. The lack of specific research exacerbates this difficulty. It is crucial to invest in professional training, improve diagnostic protocols and carry out more studies to ensure adequate treatment in order to improve the life quality of affected girls.

KEYWORDS

Hyperactivity disorder; Children; Adolescents; Women; Diagnoses; Treatment.

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INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a neuro-developmental disorder defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), based on a set of symptoms and constant patterns of inattention, hyperactivity, and impulsivity, which affect the functioning of neuro-behavioral development and may lead to motor, perceptual, and cognitive disturbances that can persist throughout life. The global incidence of ADHD is highly relevant, affecting approximately 5.2% of children and adolescents.¹⁻³

Its pathophysiology, though uncertain, is complex and involves a multifactorial interaction addressing genetic, biological, and environmental factors. Studies have shown a reduction in dopaminergic activity in the mesolimbic, mesocortical, and nigrostriatal pathways, which may be related to executive control issues in the brain's anterior regions. Modifications are also seen in the noradrenergic system, interfering with attention processes in posterior cortical regions and inhibitory processes in anterior brain regions, which are associated with temperamental, neurobiological, and interactional factors. Therefore, diagnosing and identifying certain symptoms can be a complex and challenging process.⁴⁻⁷

The diagnostic criteria most commonly used are the DSM-5 and the International Statistical Classification of Diseases and Related Health Problems, 10th edition (ICD-10). Both classification systems consider symptoms of inattention, hyperactivity, and impulsivity, divided into categories. The ICD-10 groups symptoms into three categories: inattention, hyperactivity, and impulsivity; while the DSM-5 groups them into two categories: inattention and hyperactivity/impulsivity. Additionally, it should be considered as a differential diagnosis to other disorders due to the similarity of symptoms, possibly overlapping with other conditions. Furthermore, a diagnosis can only be made if the manifestations occur in at least two different settings. Hyperactive-impulsive symptoms are associated with higher clinical accuracy rates for diagnosis, being more prevalent in males. The tendency is for girls to present with primary symptoms of inattention, while boys are more likely to exhibit hyperactivity symptoms.^{3, 8-10}

Therefore, this study aims to deepen the understanding of the disorder in females, with the goal of improving care and promoting more effective long-term outcomes.

METHODOLOGY

This study is a narrative review, selecting articles published from 2014 to 2024 in both Portuguese and English. A total of

19 articles were used for this review.

Databases with the most scientific significance were used such as PubMed, Scopus, Google Scholar, and SciELO. The criteria for article selection included cohort studies, cross-sectional studies, and literature reviews.

As for the inclusion criteria, subjects such as ADHD in girls, challenges in diagnosing ADHD in girls, gender differences in diagnosis, treatment types for ADHD, disorders in girls, ADHD in children and adolescents and differences in the number of diagnoses in girls and boys were used in the study. Distinctly the exclusion criteria involved articles focusing on adults, studies on males only, or studies concerning other disorders not directly related to ADHD.

The selected articles were analyzed, comparing their results and conclusions to provide a broader data foundation to help determine the diagnostic challenges of ADHD in girls during childhood and adolescence. Based on this, discussions were made, and a conclusion was drawn that met all the previously described objectives.

RESULTS AND DISCUSSION

The discussion based on the analysis of the selected articles on ADHD is related to its characterization as a persistent pattern of inattention and impulsive motor control, which typically begins in childhood and persists into adolescence and adulthood. This disorder carries a clinical diagnosis. However due to such heterogeneity it becomes challenging to validate it.^{6,7}

The evaluation of dysfunction should be carried out by a psychiatrist, pediatrician, or another health professional (such as a neurologist or pediatric neurologist). However, it is crucial to involve a multidisciplinary team for the proper evaluation and management of symptoms. Confirmation of diagnosis, both in children and adults, is based on 18 symptoms that indicate excessive inattention, hyperactivity, and impulsivity.^{11,12}

According to the classification in Table 1, ADHD can be classified into three subtypes: predominantly inattentive presentation (included in criterion A1 but not in criterion A2 in the last 6 months); predominantly hyperactive/impulsive presentation (included in criterion A2 but not in criterion A1 in the last 6 months); and combined presentation (included in A1 and A2 in the last 6 months).^{13,14}

Table 1 - ADHD Diagnostic Criteria.

DSM-V		
A	1. Inattention: Six (or more) of the following symptoms of inattention (minimum duration of 6 months)	a) Frequently makes careless mistakes or overlooks details in schoolwork, work, or other activities; b) Often has difficulty sustaining attention in tasks or play activities; c) Often seems not to listen when spoken to directly; d) Frequently fails to follow through on instructions and does not complete schoolwork, chores, or duties at work; e) Often has difficulty organizing tasks and activities; f) Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort; g) Frequently loses things necessary for tasks or activities; h) Is easily distracted by extraneous stimuli; i) Frequently forgets daily activities.
	2. Hyperactivity and Impulsivity: Six (or more) of the following symptoms of hyperactivity (minimum duration of 6 months)	Hyperactivity a) Frequently fidgets with hands or feet or squirms in seat; b) Frequently leaves seat in situations when remaining seated is expected; c) Frequently runs or climbs in inappropriate situations; d) Often has difficulty playing or engaging in leisure activities quietly; e) Is often "on the go" or acts as if "driven by a motor"; f) Often talks excessively. Impulsivity: g) Often gives answers before questions have been completed; h) Often has difficulty waiting for turn; i) Frequently interrupts or intrudes on others' conversations

B	Some symptoms of hyperactivity-impulsivity or inattention causing impairment must be present before age 12.
C	Some impairment caused by the symptoms must be present in two or more settings (e.g., school, work, and at home).
D	There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.
E	Symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia, or other psychotic disorder and are not better explained by another mental disorder.

Source: American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. Available at: https://www.institutopebioetica.com.br/documentos/manual-diagnostico-e-estatistico-de-transtornos-mentais-dsm-5.pdf

Historically, this disorder is more commonly associated with boys than girls, with a ratio of approximately 2:1. Recent research aims to better understand this discrepancy, based on the idea that girls present symptoms in a distinctive manner and often more subtle ways than boys. The under-recognition of symptoms in females may have led to many misdiagnoses, as there was a lack of understanding how these symptoms manifested in girls, thus impacting their adulthood. The first subtype listed in Table 1 (predominantly inattentive presentation) is the most often type found in girls, making diagnosis difficult, as the combined presentation is more common, increasing the chances that their symptoms are not recognized and treated and leading to future problems.^{10,13-15}

Recent studies suggest that one of the main challenges of ADHD in girls is the less disruptive behavior showcasing less obvious symptoms, often internalized, related to inattention and executive dysfunction. Girls show greater ability to inhibit motor responses. Thus, there is a higher likelihood that they are not diagnosed or treated appropriately or mistreated for different psychological disorders, such as anxiety and depression, leading to poor prognosis and incorrect pharmacological treatment.^{8,16}

Another challenge is that pediatricians and educators are often not adequately trained to identify symptoms that diverge from the classic presentation, affecting diagnosis in girls, as they display more disorganization, distraction, forgetfulness, and introversion, with less hyperactivity and impulsivity. Additionally, doctors may struggle to separate ADHD from its comorbidities, leading to overlapping symptoms.^{8,17,19}

Unique implications faced by girls due to their distinct symptoms include issues with self-esteem, comorbidities such as anxiety, depression, social phobia, social and family challenges, and impaired academic performance. Additionally, there is a high likelihood of risky behaviors such as substance use, challenging behaviors, early sexual activity, among others.¹⁸

It is essential that girls with ADHD are identified as early as possible and receive the necessary support. This may include behavioral interventions, personalized academic support, and in some cases, medication use, all aimed at helping them overcome the challenges associated with the disorder and reach their full potential.^{11,18}

CONCLUSION

The diagnosis of ADHD in girls during childhood and adolescence faces complex challenges that require greater attention from health and education professionals. The predominance of inattentive and internalized symptoms, combined with less disruptive behaviors, makes early recognition more demanding compared to boys.

This disparity in symptom manifestation, coupled with a history of research that it's focused on the male population and social stereotypes that underestimate the signs of the disorder in girls, results in diagnostic delays, inadequate therapeutic interventions, consequently worsening symptoms, and negatively impacting on emotional, social, and academic development. Furthermore, the predominant diagnostic patterns, often based on male-centered criteria, are insufficient for addressing the specific characteristics of ADHD in females.

Therefore, it is recommended to commit to professional training, adapt diagnostic protocols to the characteristics of ADHD in girls, and promote a multidisciplinary and individualized approach. Additionally, due to the lack of studies on this topic, it is crucial that future research further investigate the

particularities of symptoms and diagnostic patterns in the population, emphasizing methodologies that address gender issues. By adopting these measures and expanding research in this area, it is possible to fill the gaps in knowledge and ensure more accurate diagnoses, providing effective support and better life quality for girls.

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