

## Exploration of ADHD in Females: Review on Symptomatic Presentation and Effect of Late Diagnosis or Misdiagnosis on Women's Quality of Life

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### ABSTRACT

**Introduction:** Attention-Deficit Hyperactivity Disorder (ADHD) is a neurobehavioral disorder that typically affects children below twelve, with high prevalence in males compared to females. Recent trend in social media suggests many females were diagnosed late or misdiagnosed sometime in their lives. This literature review explores the general intricacies of ADHD diagnosis in females, with a focus on differences in presentation and the impact of late diagnosis or misdiagnosis in adult ADHD. **Methods:** A literature review of current research was conducted to highlight the characteristics, prevalence, public perception, presentation, diagnosis, treatment, and effect of late diagnosis or misdiagnosis of ADHD on females. **Results:** Evidence suggests that the incidence of late diagnosis or misdiagnosis can be traced to sociocultural stigma and biological sex. Interventions to create a welcoming environment. **Conclusion:** Understanding the women's side is critically important to understanding ADHD.

**Keywords:** ADHD; girls; late diagnosis; misdiagnosis.

### INTRODUCTION

Attention-Deficit Hyperactivity Disorder (ADHD) is a well-known and one of the most common neurobehavioral disorders that exists. It is typically recognized by its triad of presentation: hyperactivity, impulsivity, and inattention [3]. ADHD presentation could be found commonly in children, particularly those who are below 12 years old [3] [8]. Typically, boys were diagnosed more than girls.

Yet, the recent trend of content in social media has highlighted how symptoms in ADHD were diagnosed late in girls, with many going undiagnosed. Research conducted on Attention-

Deficit Hyperactivity Disorder (ADHD) aligns with this statement, where it has been extensively focused on the higher findings of ADHD symptoms that could be found in males and severely underrepresents females [4]. Data showed that 61% women went undiagnosed, in comparison to 39% men in one web-based survey [8]. A national cross-sectional study in the United Arab Emirates revealed a high percentage of ADHD symptoms reported among female participants [2].

Despite many research starting from this topic alone, other regions in the world remain largely alienated or underexplored due to geographical distance and cultural differences. It is important for

people, starting from vital positions within society (healthcare professionals, government, family), to have a deeper understanding of what ADHD may entail for women, including its challenges. This review aims to examine how ADHD differs between sexes, probable factors that impact misdiagnosis or late diagnosis in woman, and its impact on their daily life. From this research, valuable insight and findings for healthcare professionals, governments, and the public can be expected to help understand and address correlated challenges in real settings.

## ATTENTION-DEFICIT HYPERACTIVITY DISORDER (ADHD)

### Definition and Characteristics

Attention Deficit Hyperactivity Disorder is defined as a neurobehavioral disorder, primarily affecting children, although it has also been diagnosed in adolescents and adults. It is considered a multifactorial disorder, with many aspects contributing to a diagnosis of ADHD. Genetics and family history, sex, environment, and maternal factors are among the risk factors that have been linked with the risks of ADHD [4].

The diagnosis of ADHD is defined by six or more symptoms of inattention and/or hyperactive and impulsive category, happened within the last six months in different environments. There are three different subtypes of ADHD, with different struggles and presentations. Someone with hyperactive-impulsivity type may struggle with impulsive decision-making and inability to stay still. Those with inattention type typically struggle to maintain their focus and in task-organization skills. Combined presentation type, as a mix between prior types, is considered as the most severe subtype of ADHD.

### Prevalence

The prevalence of ADHD globally reaches between 5 to 29 percent. One study showed the trajectory of those diagnosed with ADHD as more than 4 million people between 1990 to 2019 [14]. Census conducted by Indonesia's Central Bureau of Statistics found that children under eighteen years old to have been diagnosed with ADHD [5].

### Public Perception of ADHD

Perception of ADHD has long been associated with social aspects such as culture, ethnicity, and religion [1]. This creates disparities in ADHD diagnosis for those who are at risk. Some even refuse to consult with a mental health-related worker for their issues and let it untreated. This case was observed in Saudi Arabia, where 80% of those participating preferred to leave their condition untreated [26].

Misinterpretation of symptoms and cultural perception play a huge factor in the way people perceive ADHD. One study noted that a combination of biases in race, ethnicity, and religion, as well as academic pressure and stigma surrounding mental health, contribute to reluctance and even refusal to receive mental health care [6].

However, awareness of ADHD has risen in recent

years. Social media heavily contributes to this increase in mental health care in subjects such as neurodivergence, ADHD, and ASD in public awareness [11].

### Comorbidity

In those diagnosed with ADHD, comorbidities of other psychiatric disorders typically occur. Those diagnosed may face some form of learning disability associated with impairment in their working memory function and overall decrease in cognitive function [27]. In children, hyperactivity and impulsive presentation may also co-occur with Oppositional Defiant Disorder (ODD) and Intermittent Explosive Disorder (IED). Some may experience other psychiatric disorders related to mood or anxiety disorders at a greater rate than the general population. Other people with ADHD might also be diagnosed with OCD and Autism Spectrum Disorder (ASD) [3].

### ADHD: GIRLS VS. BOYS

#### Correlation between Sex and ADHD

The prevalence of ADHD based on sex has long been researched. Studies in Indonesia have shown that sex assigned at birth is correlated with ADHD demographically, with boys typically being at higher risk compared to their girl peers [7] [18] [12]. However, other studies with adults suggested that the rate of ADHD based on sex might approach a similar differentiation of 1:1 [13]. As such, some research regarding the difference in presenting symptoms between boys and girls has emerged since.

#### Difference in Symptom Presentation

Boys typically presented symptoms that fall under the category of hyperactivity-impulsivity. These include difficulty sitting down, impulsive and rather reckless behavior, and disruptive acts that may make other people in a public setting uncomfortable. Their symptoms are more externalized and thus easily recognizable [4].

Meanwhile, in their childhood, girls would often internalize the symptoms they experienced out of fear and the social need to fit into their environment. These internalized symptoms manifest itself in a lack of self-confidence [19] and symptoms of depression or anxiety [22]. They are prone to a certain degree of perfectionism [19]. Other studies have also shown that in some cultures, symptoms such as talkativeness and a sensitive nature are more associated with personality traits rather than a clinical symptom [24].

### Diagnosis

Diagnosis for ADHD is typically lower in female compared with their peers. One nationwide study in Finland observed a higher prevalence in males, but a sharp increase in prevalence by sex and age indicator in females. Adolescent and adult females with ADHD tripled during the 6-year study, while males doubled [23]. However, females are less likely to have their symptoms seen and referred for further diagnosis and treatment.

While symptom severity is generally comparable across all binary genders, symptom severity in females is lower in the undiagnosed population [4]. With time, they could learn how to blend and mask their internalized symptoms, or learned coping mechanisms to mitigate the effects of their symptoms.

### Treatment

Treatment for ADHD is significantly attributed to males more than females. A possible factor that may have contributed to this is the externalized and more disruptive nature of symptoms in males, which triggers an increase in clinical intervention [4]. Meanwhile, since ADHD in females can present subtler, the predictor for medication prescriptions is generally lower [17].

Treatment efficacy varies between males and females due to the difference in their symptoms. Males typically have a higher rate of ADHD medication prescribed due to their externalized symptoms. Studies showed that they significantly benefit in attention and task-related activities following stimulant use as children, and comparable improvement in symptom severity as an adult [9].

Different treatment results were observed in females, where they showed greater improvement in emotional regulation and social function [4]. Following a long-term 1-year period of treatment, girls displayed lower severity in symptom appearance, as well as better attention function generally [10].

### DISCUSSION

Prior research has shown that women have been underdiagnosed, with their symptoms overlooked and dismissed when they raise their concerns. Some studies have also highlighted internalized symptoms found in girls, and the sociocultural environment contributes toward an increase in undiagnosed, misdiagnosed, or late diagnosis of ADHD.

### Adverse Experience

For women, the generic difference in symptomatic appearance, especially early in their childhood, females with risk of ADHD are less likely to gain access to a referral diagnosis or gain the support and services that they might require [20]. This, in part, plays to their higher presentation of inattention, where many of the girls' symptoms were overlooked by their teachers.

Those who were diagnosed later in adulthood have also expressed early struggles to navigate their relationship, managing expectations, as well as the emotional toll that comes with not knowing what exactly occurred to them [15]. It also highlighted the aftermath of the diagnosis, where females also struggle with prior misguided information and the toll that comes with advocating for themselves.

### Effect of Misdiagnosis or Late Diagnosis

Short and long-term effects are recognizable in the symptomatic presentation of girls with ADHD, as

well as a range of issues related to their academic and social aspects. They are more likely to have their symptoms continue beyond their formative years [16]. These may include experiences with low self-esteem and heightened response to life stressors, but also translate into physical manifestations such as headaches, stomachaches with no other pathological association [20].

### Interventions

Strategies and efforts to counter the rising prevalence of ADHD within the female population should be done intersectionally. Additionally, it is important to increase awareness and understanding of different ADHD presentations among healthcare professionals. An establishment of accurate ADHD diagnosis should be established, and important considerations for past and current behavior patterns must be noted [20].

### FUTURE DIRECTIONS

Future research within the same subject should consider focusing on conducting more sex and gender-based studies, particularly to explore more deeply the short-term and long-term effects of an ADHD diagnosis for women. Expanding research in this topic through multi-collaboration with other fields (psychology, social studies, gender studies, sociology) may provide different insights and allow a more diverse approach to the way the healthcare community has treated ADHD.

### CONCLUSION

This scoping review observed differences in ADHD presentation between boys and girls. Girls typically present with more internalized symptoms of ADHD, such as lower confidence levels and depression. Internalized symptoms and perceived bias through sociocultural views enabled females to further internalize their symptoms and refuse treatment. This had for disastrous impact on their quality of life in the long term.

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