Sex and Gender Related Considerations in Attention-Deficit / Hyperactivity Disorder (ADHD)

Kaitlyn Blair[1] and Min Young Kim[2]

[1] Philadelphia College of Osteopathic Medicine, Philadelphia, PA, [2] Oakland University William Beaumont School of Medicine, Rochester, MI

Background

The need for a clear and easy to use factsheet for clinicians outlining the major sex and gender differences in Attention Deficit Hyperactive Disorder (ADHD) was determined by the American Medical Women's Association (AMWA) Sex and Gender Health Collaborative.

The goal of AMWA's Sex and Gender Health Collaborative is to improve access and exposure to sex and gender differences in healthcare as so few medical school curricula educate students on these differences. Reported by the AMWA, fewer than 20% of medical schools have an integrated women's health curriculum outside of traditional OB/GYN.

ADHD is underdiagnosed, undertreated, and frequently misdiagnosed in women due to lack of recognition of gender specific presentation. The accurate diagnosis and subsequent treatment of ADHD in women and girls requires a thorough understanding of gender-specific presentation, the impact of diagnosed comorbid conditions on accurate ADHD diagnosis, and the effect of masking on symptom presentation.

The following poster highlights the reviewed literature regarding sex and gender differences in the prevalence, diagnosis, referral for, prevention, clinical presentation, and treatment of ADHD. Our goal in disseminating this information in a clear and easy to understand manner is to reduce sex and gender related disparities in the treatment and diagnosis of ADHD.

The literature reviewed typically did not differentiate between gender and sex and used these terms interchangeably.

Methods

A Pubmed and Google Scholar search was performed using the search terms "ADHD," "women," "sex specific symptoms," "gender specific symptoms," "sex specific presentation," "gender specific presentation." A total of 25 peer reviewed sources sources were selected for review.

Comorbidities

- Women primarily exhibiting inattentive type symptoms may be inappropriately diagnosed with dysthymia rather than ADHD.
- Women exhibiting combined type symptoms with high energy and impulsivity may be misdiagnosed with bipolar disorder rather than ADHD. [15,16,23]
- Due to the influence of comorbidities on ADHD diagnosis, girls are more likely to be treated with antidepressants before receiving necessary ADHD treatment compared to boys. [16,17]
- Common comorbidities of ADHD in women often include anxiety and major depression. Their presence can decrease the likelihood that their ADHD will be diagnosed. [14,16]
- A history of anxiety and depression is much more likely in women who did not receive their ADHD diagnosis until adulthood. [16,19]
- Girls and women with ADHD have been found to be more likely to engage in risky sexual behavior than boys and men with ADHD. [7, 8, 10 16, 17]

Prevalence

The prevalence of ADHD in adults is estimated at 4%[9] with the estimated ratio of diagnosed females to males is approximated being 1:1.6.[20] For ADHD in children, studies show the ratio of diagnosed females to diagnosed males varies from 1:1.8 to 1:16.[20] Gender bias leading to a referral gap contributes to the difference in prevalence between males and females.[6,2] One significant example of gender bias contributing to the referral gap between males and females is teacher perception of clinical presentation. Teachers were found to be more likely to refer to a boy than a girl with equivalent symptom profiles.[21] Males with ADHD presenting with more hyperactive and impulsive behaviors, compared to females presenting with inattentive symptoms that are harder to detect contributes significantly to the referral gap and subsequently the diagnosis gap.[2]

Males with ADHD tend to exhibit "**externalizing**" disorders such as[2]:
- Alcohol misuse
- Antisocial personality disorder
- Conduct disorder

Females with ADHD tend to exhibit "**internalizing**" disorders such as[2]:
- Anxiety
- Depression
- Somatic symptoms
- Bulimia

Clinical Presentation

- In childhood, women with ADHD are more likely to be perceived as overly talkative, daydreamers, and behaviorally compliant. Cultural misrepresentation and stigma may prevent women from self-identifying as having ADHD [25]
- Young females typically mature sooner than males and and may develop better coping strategies allowing them to be better able to mask their emotional dysregulation, poor concentration and memory and impulsivity [16, 25]
- Interviews with girls with ADHD show that they perceive difficulties as personality traits, leading to increased risk of low self esteem, self blame, anxiety and internalising [18]
- Low self-esteem is more prominent in females with ADHD than in males with ADHD or non-ADHD female controls [4]
- While it was found that both girls & boys with ADHD exhibit impaired peer relationships compared to those without ADHD, girls with ADHD experienced that strongest impairment. [13]
- Premenstrual amplification of ADHD symptoms has been observed. [15, 16, 24]

Diagnostic Considerations

Diagnosis is based on the DSM-5 criteria for ADHD.[3]

- Due to masking and coping mechanisms, classroom performance, satisfactory academic achievement does not rule out ADHD in girls. [16]
- Poor peer relationships, anxiety, or self-esteem issues and/or somatic complaints may be initial clues to the impact that ADHD symptoms are having on girls and women in school, at work, or at home. [16]
- It has been suggested that women who are diagnosed with ADHD generally need to be more symptomatic than their male counterparts in order to be diagnosed. [11, 16, 22]
- Women frequentlydon't get diagnosed until someone else in their family gets diagnosed. [11, 16, 22]
- ADHD diagnosis peaks at age 8 in boys and age 17 in girls [11]
- Somatic symptoms, poor relationships with peers, anxiety, and poor self-esteem may be the first indicators of the impact of ADHD symptoms and the masking of ADHD symptoms on girls and women.[2,16]

Treatment & Therapeutics

- Medication
  - Stimulants (ex. amphetamines, methylphenidate)
  - Non-Stimulants (ex. atomoxetine, bupropion)
- Education
- Skills training
- Behavioral/psychological interventions
- ADHD medications may require titration throughout the menstrual cycle to optimize symptom management due to the differential response of stimulants with fluctuating estrogen levels. [15, 16, 24]

Discussion

- Women with ADHD are underdiagnosed, undertreated, and frequently misdiagnosed due to lack of recognition of gender specific presentation.
- The accurate diagnosis of ADHD in women and girls requires a thorough understanding of gender-specific presentation, the negative impact of diagnosed comorbid conditions on accurate ADHD diagnosis, and the effect of masking on symptom presentation.
- Cultural perception as well as externalizing vs internalizing factors of clinical presentation have an effect on the difference in referral rate and thus difference in diagnostic rate between males and females. Females are more likely to exhibit inattention, emotional reactivity, decreased self-esteem, and risky behavior.
- Satisfactory academic performance **does not** rule out ADHD in girls and women, as such parents may be the first to observe ADHD symptoms that are missed in school.
- Somatic symptoms, peer relationship struggles, and poor self-esteem may be the first indicators of underlying ADHD in some women due to the influence of masking.

Acknowledgement

Thank you to the Sex and Gender Health Collaborative of the American Medical Women's Association for their support

References

SCAN ME