

## *Summary*

# Gender Bias in Early Recognition of ADHD

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Recent studies of Attention Deficit/Hyperactivity Disorder (ADHD) emphasize that there is a gender bias in diagnosis of ADHD (Moldavsky, Groenewald, Owen, & Sayal, 2012; Pisecco, Huzinec, & Curtis, 2001; Sciotto, Nolfi, & Bluhm, 2004). Attention Deficient/Hyperactivity Disorder (ADHD) is a common neurodevelopmental and behavioral disorder in children, adolescents and adults (Anderson, Watt, Noble, & Shanley, 2012; Groenewald, Emond, & Sayal, 2009). According to the newly revised DSM-5 Diagnostic Criteria Reference Manual, ADHD has three presentations as hyperactivity-impulsivity, attention deficit and combined type (American Psychiatric Association (APA), 2013). In DSM-5 ADHD is classified as a neurodevelopmental disorder and the predicted age in diagnostic criteria in DSM-5 is changed.

Considering that ADHD is a very common and life-long disorder, it has been found that it is very important for the people with this diagnosis to be detected early and to make appropriate interventions (Tahiroğlu, Uzel, Avcı, & Firat, 2004). In school-age children, the prevalence of ADHD ranges from 3% to 7% worldwide (APA, 2000). The Center for Disease Control and Prevention has reported that 4.4 million children between the ages of 4 and 17 years in the United States are diagnosed with ADHD (Schroeder & Kelley, 2009). In Turkey, ADHD is seen in every 20 children (Göl & Bayık, 2013). Studies conducted with families and teachers on the diagnostic procedures of ADHD show that 8.1% of the children diagnosed in Turkey are children in the age of school between the ages of 6 and 12 (Erşan, Doğan, Doğan, & Sümer, 2004; Gül, et al., 2010). According to another research conducted in Turkey, it has been shown that 5% of children living in the urban area have ADHD (Güçlü & Erkıran, 2004). Distribution of ADHD presentations in Turkey indicates that inattentive presentation is seemed more in girls (40.6%) than boys (32.6%). Hyperactivity-impulsivity and combined presentations are seemed in boys (67.4%; 65.6%) more than girls (59.4%; 34.4%) (Erşan, et al., 2004). In a study conducted by Toros and Tataroğlu (2002), it was found that the prevalence of

ADHD was found to be higher (3.65 to 1) in boys older than nine years.

Parallel to these findings; Aras, Ünlü and Taş (2007) found that ADHD had a higher rate of admission to psychiatric clinics with hyperactivity presentations than boys (23.7%) and girls (8%). In the same study, only 17.8% of males and 4.6% of females were found to have ADHD. These differences result in the fact that children with predominantly external symptoms such as hyperactivity-impulsivity may be more easily identified by parents and teachers and the child then referred to appropriate services for further support by teachers (Aras et al., 2007). The prevalence of ADHD was found to be significantly higher in males than in females (Sciotto, Nolfi, & Bluhm, 2004) and males were diagnosed with ADHD twice or three times more likely than females (Coles et al, 2010; Kos, Richdale, & Jackson, 2004). It is known that children who are diagnosed with ADHD during schooling experience adverse outcomes in later periods when they do not receive any treatment (Hinshaw, 2002; Kopp, 2010, APA, 2013).

Early diagnosis of ADHD is essential for appropriate interventions in order to reduce its life-long effects of ADHD. Indeed, clinical field trials have shown that untreated ADHD is a risk factor in the development of antisocial behavior, substance abuse, and other psychiatric disorders in adulthood (Pineda, et al., 2000). Girls who have ADHD with inattentive subset symptoms without any treatment at risk of suffering from major depression, substance abuse, low academic and work performance, eating disorders, sleep disorders and interpersonal problems in adulthood (Crawford, 2003).

Early recognition and referral are very important in order to support the children with ADHD (Moldavsky et al., 2013; Sayal et al., 2006; Sciotto et al., 2004). However, according to Jackson and King (2004), teachers may have a gender based expectation in relation to children observed behaviors in classroom settings. For example, whilst children, displaying externalizing problematic behaviors maybe considered for ADHD and

referred to the relevant support services, children who may display ADHD subset symptoms of inattentiveness may be mistakenly misjudged or misunderstood due to the expected gender behavior serotypes (Erşan et al., 2004; Groenewald et al., 2009; Moldavsky et al., 2013; Sciutto et al., 2004). Studies of Attention Deficit and Hyperactivity Disorder (ADHD) emphasize that there is a gender bias towards this diagnosis (Moldavsky et al., 2012; Ohan & Visser, 2014; Pisecco et al., 2001; Sciutto et al., 2004). Another important issue for the research conducted in this area is that the researchers primarily focused on boys (Biederman, et al., 2002). One reason for this is that boys are more likely to be diagnosed with ADHD (Kopp, 2010). In other words, clinical diagnosis is predominantly given to male children, and the investigations are mainly focused on hyperactivity presentation, which is more common in boys. A limited number of studies have shown that ADHD hyperactivity presentation and combined presentation are more common in boys than girls, but in girls, inattentive presentation is greater than boys (Baurmeister, et al., 2007; Biederman et al., 2002; Moldavsky et al., 2013; Rucklidge, 2010). The presentation of attention deficit most common in girls are less studied and less understood (Marks et al., 2002; Quinn, 2005).

Thus the main purpose of this study is to examine the gender bias in recognition of ADHD by teachers at Turkish school settings. In addition to this, this also aims to provide descriptive findings.

## Method

### Participants

A sample of 100 primary school teachers ( $M_{\text{age}} = 40.6$ ;  $SD = 10.08$ ) were given six vignettes, meeting symptom criteria for ADHD (DSM-5) for inattentive, hyperactivity and combined presentations. Convenience sampling method was used to reach participants.

### Materials and Procedure

Primary school teachers took six vignettes about ADHD in terms of recognition and questions about vignettes. All of participants took these vignettes and questions in a same order. Then, participants took a demographic form which was used to collect demographic details of the teachers and their relevant experiences and education in relation to ADHD.

Vignette methodology was used in this research (Groenewald, et al., 2009, & Moldavsky et al., 2013) A total of six vignettes, produced for this study based on the requirement of symptoms of ADHD according to the DSM-5 criteria (APA, 2013). In this study, expert approval was obtained for constructing the vignettes

and professionals (two clinical psychologists and one psychiatrist) evaluated these vignettes on a 10 Likert scale for vignettes' representativeness (Eg. Vignette of Melis, which you read above how much represents presentation of Attention Deficit in DSM-5?) Intraclass Correlation Coefficient (ICC) was use for the reliability of recognition of girls and boy with same ADHD presentations in vignettes ( $ICC_{\text{attention deficit}} = .89$ ;  $ICC_{\text{hyperactivity}} = 1.00$ ;  $ICC_{\text{combined}} = .83$ ).

## Results

The results revealed that, teachers failed to recognize girl with inattentive presentation of ADHD ( $\Delta\chi^2(1) = 12.96$ ,  $p < .05$ ). Teachers recognized combined presentation in girls significantly less, and they recognized hyperactive presentation in girls significantly more than other presentations of ADHD vignettes ( $\Delta\chi^2(1) = 14.44$ ,  $p < .05$ ).

When the teachers' views examined it appeared that the girls with the same indications for hyperactivity vignette are more likely to be labeled as "learning difficulties" than boys (20 (K) / 4 (B)). Boys with the same designation for combined vignette are more likely to be labeled as "hyperactivity" than girls (60 (B) / 26 (G)). Girls with the same indications for attention deficit vignette are more likely to be labeled as "behavior problems" than their male counterparts (25 (B) / 8 (G)).

In addition, when teachers view on the need for medication was asked, all nonpharmacological interventions were selected by all classroom teachers ADHD presentations for both gender. Only few teachers reported the medication will be useful for inattentive presentation for both gender. Whilst, 32% of teachers reported that medication will be useful for the girl with combined presentation, 36% and 33% of teachers indicated the medication will be useful for the boy with hyperactivity-impulsivity and combined presentation.

## Discussion

Analysis of the study revealed that, teachers failed to recognize girls with inattentive presentation of ADHD. Teachers recognized combined presentation in girls significantly less, and they recognized hyperactive presentation in girls significantly more than other presentations of ADHD vignettes. Although % 95 of teachers indicated that they were familiar with ADHD, they identified inattentive girl vignettes as less likely for ADHD presentation. Vignette of a boy with combined ADHD presentation was identified as more likely to be ADHD than a girl with combined presentation. There was no difference in recognition of hyperactivity

presentation of girl and boy vignettes. Although a big majority of teachers indicated that the need of working with parents, academic and social support and behavioral interventions for the vignettes given, only very small percent of teachers indicated that medication might be helpful for inattentive presentation of ADHD.

The primary school teachers have a huge role in recognition and early intervention in treatment of ADHD. In recent studies emphasize that there is gender bias in girls with inattentive presentation of ADHD (Biederman et al., 2002; Groenewald et al., 2009; Moldavsky et al., 2013; Mullica et al., 2011; Scitutto et al., 2004). Mullola and colleagues (2011) explained that child's gender influenced teacher judgments of behaviors of a student such as having disruptive behavior or not. Their study indicated that there are cultural gender role norms and expectations of teachers formed on such norms might lead them to see girls as quiet, well-behaved and undisruptive. It is therefore plausible that teachers may perceive inattentive girl who are not problematic and teaching them is not disrupted. Thus, they may not require specialized help. As it was hypothesized, the results revealed that primary schoolteachers failed to recognize girls with inattentive presentation. When these children are not recognized by their teachers, they will be late for intervention and required treatments. Furthermore, as it was hypothesized that primary school teachers were less likely to recognize the combined presentation of ADHD vignette if the gender is a girl particularly and this was also confirmed by the finding of this study (Moldavsky, et al., 2013). In addition to these findings, one of the hypotheses of the study was that the primary school teachers will be more likely to recognize the hyperactive presentation of ADHD vignette with boy than girl, however this was not supported. This could be related to the cultural expectations as hyperactivity is associated with boys. Although hyperactivity presentation is more reported to the psychiatric clinics and psychological services particularly for boys in Turkey (Aras et al., 2007), girl with hyperactivity presentation was more recognized in the current study.

There are some limitations in this study that the predictors that may be important for the effective management of ADHD for all subtypes could not be examined in this study. Further evidence on other subtypes recognition will also be important for effective management of ADHD. Yet again, due to the low number of male teacher participants, gender differences were not observed in relation to ADHD presentation's recognition. It is advisable that future studies should address these questions.

To sum, primary school teachers have an important role in recognition of ADHD for relevant interventions

and effective management of such disorder. Early recognition will help to reduce the stress of children, parents as well as teachers. Especially, there is a need to emphasize the inattentive presentation of ADHD with girls and its signs to be recognized by the teachers. Thus in order to increase awareness and inform teachers about ADHD presentations relevant trainings should be given particularly to the primary school teachers. Vignettes, introduced in this study can be used in such trainings, further clinical and research related practices.