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ORIGINAL ARTICLE

Factors predicting treatment adherence in patients with adult attention-deficit/hyperactivity disorder: a preliminary study

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Abstract This study aimed to elicit patient- and treatment-related factors that can potentially predict treatment adherence in adult ADHD. Subjects who were over 18 and received a diagnosis of ADHD were included in the study. Chart review data of 102 subjects regarding demographics, medications, comorbidities, concomitant medications and domains of functional impairment were collected, and predictors were assessed using a binominal logistical regression model. One hundred and two patients (78.4 % male) with a mean age of 28.8 (SD = 9.8, range = 18–55) years were enrolled in the study. Childhood diagnosis of ADHD, agents used for treatment (MPH or atomoxetine), individual domains of dysfunction and use of additional psychotropic drugs were not found to be related to treatment adherence. Patients with a university education and those referred for family history of ADHD were more likely to adhere to treatment ($p = 0.05$ and 0.03, respectively). On the other hand, reasons for referral other than ADHD were significantly more frequently related to non-adherence ($p = 0.02$). Treatment noncompliance remains a significant problem despite therapeutic effects of medications. Identification of predictors of non-adherence can lead to heightened awareness of special populations at risk. We have found that prior awareness on ADHD (via past history/media/friends) leading to self/clinician referral to rule out ADHD and pervasiveness of symptoms across functional domains led to better compliance in our sample. Future research with prospective design utilizing objective tools for adherence is required.

Keywords Adult ADHD · Pharmacology · Treatment compliance · Treatment adherence

Introduction

Attention-deficit/hyperactivity disorder (ADHD) is the most common neurobehavioral disorder of childhood with an estimated worldwide prevalence of 5 % (Barkley 2005). It is characterized by age-inappropriate and impairing inattention, hyperactivity and impulsivity. Until recently, ADHD has been widely recognized and described as a condition affecting school-aged children; however, the view that the signs and symptoms of the disorder remit in adulthood obviating the need for treatment is being increasingly challenged (Biederman and Faraone 2005). Most of the prospective studies that were commenced in childhood demonstrated that the signs and symptoms of the disorder continued either unabated or with partial remission in approximately two-thirds of the patients (Kessler et al. 2006).

National Comorbidity Survey Replication (NCS-R) in the USA found that the prevalence of ADHD among those older than 18 years was 4.4 % (Kessler et al. 2006). Adult patients with ADHD are reported to have significantly more vocational (Biederman et al. 2006; Halmoy et al. 2009), interpersonal (Murphy and Barkley 1996), legal

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(Retz and Rosler 2009) and substance abuse-related (Wilens 2004, 2007) problems.

Pharmacotherapy is central in treatment of ADHD, and medications that are used in treatment are generally considered effective (Buitelaar et al. 2011). Evidence-based guidelines recommend psychostimulants and atomoxetine as treatments for adult ADHD (Kooij et al. 2010; Seixas et al. 2012).

Previous studies have shown that adherence to the medication management is as important as efficacy of treatment, as overall improvement can be affected by both parameters. (Kooij et al. 2010; Safren et al. 2007). It is possible that some of the remaining symptoms after medication treatment are due to less than optimal adherence to the regimens. This may be particularly true for ADHD compared to other psychiatric diagnoses due to the nature of some of the core symptoms of ADHD (e.g., attention problems, impulsivity, forgetfulness and disorganization). ADHD can decrease medication compliance and interfere with the potentially beneficial effects of pharmacological interventions (Safren et al. 2007).

A large number of the previous studies have recorded low adherence to medication regimens in adults with ADHD. A wide range (13–64 %) for non-adherence was shown in a review of 11 adherence studies in adults and children with ADHD (Adler and Nierenberg 2010). In a study of 66 adults receiving short-acting methylphenidate (MPH), participants reported using their medication as prescribed only half of the time (Darredeau et al. 2007). In a naturalistic study where data from a large number of patients were collected from pharmacy claims, only 50.5 % of immediate-release methylphenidate patients and 61.4 % of extended-release methylphenidate patients had more than one pharmacy claim for the index MPH medication (Olfson et al. 2007). In a placebo controlled clinical trial setting, very high adherence patterns (92.6–93.3 %) for OROS methylphenidate were reached; however, the authors acknowledged that these percentages may not be representative of adherence in naturalistic settings (Kooij et al. 2013).

Although reasons for treatment adherence are complicated and multifactorial, previous studies found recent diagnosis, female gender, higher education, higher symptom severity and concurrent illicit substance use to predict risk of non-adherence (Darredeau et al. 2007; Kooij et al. 2013). A study of adherence measured by modified adherence questionnaire in 27 adults with ADHD showed that 22 % was less than 80 % adherent, and 44 % of the patients were less than 90 % adherent to the medication regimen for the 2-week period. The authors reported that self-reported adherence to ADHD medications was negatively associated with severity of ADHD symptoms and discussed the directionality of this association (Safren et al. 2007).

More studies have focused on medication adherence in children and adolescents than in adult ADHD, and previous studies concluded that further studies are needed to understand the factors affecting treatment adherence, particularly the impact of medication non-adherence on the symptoms of ADHD and related outcomes (Adler and Nierenberg 2010). The objective of this study is to examine the predictors for treatment compliance in pharmacotherapy of adult ADHD in an effort to identify special populations at risk when starting treatment.

Materials and methods

Study center and sampling

This retrospective, chart review study was conducted at two treatment centers (a private clinic and a private hospital) in Istanbul, Turkey. Eligible subjects enrolled in the study were adults (>18 year old) with a Diagnostic and Statistical Manual of Mental Disorders (4th ed., Text Revision, DSM-IV-TR) diagnosis of ADHD. The presence of mental retardation, psychotic disorders and progressive/static neurological disorders (including seizures) were reasons for exclusion. Comorbid psychiatric disorders were captured by detailed psychiatric examination, and all of the diagnoses were based on DSM-IV TR criteria. This study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki and that are consistent with good clinical practices. Written informed consent was obtained from all patients after they were provided with an extensive explanation of the nature and procedures of the study.

Measures

Sociodemographic and clinical data

Sociodemographic and clinical information about patients were collected by chart review and involved gender, marital status, education, vocational status, history of childhood diagnosis of ADHD, reasons for application for treatment, history of comorbid psychiatric disorders (i.e., substance use disorders, anxiety disorders, mood disorders and impulse control disorders) and medications used for treatment (i.e., SSRIs, antipsychotics, mood stabilizers, atomoxetine and methylphenidate).

Diagnosis of ADHD

Diagnoses of ADHD were established by two different experienced clinicians based on DSM-IV TR criteria, using Turkish version (Günay et al. 2005) of Adult ADD/ADHD DSM-IV-based Diagnostic Screening and Rating Scale (Turgay 1995). The clinicians utilized Adult ADHD Self-Report Scale (ASRS) Turkish version to support their diagnoses.

Clinical Global Impression-Improvement (CGI-I scale)

The CGI scale is a simple instrument that evaluates the overall severity of mental disorders. The CGI-I scale consist of a 7-item Likert-type scale which allows the clinician to compare the patient's baseline condition to his or her current condition (Guy 1976).

Definition of adherence

Adherence is defined as the extent to which patients take medication, as prescribed by their healthcare provider, over the time period when they are persistent with medication. Persistence is a measure of the period of time over which patients continue to take medication, which has been initiated and not discontinued by a healthcare provider (Caisley and Muller 2012). Because of the chart review nature of the current study, persistence and adherence to treatment regimen could not be teased apart, and adherence was defined as general compliance to the recommended treatment and a patient was deemed adherent if he/she participated in (1) first (within 4 weeks) and (2) second (4–8 weeks) follow-up appointments after initial diagnostic appointment(s) and (3) declared at least 80 % adherence to the prescribed regimen. Patients were deemed to have poor adherence if they did not satisfy the three criteria above.

Domains of dysfunction

Domains of dysfunction were assessed by a questionnaire developed to collect information regarding patients' functioning in different settings. Academic/occupational impairment includes problems at school or work, repeating a year, failure to promote, being fired or expelled due to inadequate performance. Family/romantic impairment includes relationship problems due to impulsive decisions, failure to meet expectations or take responsibility, getting into frequent arguments and experiencing frequent break-ups. Other social impairments include excessive use of internet, not delivering friendship requirements, too much social planning. Risky behavior was assessed by the following criteria: traffic accidents at fault within the past year, tobacco, alcohol and drug abuse, recent event that led to filing of a police report, getting into frequent physical fights and getting into frequent verbal arguments. Other problems were deemed positive if the patent had life impairing sleep or eating problems. At least one affirmative response in academic/occupational, family/romantic, other social, risky behavior and other problems domains that had occurred most of the time and that caused impairment according to patients' declarations were judged to be positive for dysfunction in the specified domain.

Treatment

Patients were offered either atomoxetine or long-acting methylphenidate treatment as well as psychoeducation and non-structured coping skills training, built into their medication management sessions. The sessions were offered at least monthly. Data for participation in scheduled appointments as well as the number of missed medication doses (via self-report) were collected in each visit.

Statistics

A priori sample size analysis at the planning stage using G*Power 3 software revealed that for a two-tailed logistic regression with a p level of 0.05 to achieve 80 % power, it requires 113 subjects but only 102 patients were found to fulfill criteria within study duration leading to a power of 76 % (Faul et al. 2007). Statistical evaluations were performed by SPSS 15.0 program (SPSS Inc., Chicago, IL, USA). Chi-square test and Fisher's exact Chi-square test (when needed) were used for comparison of categorical variables. Continuous variables were compared by using t test. Continuous variables were reported as means (with standard deviations), while categorical variables were identified as percentages. Binomial logistic regression analyses were used to model predictors of treatment non-compliance. Age, gender, comorbid psychiatric diagnosis, use of other psychiatric medications, reasons for referral and domains of functional impairment were all regarded as possible predictors. P was set at 0.05 and all analyses were two-tailed.

Results

One hundred and two patients ($n = 80$, 78.4 % male) with a mean age of 28.8 years (SD = 9.8, range 18–55 years) were enrolled in the study. Most of the patients were young adults (44.1 %) and were still students (50.0 %). Clinical and sociodemographic features of patients according to gender are listed in Table 1.

Almost one-fourth (23.0 %, $n = 23$) of the sample were diagnosed with ADHD-Not Otherwise Specified (NOS)

Table 1 Clinical and sociodemographic features of adult patients with ADHD

	Males (%) ($n = 80$)	Females (%) ($n = 22$)	Total (%) ($n = 102$)	p
Education				
High school	23.8	13.6	21.6	0.39
University	76.3	86.4	78.4	0.39
Vocational status				
Student	50.0	50.0	50.0	0.34
Working	43.8	36.4	42.2	1.00
ADHD				
Combined	36.3	31.8	35.3	0.80
Hyperactive/impulsive	16.3	13.6	15.7	1.00
Inattentive	25.0	31.8	26.5	0.59
Comorbid Dx.				
Any disorder	28.8	40.9	31.4	0.31
Anx. D.	6.3	18.2	8.8	0.09
Mood D.	8.8	18.2	10.8	0.25
ICD	5.0	0.0	3.9	0.58
SUD	8.8	4.5	7.8	1.00

Chi-square test

ADHD attention-deficit/hyperactivity disorder, *Anx D* anxiety disorders, *Mood D*. mood disorders, *ICD* impulse control disorders, *SUD* substance use disorders, *Dx* diagnoses

Table 2 Reasons for referral in adult patients with ADHD

	Male (%) ($n = 80$)	Female (%) ($n = 22$)	Total (%) ($n = 102$)	p
To rule out ADHD[a]	51.3	31.8	47.1	0.15
Other reasons[b]	37.5	54.5	41.2	0.22
Family history of ADHD[c]	11.3	13.6	11.8	0.72

[a] Patients who are grouped under "ruling out ADHD" are those who learned about ADHD symptomatology through media (TV, radio, Internet, written publications), or through their primary care doctors or other specialists

[b] "Complaints other than ADHD" group are patients who are seen by the study psychiatrist reasons other than ADHD but received ADHD diagnosis during the intake

[c] "Family History of ADHD" group are those who had a close family member with ADHD and thus had increased awareness to seek treatment for their symptoms

due to lack of age of onset for symptoms. Those were mostly male ($n = 18$) although gender was not significantly associated with a diagnosis of ADHD-NOS ($\chi^2 = 0.00, df = 1, p = 1.00$). A diagnosis of ADHD-NOS was significantly associated with being a student ($p = 0.00$) or worker ($p = 0.05$), while level of education was not (Chi-square test). Having any comorbid disorder, a substance use disorder and mood disorder were significantly associated with being diagnosed with ADHD-NOS ($p = 0.02$, 0.01 and 0.00, respectively). Patients diagnosed with ADHD-NOS were significantly younger and had more education than those with ADHD (Student's t test, $p = 0.02$ and 0.04, respectively).

Most common reasons for referral and their breakdown according to gender are detailed in Table 2.

In bivariate analyses, no sociodemographic or clinical variable was found to be associated with a specific reason for referral apart from having a comorbid mood disorder diagnosis. Other comorbid disorders were not associated with a specific referral type. Patients with comorbid mood disorders were significantly more likely to be referred for other reasons ($p = 0.05$).

For the patients included in the study, the specific types of medications prescribed for ADHD varied: 73.5 % were on stimulants (long-acting methylphenidate) and 26.5 % were on atomoxetine. None of the patients were prescribed other psychotropic medications (i.e., bupropion and modafinil) primarily for ADHD. Almost one-fourth (22.5 %) of the patients received additional medications; 13.7 % were on an antidepressant, and 8.8 % were on atypical

Table 3 Domains of dysfunction in adult patients with ADHD

	Males (%) ($n = 80$)	Females (%) ($n = 22$)	Total (%) ($n = 102$)	p
Academic/occupational	86.3	95.5	88.2	0.45
Family/romantic relationships	63.8	68.2	64.7	0.70
Other social	68.8	59.1	66.7	0.40
Risky behaviors	47.5	22.7	42.2	0.04*
Other[a]	23.8	40.9	27.5	0.11

Chi-square test (with Fisher's exact test as needed)

* Statistically significant

[a] Sleep/appetite/sexual problems

antipsychotic medications. Males were prescribed methylphenidate significantly more frequently for ADHD, and this difference had a small effect size ($\chi^2 = 5.2$, $df = 1$, $p = 0.02$, $\Phi = 0.2$).

Functional impairment assessment results revealed that the patients had impairments in multiple domains. Risky behaviors were significantly more common among males, although with a small effect size ($\Phi = -0.21$, $p = 0.04$), and other domains were affected across both genders (Table 3).

Past history revealed a childhood diagnosis and treatment of ADHD in only 25.5 % of the sample with no significant difference between genders ($p = 0.79$).

Evaluation of treatment response at 8–12 weeks revealed that 22.5 % of the patients were "very much improved," while 31.4 % were "much improved." As such, 53.9 % of the patients were deemed treatment responders (i.e., CGI-I 1 or 2).

Sixty patients were adherent to the treatment regimen (58.8 %). Patients who adhered to their treatment did not differ significantly from non-adherents in terms of their age. Sociodemographic and clinical variables of patients in terms of their adherence are listed in Table 4.

Childhood diagnosis of ADHD, diagnosis of ADHD-NOS, agents used for treatment (MPH or atomoxetine), individual domains of dysfunction and use of additional psychotropic drugs were not found to be related to treatment adherence. Patients with a university education and those referred for family history of ADHD were more likely to adhere to treatment ($p = 0.05$ and 0.03, respectively). On the other hand, reasons for referral other than ADHD were significantly more frequently related to non-adherence ($p = 0.02$).

Median CGI-I scores at the last evaluation for treatment adherents and non-adherents were found to be 2.0 and 4.0, respectively, and this difference was found to be statistically significant (Mann–Whitney U test, $p = 0.00$). Treatment response is significantly associated with treatment adherence with a large effect size ($\chi^2 = 45.2$, $df = 1$, $p = 0.00$, $\Phi = 0.67$).

One hundred and two patients were included in the logistic regression model. Gender, age, having a high school or university education, the presence of childhood diagnosis of ADHD, reasons for referral and number of domains of dysfunction were included as predictors for the model. Enter method was utilized for logistic regression. Initial analysis revealed that our model tended to predict the entire treatment compliant group but none of the treatment non-complaints (avg. % 58.8 correct prediction, $p = 0.08$, OR 1.4).

Second-level analysis with addition of variables ($\chi^2 = 77.0$, $p = 0.00$) was able to predict 91.7 % of the treatment adherents and 81.0 % of treatment non-adherent patients (avg. 87.3 %). An evaluation of odds ratios revealed that reasons for referral other than ADHD and number of dysfunctional domains were the only clinically significant predictors (OR 10.1 and 3.2, respectively) (Table 5).

Discussion

This is a retrospective, chart review study on predictors of treatment compliance in adult patients with ADHD. In this study, we found that 58.8 % of our patients were adherent to medications prescribed for their ADHD for a period of at least 8–12 weeks. Bivariate analyses revealed that adherence was significantly associated with having a university education, treatment response and referral for family history of ADHD, while reasons for referral other than ADHD were related to non-adherence. Binary logistic regression analysis revealed that reasons for referral other than ruling out ADHD and pervasiveness of dysfunction are the most clinically important predictors for non-adherence.

Adherence in our sample fell within the range of other naturalistic study results of 11–64 % (Christensen et al. 2010; Olfson et al. 2007; Soendergaard et al. 2015); however; as is the case for other treatment trials, it is significantly below placebo controlled double-blind controlled trials (Kooij et al. 2013). The patients in our study,

Table 4 Sociodemographic and clinical variables of adult patients with ADHD in terms of their adherence to treatment for 8–12 weeks

	Adherent (%) ($n = 60$)	Non-adherent (%) ($n = 42$)	p
Male	80.3	75.6	0.63
Education			
High school	14.8	31.7	*0.05*
University	85.2	68.3	*0.05*
Vocational status			
Student	50.8	48.8	1.00
Working	40.9	41.5	1.00
ADHD			
Combined	37.7	31.7	0.67
Hyperactive/impulsive	11.5	22.0	0.17
Inattentive	26.2	26.8	1.00
Comorbid Dx.			
Any disorder	31.2	31.7	1.00
Anx.	6.6	12.2	0.48
Mood	13.1	7.3	0.52
ICD	6.6	0.0	–
SUD	4.9	12.2	0.26

Chi-square test

Italic values indicate statistically significant ($p < 0.05$)

ADHD attention-deficit/hyperactivity disorder, *Anx* anxiety disorders, *ICD* impulse control disorders, *SUD* substance use disorders

Table 5 Predictors of treatment adherence in adult patients with ADHD

	Step 0		Step 1	
	OR	p	OR	p
Constant	1.4	0.08	0.6	0.79
Gender	–	0.65	1.1	0.90
Age	–	0.74	1.0	0.57
High school education	–	*0.05*	0.58	0.53
University education	–	*0.05*	–	–
Childhood ADHD	–	0.43	2.7	0.22
Referred for family Hx of ADHD	–	*0.01*	*0.0*	*0.01*
Referred for other reasons	–	*0.00*	*10.1*	*0.01*
Tx response	–	*0.00*	*0.0*	*0.00*
Number of dysfunctional domains	–	*0.03*	*3.2*	*0.01*

Italic values indicate statistically significant ($p < 0.05$)

OR odds ratio, *Hx* history, *Tx* treatment

who discontinued treatment, did so within the first 2 months, and the rest persisted for more than 12 weeks. This finding is similar to a controlled 24-week study of long-acting methylphenidate in adult ADHD, where 43.9 % of the patients discontinued within the first 5 weeks, and 63.4 % discontinues by the end of second month (Sobanski et al. 2014). Although, the cross-sectional and retrospective nature of our study precludes hypotheses of causality, this observation may support the previous position that non-compliance in adult patients with ADHD may be more common in the beginning of treatment. Also, beginning of the treatment includes psychoeducation, and missing the initial psychoeducation predicts later dropout, as previously shown (Soendergaard et al. 2015). It may be suggested that special precautions (i.e., closer follow-up and use of rating scales) and psychoeducation on both the diagnosis and treatment modalities may be beneficial.

We did not find significant difference between genders for treatment compliance, but reasons for referral as well as education significantly affected treatment adherence. Several studies report less treatment discontinuation in female than in male patients with adult ADHD (Lawson et al. 2012; Sobanski et al. 2014; Wong et al. 2009). Another study of adult ADHD patients, however, reported better adherence in male patients. (Kooij et al. 2013). Therefore, it can be said that data relating to the effects of gender on treatment adherence in adult ADHD are inconsistent. The lack of a significant effect of gender on treatment adherence in our sample may possibly be due to other factors such as scarcity of female patients in the study (78.4 % males vs 21.6 % females) and the fact that the majority of female subjects in our study group were referred due to "other reasons," which came out as a predictor for less treatment adherence as shown in our results.

Some studies reported that higher education predicted risk of non-adherence (Darredeau et al. 2007; Kooij et al.

2013), while others reported 2.19 times more missed appointments with low education levels (Soendergaard et al. 2015). We found a trend for the latter argument (i.e., higher educated tended to be more compliant with treatment). Our study population, which had an overall high educational status [78.4 % college degree, mean education of 14.1 (SD = 1.7) years], was likely composed of individuals who require more skills related to attention and executive functioning to meet their vocational, educational and relational needs and thus were more motivated to adhere to treatment recommendation to alleviate their impairment. We think that effect of education on treatment adherence may be best assessed with a more divergent sample in terms of education.

We did not find a statistically significant difference for adherence to prescriptions of atomoxetine or long-acting methylphenidate preparations. This result could be explained by our limited and self-selected sample and should be clarified with further studies on more diverse samples. The lack of impact of concomitant psychiatric medication use (antidepressants and atypical antipsychotics) on treatment adherence may not reflect the importance of addressing comorbidities and residual symptoms in adult patients with ADHD and may be due to sampling bias (Darredeau et al. 2007; Kooij et al. 2013). It can be postulated that when comorbidities were addressed with concomitant medications, patient's overall symptom burden and impairment decreased, which subsequently may increase their treatment compliance.

Our results showed childhood diagnoses of ADHD did not predict adherence to treatment. This finding was surprising as we expected prior diagnosis would further strengthen diagnostic stability and therefore adherence. Relatively, low number of participants with past diagnoses (25 %), likely caused by inadequate access to mental health care, and a diagnosis of ADHD not being considered when these subjects were in their school years (in Turkey, ADHD awareness and diagnostic and treatment options have only become mainstream in the past few years) may be the reason for the absence of childhood diagnoses as a predictor. Also, many of the subjects who were diagnosed in childhood years were refused treatment by their parents at the time due to stigma against psychiatric drug treatments. Therefore, we could not assess the effect of prior treatment efficacy on adherence to current treatment.

Interestingly, our study showed that reason for referral to treatment has a significant effect on treatment adherence and persistence. If patients were referred to the psychiatrist to rule out ADHD, meaning they had an understanding of a possible diagnosis of ADHD, which was then confirmed by our study psychiatrist, the patients were more likely to adhere to the treatment regimen. The pervasiveness of dysfunction due to ADHD (i.e., domains affected by symptoms) also significantly predicted treatment adherence. Conversely, if the patient was referred for other reasons, but ADHD symptoms were first noticed and diagnosed by the psychiatrist, they were less likely to adhere to the treatment recommendations. This finding speaks to the fact that although ADHD can be diagnosed and effectively treated, the patients need to build a readiness to accept the diagnosis to adhere to the treatment. Readiness can be a multi-step process which may require patients being exposed to information on ADHD symptomatology and its impact on one's life from multiple sources. These sources can be numerous, extending from increased awareness through media coverage on adult ADHD to education by primary care physicians. We suggest that increased awareness, presentation and correct referral through media may help to build readiness to accept diagnosis. Similarly, other healthcare specialists may provide psychoeducation and correct referral by identifying symptoms through quick screening measures (Montano 2004). Additionally, the observation that one's children or relatives with ADHD had benefited from medication treatment may further increase motivation for treatment. These measures are expected not only to increase diagnosis and treatment for the affected individuals but also will help increase their adherence to the treatment regimen. Psychotherapeutic and psychoeducational resources and recruiting and utilizing family members in treatment process may also be suggested to for increased adherence.

The main limitations of our study are its cross-sectional and retrospective nature, lack of documentation of symptoms and treatment effects via specialized scales and sampling bias. A clinical sample from a private center and a private hospital psychiatry outpatient clinic consisting of highly educated young adults who are still in academic education or are young white-collar professionals and who are mostly referred (self/clinician) to rule out the presence of ADHD may have limited external validity. The male predominance of our sample is also a limitation. Evaluating adherence as well as past diagnosis of childhood ADHD via patient reports may have led to recall bias, yet although evaluating adherence via medication diaries or pill counts would arguably be more objective, these measures would have been interpreted perhaps as offensive to the patients. Evaluation of domains of dysfunction using a structured method would also have been preferable; however, since there is no such structured measure which has validity and reliability in Turkish.

In conclusion, ADHD among adults causes significant functional impairment for patients and their families (Biederman et al. 2006), which, to an extent, can be successfully corrected with pharmacological interventions (Faraone and Glatt 2010). Nevertheless, treatment

noncompliance remains a significant problem despite therapeutic effects of medications (Castells et al. 2013). Identification of predictors of non-adherence can lead to heightened awareness of special populations at risk and development of strategies to increase compliance in an effort to improve prognosis and decrease relapse rate in adult ADHD. We have found that prior awareness on ADHD (via past history/media/friends) leading to self/clinician referral to rule out ADHD and pervasiveness of symptoms across functional domains led to better compliance in our sample. Future, multicenter studies using objective indicators of adherence preferably from differing countries and involving samples distributed equally for gender are required to verify our findings.

Compliance with ethical standards

Conflict of interest The authors have no financial affiliations to disclose.

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