

The Prevalence of Symptoms and Diagnosis of Attention-Deficit-Hyperactivity Disorder Among Adult Female Patients with Mild / Moderate Major Depressive Disorder Who Were Referred to the Psychiatric Outpatient Department of a Training Hospital: A Preliminary Study

Sukriye Bosgelmez¹,
Ali Evren Tufan²

¹Psychiatrist, Kocaeli Derince Training and Research Hospital, Department of Psychiatry, Derince, Kocaeli - Turkey

²Assist. Prof. Dr., Abant İzzet Baysal University, Faculty of Medicine, Department of Child and Adolescent Mental Health, Golkoy, Bolu - Turkey

ABSTRACT

The prevalence of symptoms and diagnosis of attention-deficit-hyperactivity disorder among adult female patients with mild / moderate major depressive disorder who were referred to the psychiatric outpatient department of a training hospital: a preliminary study

Objective: Attention deficit hyperactivity disorder (ADHD) and major depressive disorder (MDD) are frequently comorbid among adults. Also, people diagnosed with ADHD in adulthood frequently apply to psychiatry departments with complaints of anxiety and depression, especially irritability. In this study, it was aimed to determine the prevalence of ADHD symptoms and diagnosis among adult female patients, who were referred to the outpatient psychiatry clinic and diagnosed with MDD as well as to evaluate the relationship between symptoms of ADHD and MDD.

Method: Sixty-one female patients with MDD, who were evaluated for the first time in a training and research hospital between June 2008 and July 2009 were enrolled in the study. MDD severity was mild-moderate according to Clinical Global Impression Scale (CGI-S) and none of the patients had Axis I comorbidity. Hamilton Depression Rating Scale (HAM-D), Wender Utah Rating Scale (WURS) and Adult ADHD Rating Scales (A-ADHRS) were applied to the participants. Non-parametric methods were used for analyses and p value was set at 0.05.

Results: In the study, 31.1% of patients were found to have WURS scores 36 and above. Four patients (6.5% of the whole sample and 11.1% of those scoring at least 36 with WURS) had adult type ADHD, when they were evaluated with A-ADHRS and interviewed according to DSM-IV criteria. There were no significant differences between patients with WURS ≥ 36 and others in terms of their educational levels, HAM-D scores, number of depressive episodes, and duration for the remission of index episode. Similarly, there were no significant differences between patients with WURS ≥ 36 and patients diagnosed with adult ADHD according to A-ADHRS and DSM-IV criteria in terms of their age, educational levels, HAM-D scores, number of depressive episodes, and duration for the remission of index episode.

Conclusion: The prevalence of adult ADHD was higher than those reported for general community in our country. The lack of relationship between the evaluated variables of MDD and symptoms as well as diagnosis of ADHD in our sample may be due to our inclusion of female outpatients with mild/moderate MDD. Further studies evaluating those relationships may yield different data related to comorbidity of ADHD-MDD.

Key words: Attention-deficit hyperactivity disorder, adult, comorbidity, female, major depression

ÖZET

Bir eğitim hastanesinin psikiyatri polikliniğine ilk kez başvuran ve hafif-orta şiddette majör depresif bozukluk tanısı alan erişkin kadın hastalarda dikkat eksikliği/hiperaktivite belirtileri ve tanısının yaygınlığı: Öncü bir araştırma

Amaç: Erişkin dikkat eksikliği hiperaktivite bozukluğu (DEHB) sıklıkla majör depresif bozuklukla (MDB) birlikte görülmektedir. Erişkinlikte DEHB tanısı konan bireyler psikiyatri polikliniklerine, çoğunlukla anksiyete ve depresyona bağlı şikayetler, özellikle de iritabilite yakınması ile başvurumaktadırlar. Bu çalışmada, polikliniğe ilk kez başvuran, MDB tanısı konan erişkin kadın hastalarda DEHB belirtileri ve tanısının yaygınlığı ve DEHB belirtileri ile MDB ilişkisini belirlemek amaçlanmıştır.

Yöntem: Haziran 2008 - Temmuz 2009 tarihleri arasında bir eğitim ve araştırma hastanesi psikiyatri polikliniğine ilk kez başvuran, Klinik Global İzlenim Ölçeği (KGI) ile depresif belirtilerinin şiddeti hafif-orta olarak belirlenen, eş tanısı olmayan MDB tanılı 61 kadın hasta çalışmaya alınmıştır. Hastalara Hamilton Depresyon Ölçeği (HDO-17), Wender-Utah Derecelendirme Ölçeği (WUDÖ), Erişkin Dikkat Eksikliği Hiperaktivite Değerlendirme Ölçeği (E-DEHDO) uygulanmıştır. Analizlerde non-parametrik testler kullanılmış ve p değeri 0.05 olarak kabul edilmiştir.

Bulgular: Çalışmada hastaların %31.1'inde WUDÖ puanları 36 ve üstünde saptanmıştır. Bu hastalar E-DEHDO ve DSM-IV-TR ölçütlerine göre değerlendirildiğinde ise dört kişi (tüm örneklem %6.5'i, WUDÖ ile belirlenenlerin %11.1'i) tanı almıştır. WUDÖ puanları ≥ 36 olan grup ve geri kalanlar arasında ortalama eğitim süresi, HDO-17 puanları, epizot sayısı ve son epizotta tedavi için geçen süre karşılaştırılmış ve iki grup arasında fark saptanmamıştır. Diğer yandan WUDÖ ≥ 36 olanlar ve ek olarak E-DEHDO ve DSM-IV ölçütlerine göre erişkin DEHB tanısı alanların ortalama eğitim süresi, yaş, epizot sayısı, son epizot tedavi süresi ve ilk HDO-17 puanları karşılaştırıldığında aralarında anlamlı fark saptanmamıştır.

Sonuç: Örneklemimizde saptanan erişkin tip DEHB yaygınlığı ülkemizde, genel toplum için bildirilen yaygınlığın üzerindedir. DEHB tanısı ile MDB'ye ilişkin çalışmada değerlendirilen değişkenler arasında bağlantı bulunamaması örneklemimizin ayakta takip edilen, hafif-orta şiddette MDB hastalarını kapsamasıyla ilişkili olabilir. Bu noktaları ele alacak yeni çalışmalar MDB-DEHB birliğine yönelik farklı bilgiler ortaya koyabilir.

Anahtar kelimeler: Dikkat eksikliği hiperaktivite bozukluğu, erişkin, eştanı, kadın, majör depresyon



This study was presented in 48th National Psychiatry Congress as poster presentation.

Address reprint requests to / Yazışma adresi:
Psychiatrist Sukriye Bosgelmez,
Kocaeli Derince Training and Research
Hospital, Department of Psychiatry, Derince,
Kocaeli - Turkey

Phone / Telefon: +90-262-317-8000

Fax / Faks: +90-262-233-5540

Email address / Elektronik posta adresi:
bsukriye@hotmail.com

Date of receipt / Geliş tarihi:
January 29, 2013 / 29 Ocak 2013

Date of acceptance / Kabul tarihi:
April 3, 2013 / 3 Nisan 2013

INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most frequent neuropsychiatric disorders of childhood. Recent studies have shown that ADHD is not limited to childhood but also continued in the adulthood. ADHD, which is diagnosed in childhood, is reported to have a continuation rate of 65% in adulthood (1). 15% of these cases fulfill all criteria for diagnosis, while 50% meet some criteria (1). In our country, it is reported that the prevalence of adult ADHD was between 1.6-15.9% in the psychiatric outpatients (2,3). In a recent epidemiological study, the prevalence of ADHD was found as 3.8% (4). The results of the researches reported in literature make us think that ADHD could be evaluated as an on-going, neurodevelopmental disorder, whose effects last lifelong, leads to indirect costs other than treatment costs and results in lifelong disability in affected individuals (5,6).

ADHD and major depressive disorder (MDD) comorbidity was shown in both clinical and epidemiological studies (7,8). In an epidemiological study carried out by Kessler et al. (8), the prevalence of MDD was reported as 18.6% in individuals, who were diagnosed with ADHD, while it was determined as 7.8% in individuals who were not diagnosed with ADHD. The prevalence of lifelong MDD was reported as high as up to 63% in adult ADHD in clinical studies (9). The studies which evaluate the prevalence of ADHD in adult outpatients in our country show that these patients mostly applied because of depressive complaints in which irritability was dominant and the most frequent co-diagnoses were dysthymic disorder and MDD (2,3,10).

Although ADHD diagnosed in childhood is rather prominent in men (11), recently obtained data show that ADHD diagnosis in women in adulthood was higher than previously supposed (12). Emotional symptoms, sleep disorders, anxiety symptoms and depressive symptoms were more frequently determined in women, who were diagnosed with ADHD when compared to men (13). ADHD diagnosis is a substantial risk factor for MDD. This risk may be more obvious in the female

gender. A five-year follow-up study in which girls with ADHD were followed until the adolescence and adulthood showed that MDD risk increased 2.5 times in these patients (14). Other follow-up studies in ADHD have also reported that comorbidity of MDD and anxiety disorders were higher in women when compared to men in young adulthood. While the ratio of anxiety disorders in women with ADHD tends to show no substantial change after 25 years old, the ratio of mood disorders continue to increase between 25-30 years old (15). The diagnosis of ADHD is usually unrecognized in women with ADHD who apply with depressive complaints, and this leads to a treatment plan targeting only MDD in these patients (12). Kessler et al. (8) reported that only one-fourth of the adults diagnosed as ADHD who sought for psychiatric treatment in the last 12 months received treatment for ADHD in general population. ADHD diagnosis is related to low academic success, divorce, unemployment, frequent changes in job, low socioeconomic status in adult life (16-18). ADHD and MDD comorbidity results in more severe psychosocial dysfunction (14,19).

In the literature specific to our country, no researches have been found to evaluate the prevalence of ADHD in adult female outpatients with depressive complaints. It has been reported that MDD risk was significant in women with ADHD diagnosis, and although depressive symptoms are diagnosed and treated, ADHD diagnosis remained unrecognized (12,14). ADHD comorbidity can also influence the severity and progress of MDD (14). In the light of this information, this study aimed to determine the prevalence of ADHD symptoms and diagnosis among adult female patients who referred to the outpatient clinic and diagnosed with mild-moderate MDD based on DSM-IV-TR criteria and Clinical Global Impression (CGI) as well as to evaluate the relationship between symptoms of ADHD and MDD.

METHOD

Sample

Sixty one female patients who were older than 18 years and examined for the first time in Kocaeli Derince

Training and Research Hospital Psychiatry Outpatient Clinic between June 2008 and July 2009 and diagnosed as having MDD based on DSM-IV-TR criteria, were enrolled in the study. MDD severity was mild-moderate according to Clinical Global Impression Scale (CGI-S) and none of the patients had Axis I comorbidity. The patients who applied to the outpatient clinic for the first time, who did not receive any treatment at that time for their current (index) depressive episode were taken into the study. There were no patients who rejected to participate in the study. Those with organic brain disease history which may disrupt cognitive functions such as head trauma, epilepsy were excluded, and patients having at least 5 years of education were included in the study.

After taking the informed consent of the patients, their sociodemographic data and past treatment histories were questioned, and the patients were applied Hamilton Depression Scale (HAM-D). The patients were called for routine outpatient controls. In the event that the evaluations to be made in the symptomatic periods of the disorders may influence the responses (20), patients were applied Wender-Utah Rating Scale (WURS), when they were in remission (HAM-D score ≤ 7), the patients who were above the cut-off score were applied Adult Attention Deficit Hyperactivity Rating Scale (A-ADHRS) and semi-structured interview based on the listed DSM-IV criteria for ADHD. Adult ADHD diagnoses were made according to the availability of DSM-IV criteria such as at least some symptoms should be started before seven years old, ADHD symptoms must be present except for mood state periods from childhood till adulthood and ADHD symptoms must lead to disruption in functionality. The diagnoses were based on patient interviews.

Measures

Hamilton Depression Rating Scale (HAM-D):

It is a scale which was developed by Williams, (21) and of which Turkish validity and reliability were performed by Akdemir et al. (22). It is applied by the clinician, and measures the level of depression and changes in severity.

Wender-Utah Rating Scale (WURS): It is a Likert type self-rating scale which was developed in 1993. Turkish validity and reliability of WURS was performed by Oncu et al. (20). It questions the presence and severity of childhood ADHD symptoms. The scores of the scale ranges between 0-100, and the cut-off score is recommended as 36 by the authors who translated it into Turkish.

Adult Attention Deficit Hyperactivity Rating Scale (A-ADHRS):

It is a Likert type, 30-question scale which was developed by Turgay (23), and of which validity and reliability study was performed by Gunay et. al (24). The scale consists of three parts, which are attention deficit, hyperactivity/impulsivity and the issue questioning ADHD associated emotional and behavioural symptoms. It was put forth that the scale is a useful scale which has high sensitivity and specificity, and can be used in the diagnoses, treatment and researches of adult ADHD.

Statistical Analysis

Statistical analysis were made by using SPSS (Statistical Package for Social Sciences) 16.0 package program. Quantitative data was specified as average and standard deviation.

Nonparametric test, Mann-Whitney U test was used in the comparison of two groups' average for constant variables; and Spearman correlation test was used in the evaluation of the correlations. The significance value was considered as $p < 0.05$ in the analyses.

RESULTS

Most of the participants were married (59%, $n=36$) and housewives (49.3%, $n=30$). When the marital status of the patients was evaluated, it was seen that 32.5% ($n=20$) were single, 5% ($n=3$) were widowed, 3.3% ($n=2$) were divorced. While 18% ($n=11$) of the patients were employed, 14.7% ($n=9$) were students, and 8.2% ($n=5$) were unemployed. The mean age was 30.72 ± 6.73 (range:18-44), mean education level was 8.90 ± 3.75 years (range:5-15). First episode depression was

Table 1: Comparison of female patients with MDD who had WURS scores above the cut-off value and other female patients with MDD according to mean education level and other variables related with MDD

	WURS \geq 36 (n=19)	WURS<36 (n=42)	Z	P
Education level (year)	9.58 \pm 4.08	8.57 \pm 3.60	-1.07	0.28
Number of episodes	1.47 \pm 0.77	1.33 \pm 0.68	-0.71	0.47
Treatment duration of last episode (week)	6.86 \pm 2.90	6.30 \pm 2.29	-0.47	0.63
First HAM-D scores	19.07 \pm 3.81	18.80 \pm 3.34	-0.15	0.87
WURS scores	50.16 \pm 13.24	16.48 \pm 9.21	-6.21	0.00

WURS: Wender-Utah Rating Scale, MDD: Major depressive disorder, Z: Mann-Whitney U test

Table 2: Comparison of the education levels and variables associated with the disease in patients who received WURS \geq 36 with adult ADHD symptoms and without adult ADHD symptoms according to A-ADHRS

	WURS \geq 36		Z	P
	A-ADHRS+ (n=4)	A-ADHRS- (n=15)		
Education level (year)	11.75 \pm 4.27	9.00 \pm 3.98	-1.34	0.85
Number of episodes	1.75 \pm 0.95	1.40 \pm 0.73	-0.85	0.53
Treatment duration of last episode (week)	7.33 \pm 4.16	6.73 \pm 2.72	-0.16	0.88
First HAM-D scores	21.33 \pm 5.50	18.45 \pm 3.29	-0.86	0.45
WURS scores	54.75 \pm 16.00	48.93 \pm 12.77	-0.50	0.61

A-ADHRS: Adult Attention Deficit Hyperactivity Disorder Rating Scale, WURS: Wender- Utah Rating Scale, Z: Mann-Whitney U test

determined in 59% (n=36) of the patients (range for number of episodes: 1-4).

WURS scales were determined as 36 and above in 31.1% (n=19) of the research group. When these persons were evaluated by A-ADHRS and semi-structured interview based on DSM-IV criteria, four persons (6.5%) met the diagnostic criteria. Compound type ADHD was determined in three patients and attention deficit type was determined in one patient. No differences were found between those who received above the cut-off score from WURS and other patients according to the mean education level, number of episodes, treatment duration of the last episode and first HAM-D scores (Table 1). No significant difference was observed according to the mean education level, age, number of depressive episodes, duration of the last treatment, WURS scores and the first HAM-D scores between the patients, who received above the cut-off score from WURS but did not receive adult ADHD diagnosis and those who met adult ADHD diagnosis criteria according to A-ADHRS and DSM-IV criteria (Table 2).

No significant correlation was determined among mean education level, age, number of episodes, treatment duration of last episode, WURS scores and the first HAM-D scores in those whose WURS scores were above the cut-off score ($p>0.005$).

DISCUSSION

The aim of the study was to determine the prevalence of ADHD symptoms and diagnosis and factors associated with the symptoms in adult female patients who had MDD diagnosis and had no comorbidity according to DSM-IV-TR criteria and applied to the psychiatry outpatient clinic of a training hospital for the first time.

In our study, the rate of childhood ADHD symptoms determined with WURS in women with MDD was 31.1%, while the rate of adult ADHD which meets diagnostic criteria with DSM-IV criteria and A-ADHRS was determined as 6.5%. Duran (2) reports the rate of childhood ADHD determined with WURS in patients, who applied to adult psychiatry

outpatient clinic as 30.5%. Tamam et al. (25) reported that the rate of childhood ADHD was 27%, the rate of adult ADHD was 16% in their study on bipolar patients. In another study conducted on MDD diagnosed adult patients, it was found that 16% of the patients met complete or sub threshold childhood ADHD criteria while ADHD symptoms still continued in 12% of the patients (26). Therefore, it can be said that our results are compatible with the rates reported for adult psychiatry patients in our country. Although our sample is small, our results make us think that ADHD diagnosis should be kept in mind in women with MDD. Since hyperactivity, disruptive behaviours in childhood ADHD are more obvious in male children, these children are more easily noticed and referred to treatment by their parents or teachers, and this results in about ten times higher male prevalence in pediatric clinic sample (27,28). In adulthood, women seek for help by themselves, and the gender distribution becomes more balanced in adult clinic sample (28).

Studies on explaining ADHD and MDD association claim that there is a familial link between these two disorders. As a result of the data obtained from adoption studies and high-risk families, it was implicated that ADHD and MDD may be different expressions (phenotypes) of a common etiology (genotype) (29). Psychosocial studies reported that factors such as depression in mothers, conflict between parents, parent behaviour management, and control focus can be risk factors for ADHD-MDD association (30,31).

It is reported that gender is effective on the familial association between ADHD and MDD. It is claimed that family members of men with ADHD diagnosis share the familial risk factors of ADHD and MDD, but the non-familial risk factors mediate the onset of ADHD and MDD. It is supposed that ADHD and MDD comorbidity in families of the women with ADHD diagnosis is etiologically different familial subtype of ADHD (32). Future follow-up studies considering sociocultural and genetic factors may provide further data in these issues.

In our research sample, it was determined that those

meeting ADHD diagnosis in adulthood were mostly in compound type ADHD. The prevalence of compound type ADHD is reported to be more frequent in clinical sample (33). While attention deficit was determined to be most prevalent type in one of the researches conducted with outpatients in our country, compound type ADHD diagnosis was determined to be prevalent in the other (2,3). Upon evaluating the available data, it could be said that the information is insufficient with regard to whether the ADHD subtypes varied based on the diagnosis of adult psychiatry outpatients and there is a need for further additional researches.

The effects of ADHD comorbidity on MDD were reported. Biederman et al. (14) indicated that MDD begins earlier, lasts longer, and is more severe and relates to suicide attempts and hospitalization in women with ADHD. No difference was determined in our study and this might be related to the fact that the sample group was consisted of mild-moderate MDD patients followed-up in outpatient clinics. The small sample size might also have influence on this.

The most important limitations of our study are that it is cross sectional, focuses on patients with mild-moderate depressive episode, comorbidities are not excluded with structured interviews, no information was received from the families, relatives and employers of the patients about childhood and adult ADHD diagnoses. Since our data is based on the evaluation of the female outpatients with MDD diagnosis, it is not possible to generalize our results to the female patients who have more severe complaints and comorbidities and receive in-patient treatment. Further studies evaluating such points might present different information about MDD-ADHD association.

Despite all limitations, it can be said that ADHD diagnosis was not rare in women who applied to an adult psychiatry outpatient clinics with depressive complaints and were diagnosed with MDD based on DSM-IV-TR criteria. The recognition of MDD-ADHD association in these patients will facilitate handling the patients with these two disorders requiring different treatment approaches.

REFERENCES

1. Faraone SV, Biederman J, Mick E. The age-dependent decline of attention deficit hyperactivity disorder: a meta-analysis of follow-up studies. *Psychol Med* 2006; 36:159-165.
2. Duran S. Adult Attention Deficit Hyperactivity Disorder incidence and comorbidities in psychiatric outpatients. Postgraduate Thesis, Haydarpaşa Training and Research Hospital, Istanbul, 2006. (Turkish)
3. Ozdemiroglu F. Adult Attention Deficit Hyperactivity Disorder incidence and comorbidities in general psychiatry outpatient clinic. Postgraduate Thesis, Istanbul University, Faculty of Medicine, Department of Psychiatry, Istanbul, 2006. (Turkish)
4. Yapicioglu B, Kavakci O, Guler AS, Semiz M, Dogan O. Adult ADHD prevalence in Sivas province and comorbid axis-I, axis-II diagnoses. *Anatolian Journal of Psychiatry* 2011; 12:177-184. (Turkish)
5. Barkley RA. Attention Deficit Hyperactivity Disorder: A Handbook For Diagnosis And Treatment. New York: Guilford Press, 2006.
6. Goldstein S, Teeter Ellison A. Clinicians' Guide To Adult ADHD: Assessment And Intervention. New York: Academic Press, 2002.
7. Biederman J, Faraone SV, Monuteaux MC, Bober M, Cadogen E. Gender effects on attention-deficit/hyperactivity disorder in adults, revisited. *Biol Psychiatry* 2004; 55:692-700.
8. Kessler RC, Adler R, Barkley R, Biederman J, Conners CK, Demler O, Faraone SV, Greenhill LL, Howes MJ, Secnik K, Spencer T, Ustun TB, Walters EE, Zaslavsky AM. The prevalence and correlates of adult ADHD in the United States: results from the National Comorbidity Survey Replication. *Am J Psychiatry* 2006; 163:716-723.
9. McGough JJ, Smalley SL, McCracken JT, Yang M, Del'Homme M, Lynn DE, Loo S. Psychiatric comorbidity in adult attention deficit hyperactivity disorder: findings from multiplex families. *Am J Psychiatry* 2005; 162:1621-1627.
10. Sevinc E, Sengul C, Cakaloz B, Herken H. Comorbidity in patients diagnosed with attention deficit hyperactivity disorder in psychiatric outpatient clinics. *Archives of Neuropsychiatry* 2010; 47:139-143. (Turkish)
11. Gaub M, Carlson CL. Gender differences in ADHD: a meta-analysis and critical review. *J Am Acad Child Adolesc Psychiatry* 1997; 36:1036-1045.
12. Quinn PO. Attention-deficit/hyperactivity disorder and its comorbidities in women and girls: an evolving picture. *Curr Psychiatry Rep* 2008; 10:419-423.
13. Robison RJ, Reimherr FW, Marchant BK, Faraone SV, Adler LA, West SA. Gender differences in 2 clinical trials of adults with attention-deficit/hyperactivity disorder: a retrospective data analysis. *J Clin Psychiatry* 2008; 69:213-221.
14. Biederman J, Ball SW, Monuteaux MC, Mick E, Spencer TJ, McCreary M, Cote M, Faraone SV. New insights into the comorbidity between ADHD and major depression in adolescent and young adult females. *J Am Acad Child Adolesc Psychiatry* 2008; 47:426-434.
15. Biederman J, Petty CR, Monuteaux MC, Fried R, Byrne D, Mirto T, Spencer T, Wilens TE, Faraone SV. Adult psychiatric outcomes of girls with attention deficit hyperactivity disorder: 11-year follow-up in a longitudinal case-control study. *Am J Psychiatry* 2010; 167:409-417.
16. Biederman J, Faraone SV, Spencer TJ, Mick E, Monuteaux MC, Aleardi M. Functional impairments in adults with self-reports of diagnosed ADHD: a controlled study of 1001 adults in the community. *J Clin Psychiatry* 2006; 67:524-540.
17. Spencer TJ, Biederman J, Mick E. Attention-deficit/hyperactivity disorder: diagnosis, lifespan, comorbidities, and neurobiology. *J Pediatr Psychol* 2007; 32:631-642.
18. Sobanski E, Brüggemann D, Alm B, Kern S, Philipsen A, Schmalzried H, Hesslinger B, Waschkowski H, Rietschel M. Subtype differences in adults with attention-deficit/hyperactivity disorder (ADHD) with regard to ADHD-symptoms, psychiatric comorbidity and psychosocial adjustment. *Eur Psychiatry* 2008; 23:142-149.
19. Biederman J, Mick E, Faraone SV. Depression in attention deficit hyperactivity disorder (ADHD) children: "True" depression or demoralization? *J Affect Disord* 1998; 47:113-122.
20. Oncu B, Olmez S, Senturk V. Validity and reliability of Turkish Version of the Wender Utah Rating Scale for Attention-Deficit/Hyperactivity Disorder in adults. *Turk Psikiyatri Derg* 2005; 16:252-259. (Turkish)
21. Williams BW. A structured interview guide for Hamilton Rating Scale. *Arch Gen Psychiatry* 1978;45:742-747.
22. Akdemir A, Orsel S, Dag I, Turkcapar H, Iccan N, Ozbay H. Reliability, validity and clinical use of Hamilton Depression Rating Scale. *Journal of Psychiatry Psychology and Psychopharmacology* 1996; 4:251-259. (Turkish)
23. Turgay A. (1995) Adult Hyperactivity Assessment Scale based on DSM IV (unpublished scale). Integrative Therapy Institute Toronto, Canada.

24. Gunay S, Savran C, Aksoy UM, Maner F, Turgay A, Yargic I. The transliteral equivalance, norm study, the validity and reliability of the Turkish version of Adult ADD/ADHD DSM-IV Based Diagnostic Screening and Rating Scale. *Psychiatry in Turkey* 2006; 8:98-107. (Turkish)
25. Tamam L, Karakus G, Ozpoyraz N. Comorbidity of adult attention deficit hyperactivity disorder and bipolar disorder: prevalence and clinical correlates. *Eur Arch Psychiatry Clin Neurosci* 2008; 258:385-393.
26. Alpert JE, Maddocks A, Nierenberg AA, O'Sullivan R, Pava JA, Worthington JJ, Biederman J, Rosenbaum JF, Fava M. Attention deficit hyperactivity disorder in childhood among adults with major depression. *Psychiatry Res* 1996; 62:213-219.
27. Biederman J, Mick E, Faraone SV, Braaten E, Doyle A, Wilens TE, Spencer T, Frazier E, Johnson MA. Influence of gender on attention deficit hyperactivity disorder in children referred to a psychiatry clinic. *Am J Psychiatry* 2002; 59:36-42.
28. Simon V, Czobor P, Bálint S, Mészáros A, Bitter I. Prevalence and correlates of adult attention-deficit hyperactivity disorder: meta-analysis. *Br J Psychiatry* 2009; 194:204-211.
29. Marks DJ, Newcorn JH, Halperin JM. Comorbidity in adults with attention-deficit/hyperactivity disorder. *Ann NY Acad Sci* 2001; 931:216-238.
30. Faraone SV, Biederman J. Do attention deficit hyperactivity disorder and major depression share familial risk factors? *J Nerv Ment Dis* 1997; 185:533-541.
31. Ostrander R, Herman KC. Potential cognitive, parenting, and developmental mediators of the relationship between ADHD and depression. *J Consult Clin Psychol* 2006; 74:89-98.
32. Mick E, Biederman J, Santangelo S, Wypij D. The influence of gender in the familial association between ADHD and major depression. *J Nerv Ment Dis* 2003; 191:699-705.
33. Wilens TE, Biederman J, Faraone SV, Martelon M, Westerberg D, Spencer TJ. Presenting ADHD symptoms, subtypes, and comorbid disorders in clinically referred adults with ADHD. *J Clin Psychiatry* 2009; 70:1557-1562.