

Original article / Araştırma**The prevalence of adult separation anxiety disorder in a clinical sample of patients with attention-deficit/hyperactivity disorder**

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ABSTRACT

Objective: Separation anxiety disorder (SAD) of adulthood was added to the group of anxiety disorders in the DSM-5. Attention-deficit/hyperactivity disorder (ADHD) displays elevated comorbidity with anxiety disorders. Aims of the present study are to determine a) the prevalence of SAD in a clinical, adult sample with ADHD and b) the correlates of SAD comorbidity in adults with ADHD. **Methods:** DSM-IV-Based Diagnostic and Evaluation Inventory for Adult ADD/ADHD to confirm ADD/ADHD diagnosis by the psychiatrist; Structured Clinical Interviews for the Symptoms of SAD (SCI-SAS); the Questionnaire for Adult SAD (A-SAQ); and the Inventory for Symptoms of SAD (SASI) were administered to ADHD patients and to the age, gender, marital status, and education-matched healthy controls. **Results:** Thirty adults with ADHD and 26 healthy controls were enrolled in the study. The ADHD group had significantly higher Adult Separation Anxiety Questionnaire (A-SAQ) and Separation Anxiety Symptom Inventory (SASI) scores than the control group. According to the Structured Clinical Interview for Separation Anxiety Symptoms (SCI-SAS), 53.3% of the ADHD group and 11.5% of the control group fulfilled the SAD criteria while 63.3% and 19.2%, respectively, fulfilled the childhood SAD criteria. Three patients with ADHD (10.0%) that did not fulfil the childhood SAD criteria had the diagnosis as adults, while six ADHD patients (20.0%) and four control patients (15.4%) had childhood SAD and recovered from it. Only one of the controls (3.9%) developed de novo SAD. We found significantly increased life-time, childhood, and adult prevalence of SAD in adult patients with ADHD. **Conclusions:** Due to the self-selected, clinical sample, this rate may not reflect the true population prevalence of SAD among Turkish adults; community studies evaluating SAD's prevalence are needed. (*Anatolian Journal of Psychiatry* 2016; 17(6):459-465)

Keywords: adult separation anxiety disorder, adult attention-deficit/hyperactivity disorder, prevalence

Erişkin dikkat eksikliği hiperaktivite bozukluğu hastaları klinik örnekleminde erişkin ayrılma anksiyetesi bozukluğu yaygınlığı**ÖZ**

Amaç: Erişkin ayrılma anksiyetesi bozukluğu DSM-5'te anksiyete bozukluğu grubuna eklenmiştir. Dikkat eksikliği hiperaktivite bozukluğunda (DEHB) yüksek oranda anksiyete bozukluğu eş tanısı görülmektedir. Bu çalışmada amaçlar erişkin DEHB grubunda erişkin ayrılma anksiyetesi bozukluğu yaygınlığını ile erişkin DEHB ve erişkin ayrılma anksiyetesi bozukluğu arasındaki ilişkiyi saptamaktır. **Yöntem:** Bir psikiyatrist tarafından DSM-IV'e göre DEHB tanısı konulmuş olan kişilere ve onlarla yaş, cinsiyet, medeni durum ve eğitim olarak eşleştirilmiş sağlıklı kontrollere ayrılma anksiyetesi belirtileri için yapılandırılmış klinik görüşme ölçeği, Yetişkin Ayrılma Anksiyetesi Anketi (YAAA) ve Ayrılma Anksiyetesi Belirti Ölçeğini (AABÖ) uyguladı. **Bulgular:** Bu çalışmada 30 erişkin DEHB hastası ve 26

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sağlıklı kontrol alınmıştır. DEHB grubunda kontrol grubuna göre YAAA ve AABÖ puanları anlamlı olarak yüksekti. Ayrılma anksiyetesi belirtileri için yapılandırılmış klinik görüşmeye göre DEHB grubunun %53.3'ü, kontrol grubunun %11.5'i erişkinde ayrılma anksiyetesi bozukluğu ölçütlerini karşılarken, bu oranlar çocukluk ayrılma anksiyetesi bozukluğu için %63.3 ve %19.2'dir. DEHB grubundan üç hasta (%10) çocukluk ayrılma anksiyetesi bozukluğu tanı ölçütlerini karşılamazken, erişkin ayrılma anksiyetesi bozukluğu tanı ölçütlerini karşılamaktadır. DEHB grubundan altı hasta (%20) ve kontrol grubundan dört hasta (%15.4) çocukluk ayrılma anksiyetesi bozukluğu tanı ölçütlerini karşılarken, daha sonra iyileşme göstermiştir. Kontrol grubundan yalnız bir hastada kendiliğinden oluşan erişkin ayrılma anksiyetesi bozukluğu gelişmiştir. Biz erişkin DEHB'de yaşam boyu, çocukluk ve erişkin ayrılma anksiyetesi bozukluğu yaygınlığını yüksek saptadık. **Tartışma:** Bu çalışmada erişkin DEHB'ye yaşam boyu, çocukluk ve erişkin ayrılma anksiyetesi bozukluğunun yüksek oranda eşlik ettiği saptanmıştır. Ancak araştırmanın klinik örnekleme yapılmış olması nedeni ile, Türk toplumundaki erişkin ayrılma anksiyetesi bozukluğu yaygınlığını değerlendirecek toplum çalışmalarına da gereksinim vardır. (*Anadolu Psikiyatri Derg* 2016; 17(6):459-465)

Anahtar sözcükler: Erişkin ayrılma anksiyetesi bozukluğu, erişkin dikkat eksikliği hiperaktivite bozukluğu, yaygınlık

INTRODUCTION

Separation anxiety disorder (SAD) is defined as an inappropriate, severe, and impairing anxiety that is experienced either when one is separated from the mother or the principal figure of attachment or when such a separation is anticipated.¹ SAD of childhood (SAD-C) was listed in the 'disorders usually diagnosed in infancy, childhood or adolescence' section of the DSM-IV.² Studies accumulating after publication of the DSM-IV support the homotypical continuity of the chief symptoms of childhood SAD as well as heterotypical continuity.³⁻⁵ A longitudinal study reported that 40.0% of the sample who had separation anxiety when they were 11 years-old still displayed symptoms when they were 18 years-old.⁶ Shear and colleagues reported a 6.6% lifetime prevalence of SAD among their adult sample and argued for its inclusion in the DSM nomenclature.⁷ In a sample of college students, the rate of SAD was 21.0%, while, in a small sample of over 60-year-old seniors was 6.0%.^{8,9} Further studies reported that SAD rates were up to 23.0-42.0% among adults applying to specialized Mood and Anxiety Disorder Clinics.¹⁰ De novo SAD arising in adults without a childhood history was also reported.¹¹ As a result of those studies, 'SAD of adulthood' was added the group of anxiety disorders in the DSM-5.¹² Current studies report elevated rates of comorbidity in adults with SAD. Shear and colleagues⁷ report that the lifetime prevalence of mood disorder comorbidity was 62.0%, while the lifetime prevalence of anxiety disorder comorbidity was 67.0%; this seems to be bi-directional for mood and anxiety disorders.¹⁰

Attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder once thought to be limited to childhood.² Accumulating research revealed that ADHD continues into adulthood in a substantial number of cases, resulting in addi-

tion of specific examples and a reduction in the number of required symptoms for adults in the DSM-5.¹² ADHD displays elevated comorbidity with anxiety disorders and mood disorders throughout life, and is a risk factor for mood and anxiety disorders.^{13,14} As such, a high comorbidity with ADHD in adulthood and SAD may be expected; however, no studies that we are aware of have evaluated the rates of SAD among adults with ADHD.

SAD may be conceptualized as a disorder of the attachment system.¹⁵ Previous studies conducted on children also report that insecure attachment is more common among patients with ADHD and that problems of attachment may affect the course of the disorder.^{16,18} Both meta-analyses¹⁹ and previous studies from Turkey²⁰ reported that insecure attachment is found more frequently among adults with ADHD. Accordingly, it may be argued that adults with ADHD have elevated rates of SAD.

The aims of this study are determining the prevalence of SAD and the correlates of SAD comorbidity in adults with ADHD.

METHODS

Study center and sampling

The study was conducted between September 2014 and February 2015 at the outpatient psychiatry department of a secondary treatment center in Istanbul, Turkey. Inclusion criteria were: being 18-60 years old, lacking mental retardation, lacking a serious comorbid psychiatric disorder (mild, first episode major depressive disorder, as determined by SCID-I and Beck Depression Inventory score <16, and generalized anxiety disorder (GAD), as determined by SCID-I, were allowed comorbidities) lacking any chronic neurological/ medical illnesses, and providing informed consent for participation in

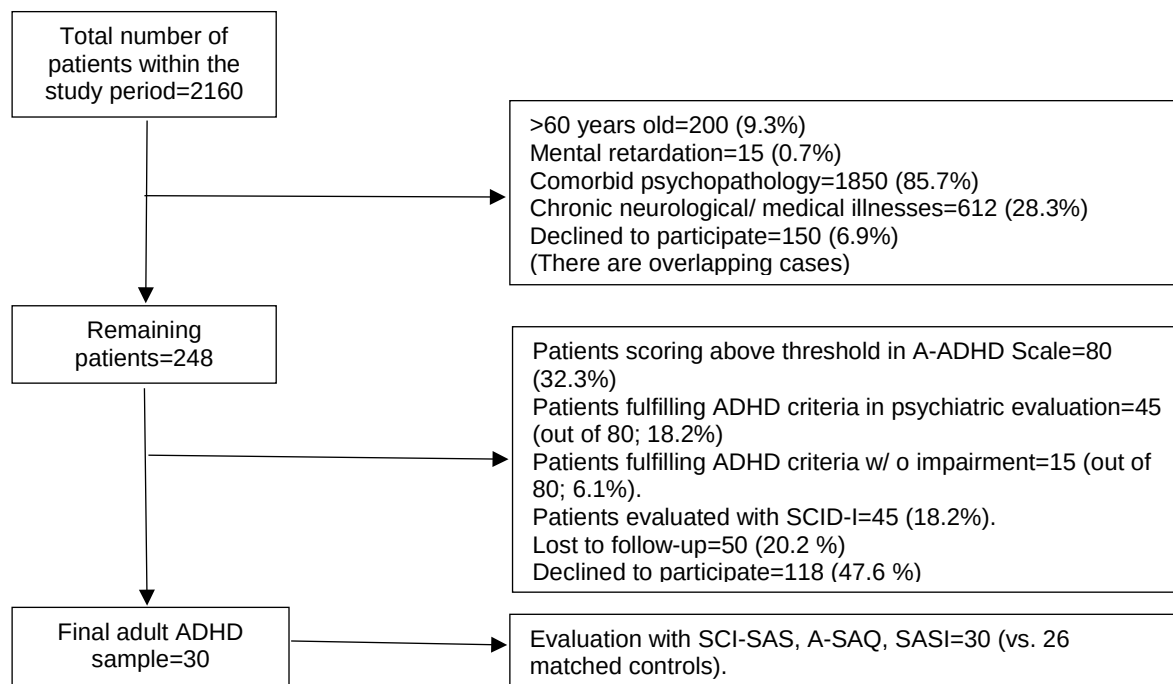
the study.

Üsküdar University Clinical Research Ethics Committee approved the study protocol and all the study procedures were in accordance with the Declaration of Helsinki and local laws and regulations.

Study procedures

All consecutive patients that met the required criteria and applied to the study within the specified time period were approached for their potential participation in the study. The study flowchart is illustrated in Figure 1.

Figure 1. Flowchart of the study



A-ADHD: DSM-IV Based Adult ADHD Scale. SCID-I: Structured Clinical Interview for Axis I DSM-IV Disorders, SCI-SAS: Structured Clinical Interview for Separation Anxiety Symptoms, A-SAQ: Adult Separation Anxiety Questionnaire, SASI: Separation Anxiety Symptom Inventory

Forty-five patients were evaluated with the Structured Clinical Interview for Axis I Disorders (SCID-I).²¹ Thirty patients had probable ADHD and were given the DSM-IV-Based Diagnostic and Evaluation Inventory for Adult ADD/ADHD to confirm the diagnosis.^{22,23} Twenty-six healthy controls matched with the patients in terms of age, gender, education, and marital status, were enrolled as a control group after providing informed consent.

Both the controls and the ADHD group were evaluated by structured clinical interview for symptoms of SAD (SCI-SAS),^{24,25} the Questionnaire for Adult SAD (A-SAQ), and the Inventory for Symptoms of SAD (SASI).²⁶⁻²⁸

Sociodemographic Data Form: A form to record identification data, age, gender, education, marital status and diagnostic status (ADHD/con-

trol) was developed by investigators and used to record sociodemographic data.

Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I): This is a structured interview to evaluate major DSM-IV Axis I diagnoses.²⁹ Turkish version of SCID-I was found to be reliable and valid and had been used in numerous studies since 1999.²¹

DSM-IV Based Diagnostic and Evaluation Inventory for Adult Attention Deficit Disorder/Attention Deficit-Hyperactivity Disorder (A-ADHD): This scale was developed by Turgay and standardized in Turkish by Gunay and colleagues.^{22,23} Nine criteria for inattention listed in DSM-IV formed the first subscale (A-ADHD-inattention, A-ADHD-IA) while the rest of the criteria on hyperactivity- impulsivity formed the second subscale (A-ADHD-hyperactivity/ impul-

sivity, A-ADHD-HI). The third subscale was formed by symptoms that were not listed in DSM-IV but were commonly reported in studies on adults with ADHD. Those questions formed the A-ADHD-Related Features (A-ADHD-RF) subscale. All questions are answered on a 4-point Likert scale (0: almost never, 1: sometimes, 2: frequently, 3: very frequently).

The A-ADHD scale was used in various studies on both community and clinical samples from our country and it was found to be reliable and valid.^{30,31}

Structured Clinical Interview for Separation Anxiety Symptoms (SCI-SAS): This interview was developed to evaluate symptoms of separation anxiety in adults by revising childhood symptoms of separation anxiety to better reflect developmental variations.²⁴ SCI-SAS was formed of two parts of eight questions each. The first part retrospectively evaluates symptoms of childhood separation anxiety while the second part evaluates current symptoms in adulthood. Presence of at least 3 out of 8 criteria leads to a diagnosis of Childhood SAD or Adult SAD; depending on the part. SCI-SAS was translated into Turkish and psychometric evaluations showed that it was reliable and valid.^{25,32}

Adult Separation Anxiety Questionnaire (A-SAQ): This 27-item self-report questionnaire was developed to evaluate symptoms of separation anxiety in adults.²⁷ The questions are answered on a 4-point Likert scale of frequency with 0 denoting 'never felt' to 3 denoting 'felt very frequently'. A-SAQ was translated into Turkish and found to be reliable and valid.^{25,32} A cut-off score of 25 is suggested.

Separation Anxiety Symptom Inventory (SASI): This inventory is a self-report inventory of 15 questions answered on a 4-point Likert scale.²⁸ Each item retrospectively evaluates childhood symptoms of separation anxiety on a continuum from 0 (never felt) to 3 (felt very frequently). SASI was translated into Turkish and found to be reliable and valid.²⁵⁻³² A cut-off score of 12 is suggested.

Statistics

It was hypothesized that adults with ADHD would have increased life-time prevalence of SAD. A priori power analysis with G*Power 3.1 program³³ for a chi-square test with an alpha level of 0.05 and power of 80% revealed that 26 patients would be required to determine a life-time prevalence twice higher than that previously reported for adults (i.e. 6.6%).³⁴ Because of en-

rolling 30 patients with ADHD within the specified time frame, post-hoc power was 85.0%.

Statistical analyses were done by Statistical Package for Social Sciences (SPSS Inc., Chicago, IL) 15.0 programs for Windows™. Primary end-point was life time prevalence of separation anxiety in adults with ADHD (one-tailed) while secondary end-points were correlations between presence of SAD and psychometric variables (two-tailed). All other analyses (two-tailed) were exploratory. P was set at 0.05.

RESULTS

Within the specified time period, 30 adults with ADHD and 26 healthy controls were enrolled in the study. The mean ages for ADHD and control groups were 34.3 ± 9.7 and 36.9 ± 9.2 years, respectively. Subjects in the ADHD and control groups had 13.1 ± 2.5 and 13.6 ± 1.9 years of formal academic education respectively. Forty percent of patients with ADHD were females, the corresponding ratio was 38.5% among the healthy controls. 46.7% of the ADHD group was married at the time of the evaluation, while the ratio of married subjects was 50.0% in the control group. The groups did not differ significantly by age, mean years of education attended, marital status, or gender ratios. Patients with ADHD had significantly higher A-ADHD-IA, A-ADHD-HI, A-ADHD-RF, SASI, and A-SAQ scores (Table 1).

Patients with ADHD were mostly of the combined subtype (53.3%); the inattentive subtype was the second most common (23.3%). Only two patients had the hyperactive/impulsive subtype (6.7%), while the remainder (16.7%) was classified as having ADHD-NOS. All patients with ADHD-NOS had ages of onset higher than 7 years old and had subthreshold symptoms with impairment due to ADHD symptoms. According to SCI-SAS, 53.3% of the ADHD group fulfilled the criteria for SAD while the rate of patients with ADHD who fulfilled the criteria for childhood SAD was 63.3%. Three patients with ADHD (10.0%) did not the childhood SAD criteria but were diagnosed with SAD as adults. In contrast, six patients with ADHD (20.0%) had childhood SAD from which they recovered. For the healthy controls, 11.5% (n=3) fulfilled the criteria for SAD via SCI-SAS while 19.2% fulfilled the criteria for childhood SAD. Only one of the controls (3.9%) developed de novo SAD. In contrast, four of the healthy controls (15.4%) had SAD in their childhood from which they recovered. Accordingly, the lifetime prevalence of SAD was 73.3% in the

Table 1. Comparison of adult patients with ADHD and controls on scales of ADHD and adult separation anxiety

	Mean±SD		p*
	ADHD (n=30)	Control (n=26)	
A-ADHD-IA	14.4±4.8	5.9±2.0	0.001
A-ADHD-HI	14.7±5.1	6.6±1.9	0.001
A-ADHD-RF	39.4±12.0	10.3±2.3	0.001
A-ADHD-total	68.5±14.2	22.8±4.6	0.001
A-SAQ	30.3±13.1	17.9±10.0	0.001
SASI	11.4±7.7	6.9±4.0	0.030

*Mann-Whitney U test, A-ADHD-IA: Adult ADHD-Inattention, A-ADHD-HI: Adult ADHD-Hyperactivity/ Impulsivity, A-ADHD-RF: Adult ADHD-Related Features, A-SAQ: Adult Separation Anxiety Questionnaire, SASI: Separation Anxiety Symptom Inventory

ADHD group versus 23.1% among controls. The rates of patients with ADHD scoring above the cut-offs for A-SAQ and SASI were 63.3% and 53.3%, respectively. The corresponding rates for controls were 19.2% and 11.5%, respectively.

Patients with ADHD were significantly more likely to have current (chi-squared=10.9, df=1, p=0.002) as well as childhood (chi-squared=11.1, df=1, p=0.001) SAD. The chi-squared test also revealed that adult patients with ADHD were significantly more likely to score above the cut-offs for both the A-SAQ (chi-squared=11.1, df=1, p=0.001) and SASI (chi-squared=10.9, df=1, p=0.002), all with a medium to-large effect size (Cramer's V=0.4).

Patients with ADHD with and without current SAD comorbidity did not differ in age, years of education, or A-ADHD scores, when compared with a Mann-Whitney U test. Current SAD comorbidity was also not related to gender or marital status (chi-squared test). For exploratory analyses, bivariate correlations between A-ADHD, A-SAQ, and SASI scores were analyzed with Spearman's rank order analyses. A-SAQ and SASI scores correlated strongly between each other ($r=0.79$, $p<0.001$) but had no significant correlations with A-ADHD scores, thereby supporting that those measures evaluate different constructs. At the last step of exploratory analyses, the A-SAQ and SASI scores of the ADHD-combined, ADHD-inattentive, and ADHD-NOS groups were compared by a Mann-Whitney U test; no statistically significant differences were found.

DISCUSSION

This cross-sectional study aimed to evaluate the lifetime prevalence of SAD among adults with

ADHD and compare the results with matched controls. We found that adult patients with ADHD had significantly increased life-time prevalence of SAD, as well as fulfilling childhood and adult diagnoses. Patients with ADHD and separation anxiety did not differ from those without them, in terms of ADHD scales and sociodemographic features. There were also no correlations between the scales evaluating symptoms of SAD and those evaluating ADHD symptoms.

Lifetime comorbidity of other psychopathologies in adults with ADHD was reported to be up to 80.0% and increase with age. Specific comorbidities varied between studies but, among clinical populations of adults with ADHD, depressive disorders were reported to vary from 19.0-37.0%, anxiety disorders were reported in 25.0-50.0% of patients, and learning disabilities and bipolar disorders were reported in 20.0% and 10.0% of patients, respectively. Generally, personality disorder comorbidity may be between 10.0% and 20.0%.^{35,36} In our sample, the lifetime prevalence of SAD was 73.3% and GAD was 100.0%. At the time of the evaluation, 53.3% of the ADHD group fulfilled the criteria for SAD. Although the current rate of SAD was similar to previous reports, in our sample, rates of GAD and lifetime SAD were much higher. High rates of lifetime SAD in our study may be explained by sampling bias, while those of GAD reflected the scarcity of adult patients with SAD and ADHD alone.

Another point concerning the diagnosis of SAD in adults, both generally and specifically in our sample, is dependent personality disorder (DPD). In the DSM-5, DPD is defined as 'pervasive and excessive need to be taken care of, leading to submissive and clinging behavior and fears of separation'. The diagnosis requires the

presence of at least 5 of 8 criteria, beginning by early adulthood and seen in various contexts;¹² a childhood history of SAD or chronic physical illness is listed among the risk factors.¹² A perusal of those criteria and definitions shows overlapping features between SAD and DPD in adults. The DSM-5 reports that patients with DPD have an indiscriminate tendency to rely on the support of others but that this tendency involves spouses or parents in most adults. Therefore, the diagnosis of SAD and DPD may be problematic in adults. Elevated rates of SAD in our sample may be an artefact due to lack of evaluation of personality disorders, and it may be argued that additional evaluation with SCID-II would lead to more reliable results.

The prevalence of SAD among adults in the US for the past year was 0.9-1.9%.¹² Within our sample, the rate of SAD was 53.3% (among the patients evaluated with the SCID-I), while it fell to 20.0% if all patients scoring above the threshold in the adult ADHD scale (n=80) were included. The rate of SAD was 0.7% when all

patients were evaluated, which is similar to the prevalence among US adults. Regardless, due to the self-selected clinical sample, this rate may not reflect the true population prevalence of SAD among Turkish adults; community studies evaluating SAD prevalence are needed.

The main limitations of our study are its cross-sectional nature and focus on a self-selected clinical sample. Childhood reports of separation anxiety symptoms in SASI and SCI-SAS may also be affected by recall bias. Supporting this view, the DSM-5 reports that adult patients with SAD may recall childhood symptoms but not diagnosis.¹² Lack of evaluation of personality disorders, especially is among the limitations.

Regardless of its limitations, our results may support the view that lifetime and adult diagnoses of SAD may be elevated in adults with ADHD and that symptoms of SAD may not affect those of ADHD. Further studies on larger samples from the community are needed.

Yazarların katkıları: E.Ö.: Konuyu bulma, literatür tarama, makaleyi yazma; A.E.T.: Konuyu bulma, literatür tarama; G.E.: Planlama, araştırmanın yürütülmesi; G.H.S: Planlama, araştırmanın yürütülmesi; H.B.: Makaleyi yazma.

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