

**Original article / Araştırma****Prevalence and characteristics of impulse control disorders in a group of medical students****Lut TAMAM,<sup>1</sup> Özlem PALTACI,<sup>1</sup> Necla KESKİN<sup>1</sup>****ABSTRACT**

**Objective:** To determine the prevalence of impulse control disorders (ICDs) among medical students and evaluate the related sociodemographic and clinical features. **Methods:** A total of 277 students in the fourth and fifth year of medical school were included in the study. The study was conducted between September 2011 and June 2012 in Cukurova University Medical School, Adana, Turkey. A demographic data form has been completed. The Structured Clinical Interview for DSM-IV (SCID-I) was used to determine axis I psychiatric disorders. The prevalence rates of ICDs were investigated by using the modified version of the Minnesota Impulse Disorders Interview. All patients completed Barratt Impulsiveness Scale Version 11 (BIS-11) and Symptom Check List-90. **Results:** The lifetime prevalence of at least one ICD in our sample was 11.2% (n=31). When the participants with the diagnosis of ICDs not otherwise specified were excluded the prevalence rate decreased to 7.9%. The most common ICD was intermittent explosive disorder (6.1%), followed by trichotillomania (2.5%). History of suicide attempts was significantly higher in the group with ICD. There was statistically significant difference between comorbidity of other Axis I psychiatric disorders and a significant difference was observed in terms of total impulsivity, non-planning activity, and motor impulsivity scores as determined by BIS-11 between groups with or without ICDs. **Conclusion:** ICDs might be underdiagnosed in young adult populations. ICDs affect the quality of life, the course and outcome of comorbid disorders so it is important to ask for these disorders in regular psychiatric interviews and treating them in an appropriate and specific way. (*Anatolian Journal of Psychiatry* 2017; 18(2):113-120)

**Keywords:** impulse control disorders, medical students, sociodemographic and clinical features

**Bir grup tıp fakültesi öğrencisinde dürtü kontrol bozukluklarının görülme sıklığı ve klinik özellikleri****ÖZ**

**Amaç:** Bu çalışmada dürtü kontrol bozukluklarının (DKB) tıp fakültesi öğrencileri arasındaki sıklığının ve ilişkili sosyodemografik ve klinik özelliklerin belirlenmesi amaçlanmıştır. **Yöntem:** Çalışmaya Eylül 2011-Haziran 2012 tarihleri arasında, Çukurova Üniversitesi Tıp Fakültesi'nde eğitim görmekte olan 277 4. ve 5. sınıf öğrencisi alındı. Demografik veri formu dolduruldu. Eksen I psikiyatrik bozuklukların belirlenmesinde DSM-IV için Yapılandırılmış Klinik Görüşme Ölçeği (SCID-I) kullanıldı. DKB yaygınlık oranı Minnesota Dürtü Kontrol Bozukluğu Görüşme Ölçeği'nin modifiye edilmiş şekli uygulanarak saptandı. Tüm hastalar, Barratt Dürtüsellik Ölçeği-11 (BIS-11) ve Belirti Tarama Listesi'ni doldurdu. **Bulgular:** Örneklem grubunda en az bir DKB eş tanısı konan hasta sıklığı %11.2 (s=31) idi. Başka türlü adlandırılmayan DKB dışlandığında bu oran %7.9'a düştü. En sık görülen DKB aralıklı patlayıcı bozukluk iken (%6.1) bunu trikotillomani (%2.5) izlemekteydi. Özkıyım girişimi DKB olan grupta anlamlı oranda yüksekti. Eksen I psikiyatrik bozukluk ek tanısı ve BIS-11'de ölçüldüğü üzere toplam dürtüsellik, plansız eylem ve motor dürtüsellik puanları DKB olan grupta DKB olmayan gruba göre istatistiksel olarak anlamlı düzeyde daha yüksek bulundu. **Sonuç:** Bu çalışmanın sonuçları DKB'nın genç erişkinlerde sık görülen, ancak tanı konmayan

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*bozukluklar olduğunu göstermektedir. DKB, yaşam kalitesini ve ek hastalıkların gidişini etkilemektedir. Bu nedenle psikiyatrik görüşmelerde rutin olarak sorgulanmalı ve saptandığı takdirde etkin ve uygun bir şekilde tedavi edilmelidir. (Anadolu Psikiyatri Derg 2017; 18(2):113-120)*

**Anahtar sözcükler:** Dürtü kontrol bozuklukları, tıp öğrencileri, sosyodemografik ve klinik özellikler

## INTRODUCTION

Impulsivity can be defined as taking action, making decision and tending to act quickly on impulse rather than thought. Impulsivity includes inappropriate or too risky, unpremeditated act or feelings that cause undesirable consequences.<sup>1,2</sup> Impulsivity can be a characteristic of normal behavior that may have effects on living or a psychopathological part of many mental disorders.<sup>3-5</sup> Impulse control disorder (ICD) is characterized by problems in emotional and behavioral self-control.<sup>6</sup> Although the act is usually ego-syntonic, the feeling of regret or guilt is not rare.<sup>7</sup>

Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV-TR) includes the category, 'impulse control disorders not elsewhere classified', which consists of kleptomania, pathological gambling (PG), pyromania, trichotillomania, intermittent explosive disorder (IED), and impulse control disorders not otherwise specified (ICD-NOS). Other ICDs are compulsive skin picking, compulsive buying (CB), compulsive exercise (CE), compulsive internet usage disorder and compulsive non-paraphilic sexual behavior.<sup>8,9</sup> In DSM 5, PG is moved to 'Substance-Related and Addictive Disorders' chapter and trichotillomania and skin picking disorder are covered in 'Obsessive-Compulsive and Related Disorders'.

ICDs are relatively common among adolescents and adults, cause significant morbidity and mortality and affecting an estimated 8.9% of the general population.<sup>11</sup> The prevalence rate of ICDs is assumed to be more than it was estimated in the past.<sup>12-14</sup> ICDs are underdiagnosed disorders and the majority of healthcare providers did not have sufficient information for patients with ICDs.<sup>15</sup> A study of college students found that 10.4% met criteria for at least one lifetime ICD, demonstrating the common nature of these disorders in the general population.<sup>16</sup> On the other hand, Böhne found the lifetime prevalence of ICDs as 3.5% in college students and disorder-specific rates ranged between 0 and 1.2% in the same study.<sup>17</sup> The rates change according to particular ICD, sociocultural features, age and gender.<sup>18</sup>

Previous studies reported mixed results of age

differences between patients with ICDs. Müller et al and Lejoyeux et al indicated that the patients with ICDs were younger, but Grant et al didn't find any age difference between adult psychiatric patients with or without ICDs.<sup>12,19-21</sup> In a recent study performed on patients aged 60 and over, the lifetime prevalence rate of at least one comorbid ICD was found to be 22.4%.<sup>22</sup>

Impulsivity decreases with aging and children and teenagers are thought to be more impulsive. In a study that investigated the lifetime prevalence and age-of-onset distributions of DSM-IV disorders, the lifetime prevalence of ICDs was found as 24.8% and the age of onset of ICD was 11 years.<sup>23,24</sup> Although the age of onset of ICDs is usually adolescence and early adulthood, little is known about lifetime prevalence of ICDs in this population.

The aim of this study was to determine the characteristics of ICDs among medical students and evaluate the related sociodemographic and clinical features.

## METHODS

A total of 277 students in the fourth and fifth year of medical school were included in the study. Of the 289 students approached, 12 were excluded from the study because they did not give written informed consent. Other exclusion criteria were being in acute psychotic episode or delirium state.

Sociodemographic variables were obtained from a demographic data form. All participants were interviewed using the Turkish version of the Structured Clinical Interview for DSM-IV (SCID-I).<sup>25</sup> The SCID-I examines both current and lifetime Axis I psychiatric disorders according to the DSM-IV.<sup>26</sup>

The presence of lifetime ICDs were evaluated with a modified Turkish version of the Minnesota Impulse Disorders Interview (MIDI).<sup>27</sup> The MIDI is a 36-item semi-structured interview that includes questions for PG, IED, trichotillomania, kleptomania, pyromania, CB and compulsive sexual behavior.<sup>28</sup> However, for the other disorders reviewed under the rubric of the ICD-NOS, the questions in the MIDI determine the pre-

sence of increasing tension before the related act followed by relief after the completion of the act, the level of distress, and the presence of functional impairment.

All participants completed Turkish version of the Barratt Impulsiveness Scale Version 11 (BIS-11).<sup>29</sup> BIS-11, is a self-report questionnaire assesses six first-order factors (attention, motor, self-control, cognitive complexity, perseverance, and cognitive instability impulsiveness) and three second-order factors (attentional, motor, and non-planning impulsiveness).<sup>30</sup> The evaluation of BIS-11 gives 4 different sub-scores; total score, non-planning activity, attentional (cognitive) impulsivity and motor impulsivity. Turkish version of BIS-11 has been found to be valid and reliable.<sup>29</sup>

In addition all participants completed Symptom Check List-90 (SCL-90). SCL-90 is a self-report psychometric instrument and is used to evaluate a broad range of psychological symptoms.<sup>31</sup> The Turkish version of SCL-90 have sufficient reliability.<sup>32</sup>

## Statistical analysis

Descriptive statistical analyses were carried out for the evaluation of demographic and clinical characteristics of the entire group. Chi-square test and Fisher's exact test were used to analyze categorical variables and t-test was used for the comparison of parametric continuous variables. For prevalence rates of ICDs 95% confidence intervals were provided in this sample. All p values were two-tailed, and statistical significance was set as  $p < 0.05$ .

## RESULTS

The sample included 277 participants (129 females, 148 male) aged 20-44. The lifetime prevalence of at least one ICD in our sample was 11.2 %. When the participants with the diagnosis of ICD-NOS (ICD-NOS: compulsive skin picking, CB, CE, and compulsive non-paraphilic sexual behavior) were excluded the prevalence rate decreased to 7.9%. The most common ICD was IED (6.1%), followed by trichotillomania (2.5%)..

**Table 1.** Current and lifetime prevalence of ICDs among medical students

	Current		Lifetime	
	n	%	n	%
ICD (+) (without ICD-NOS)	18	6.5	22	7.9
ICD (+) (with ICD-NOS)	26	9.4	31	11.2
Intermittent explosive disorder	16	5.8	17	6.1
Trichotillomania	4	1.4	7	2.5
Pyromania	0	0	1	0.4
Compulsive buying	4	1.4	5	1.8
Pathological skin picking	5	1.8	6	2.2
Compulsive exercise	1	0.4	1	0.4

ICD: Impulse Control Disorder; NOS: Not otherwise specified

**Table 2.** Sociodemographic characteristics of 277 medical students

			ICD (+) (n=31)		ICD (-) (n=246)	
	n	%	n	%	n	%
Mean age	22.5±2.5		23.1±2.81		22.4±2.48	
Gender						
Female	129	46.6	13	11.2	116	88.8
Male	148	53.4	18	13.8	130	86.2
Marital status						
Married	13	4.7	2	15.3	11	84.7
Single/divorced	264	95.3	29	10.9	235	89.1
Economic Status						
Low	32	11.6	1	3.1	31	96.9
Mid+high	245	88.4	30	12.2	215	87.7

The lifetime and current prevalence of ICDs in medical students is presented in Table 1.

The majority of the sample were single (95.3%), and had mid or high level socioeconomic status (88.4%). Participants were separated into two groups; one group with ICDs named as ICD(+)

group and the other ICD(-) group. There was no statistically significant difference between socio-demographic characteristics of participants with or without ICDs. Table 2 shows sociodemographic characteristics of our sample.

The lifetime prevalence of ICDs was 5.4% in

**Table 3.** Comparison of lifetime prevalence of ICDs between genders

	Lifetime prevalence				p
	Female (n=129)		Male (n=148)		
	n	%	n	%	
ICD (+) (without ICD-NOS)	8	6.2	14	34.1	0.317
ICD (+) (with ICD-NOS)	13	10.1	18	12.2	0.583
Intermittent explosive disorder	4	3.1	13	8.8	0.049
Trichotillomania	4	3.1	3	2.0	0.782
Pyromania	0	0	1	0.7	1.0
Compulsive buying	3	2.3	2	1.4	0.666
Pathological skin picking	2	1.6	4	2.7	0.689
Compulsive exercise	0	0	1	0.7	1.0

ICD: Impulse control disorder, NOS: Not otherwise specified, IED: Intermittent explosive disorder, CB: Compulsive buying, CE: Compulsive exercise.

female and 7.4% in male. When ICD-NOS were included these rates increased to 17.6% and 34.1% respectively. The lifetime prevalence of IED was significantly higher in men (8.8%) than in women (3.1%) ( $p < 0.05$ ). Comparison of lifetime prevalence of ICDs between genders is presented in Table 3.

History of suicide attempts was significantly higher in the group with ICD ( $p = 0.034$ ). There

was statistically significant difference between comorbidity of other Axis I psychiatric disorders (depressive disorder, post-traumatic stress disorder, somatoform disorders, adjustment disorder, eating disorders) between groups with or without ICDs. Table 4 shows comorbidity of Axis I psychiatric disorders in ICD(+) and ICD(-) group.

**Table 4.** Comorbidity of Axis I psychiatric disorders in ICD(+) and ICD(-) group

	ICD(+) (n=31)		ICD(-) (n=246)		p
	n	%	n	%	
Presence of comorbidity	10	32.3	40	16.3	0.029
Mood disorders	4	12.9	7	2.8	0.024
Depression	4	12.9	5	2.0	0.011
Alcohol/substance use disorder	1	3.2	6	2.4	0.569
Anxiety disorders	8	25.8	29	11.8	0.046
Panic disorder	1	3.2	3	1.2	0.380
OCD	0	0	13	5.3	0.373
PTSD	2	6.5	2	0.8	0.063
GAD	1	3.2	2	0.8	0.301
Somatoform disorders	3	9.7	4	1.6	0.033
Adjustment disorder	4	12.9	9	3.7	0.045
Eating disorders	3	9.7	0	0	0.001

p value indicate the comparison between ICD(+) and ICD(-) group, OCD: Obsessive-compulsive disorder, PTSD: Post-traumatic stress disorder, GAD: Generalized anxiety disorder

**Table 5.** Comparison of psychometric tests between ICD(+) and ICD(-) group

	ICD (+)	ICD (-)	p
SCL- GSI	0.5±0.41	0.4±0.27	0.045
SCL-PSI	1.3±0.37	1.4±2.18	0.819
SCL- SOM	0.5±0.4	0.4±0.34	0.138
SCL-Anxiety	0.4±0.46	0.4±0.31	0.102
SCL-OC	0.8±0.60	0.6±0.46	0.104
SCL-Depression	0.5±0.61	0.4±0.37	0.146
SCL-IS	0.5±0.51	0.5±0.45	0.504
SCL-Psychoticism	0.3±0.36	0.2±0.24	0.094
SCL-PI	0.5±0.44	0.4±0.11	0.815
SCL-Hostility	0.6±0.49	0.3±0.39	<0.001
SCL-PA	0.2±0.31	0.2±0.25	0.438
SCL-AI	0.4±0.40	0.4±0.36	0.251
BIS-Total	63.4±11.0	57.8±8.85	<0.001
BIS-NPA	15.6±4.46	13.5±3.03	<0.001
BIS-MI	20.0±4.25	18.3±3.47	0.014
BIS-AI	26.9±4.32	25.4±3.98	0.066

ICD: Impulse control disorder, SCL: Symptom Check List, GSI: Global severity index, PSI: Positive symptom index, SOM: Somatization, OC: Obsessive-compulsive, IS: Interpersonal Sensitivity, PI: Paranoid ideation, PA: Phobic anxiety, BIS: Barratt Impulsivity Scale, NPA: Non-planning, MI: Motor impulsiveness, AI: Attentional impulsiveness

## Psychometric scales

Global Severity Index and hostility subscale points of SCL-90 were statistically higher in group with ICD. A significant difference was observed in terms of total impulsivity, non-planning activity, and motor impulsivity scores as determined by BIS-11 between groups with or without ICDs. Table 5 presents the comparison of psychometric tests between ICD(+) and ICD(-) groups.

## DISCUSSION

The results of the present study revealed that 11.2% of healthy medical students had at least one ICD based on DSM-IV-TR criteria. The importance of our study is that this is the first study investigating ICDs according to DSM-IV-TR criteria in young healthy population that don't receive or seek for treatment in our country and is the second in the literature following the research performed by Odlaug et al.<sup>16</sup> Our study shows that ICDs are highly prevalent disorders and should be monitoring well in general young population.

Kessler et al. reported the lifetime prevalence of ICDs as 24.8% in normal population and the prevalence rate of ICDs were found to be 15.4 % in National Comorbidity Survey-Replication in urban and rural settings.<sup>33</sup> Odlaug and Grant

found the lifetime prevalence of ICDs as 10.4% in college students.<sup>16</sup> Pallanti et al. examined behavioral addictions among high school students and found caffeine abuse, sex, relationship submissive, gambling, food starving, and food bingeing had highest scores.<sup>34</sup> Bohne reported a lower rate and found the lifetime prevalence of ICDs as 3.5% in college students.<sup>17</sup> In the literature the lifetime prevalence rate of at least one ICD ranges from 23.5% to 37.8% among psychiatric inpatients.<sup>12-14</sup> It's known that impulsivity is a psychopathological part of many mental disorders so it can be expected ICDs are more common in psychiatric patients than normal population. The different results obtained in researches may be due to the number of cases included, the distribution of psychiatric disorders, sociocultural features, criteria required for diagnosis and the heterogeneity of sample groups.

In the current study the most common ICD type was IED. Our findings of IED were consistent with the rate reported by Coccaro et al. in their research on community sample and despite different sample groups our results were parallel with the rates found in psychiatric patients.<sup>12,13,35,36</sup> In an adolescent study it was reported that nearly two-thirds of adolescents had lifetime anger attacks but only 7.8% of these met the DSM-IV criteria for IED and the age of onset is early (mean age 12 years) in 80.1% of cases.<sup>37</sup>

Trichotillomania is evaluated as an ICD based on DSM-IV in our study. Christenson et al reported the lifetime prevalence rate of trichotillomania to be 0.6 % in college students. In the same study hair pulling resulting in visible hair loss, but failing to meet full DSM-III-R criteria, was identified in 1.5% of males and 3.4% of females.<sup>38</sup> This difference may be a result of DSM criteria that require 'an increasing sense of tension or excitement before acting out; and a sense of pleasure, gratification, or release at the time the act is committed or shortly thereafter' for diagnosis. In DSM-5 this criteria is removed and a new criteria ('repeated attempts to decrease or stop hair pulling') that reminds addiction behavior is involved. Our finding of trichotillomania in 2.5% of the sample is consistent with the rate noted in research on college students but is lower from the rate found in preparatory course students.<sup>16,39</sup> Chronic fluctuating clinical course of trichotillomania and patients tend to hide their symptoms may cause these different rates.

In the current study, the lifetime rate of skin picking disorder, CB, CE, pyromania, kleptomania, PG and compulsive sexual behavior were notably lower than previous rates reported in researches on general population.<sup>24,39-44</sup> The prevalence rate of pyromania differs from 0% to 60% in the literature according to sample groups and criteria used for diagnosis. Our finding of pyromania in 0.4% of the sample is consistent with a previous research on preparatory course students but is lower than the rate Odlaug and Grant reported.<sup>16,39</sup> The prevalence rate of PG was found 0.42% in a study on a large sample group of the United States.<sup>43</sup> In another study gambling disorders were found to be more common in psychiatric inpatients.<sup>44</sup> Gambling is forbidden in our country and low rates can be expected for PG. Previous researches suggest that kleptomania may have a bimodal age at onset and episodic course.<sup>16</sup> The small size, mean age, education and socioeconomic status of our sample, episodic course of these disorders may be the reason of low rates.

IED were found to be more common in men. There are different results in the literature but it can be said that kleptomania, trichotillomania and CB are more commonly seen in female and

IED, PG and pyromania are more common in male generally.

In the literature it was reported that ICDs are more common in psychiatric patients than normal population.<sup>12-14,36,48</sup> Consistent with this data we found a significant difference between comorbidity of other Axis I psychiatric disorders between groups with or without ICDs. Although it's reported ICDs have a strong relation with childhood psychiatric disorders in the literature, we found no difference between groups according to interviews made with participants.<sup>22,47</sup> Suicide attempts, which impulsivity is an important risk factor for, were found to be more common in group with ICD.

None of the cases had a previous diagnosis of ICD or thus did not apply for treatment for ICD before. In a study that was performed on psychiatric inpatients it was reported only 1.5% of participants had a primary admission diagnosis of an ICD.<sup>12</sup> Müller et al. related the underdiagnosis of ICDs with busy inpatient units, interpreting the symptoms of ICDs as a part of other mental disorders, the ICD-NOS category which is not formally included in DSM and the legal consequences of these disorders.<sup>13</sup>

There are several limitations of this study. Our study was performed in a medical school on a small sample group that have mid or high level socioeconomic status so it's difficult to generalize our results to general public and this age group.

In conclusion, the results of this study have shown that ICDs are commonly seen but underdiagnosed disorders in young adult populations. Although the age of onset of ICDs is usually adolescence and early adulthood, little is known about lifetime prevalence of ICDs even in this population. None of the cases apply for the symptoms of ICDs and even if they were referred to a clinician the diagnosis is overlooked because of comorbid disorders. ICDs affect the quality of life, the course and outcome of comorbid disorders, so it is important to ask for these disorders in regular psychiatric interviews and treating them in an appropriate and specific way.

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