Impulse control disorders in an inpatient psychiatry unit of a university hospital

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Impulse Control Disorders in an Inpatient Psychiatry Unit of a University Hospital

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ÖZET:
Bir üniversite psikiyatri kliniğinde dürtü kontrol bozukluğu sıklığı

Amaç: Diğer ruhsal bozukluklarda olduğu gibi dürtü kontrol bozukluklarının (DKB) da psikiyatrik bozukluklarla bir arada bulunması, hastalarda tanı konmasını güçleştirir ve uygulanacak tedaviyi, hastalığın gidişini olumsuz etkiler. Bu bozukluklar rutin psikiyatrik muayene sırasında ve yarı yapılandırılmış görüşmelerde sorgulanmadığı için, sıklıkla tanı konması güçleşir ve tedavisinde gecikmeler olur. Dürtü kontrol bozuklukları kategorisi uzun zamandır yaygın olarak kullanılan iki sınıflandırma sisteminde de yer almasına karşın, bu konu üzerinde az sayıda çalışma yapılmıştır. Bu çalışmada, konuya katkıda bulunmak amacıyla klinikte yatmakta olan bir psikiyatrik hasta grubunda dürtü kontrol bozukluklarının sıklığının ve ilişkili klinik ve sosyodemografik değişkenlerin değerlendirilmesi amaçlanmıştır.
Yöntem: Psikiyatri kliniğimize 6 aylık bir süre içerisinde yatan 103 erişkin hasta çalışmaya dahil edilmiştir. Hastaların DSM-IV'e göre eksen I tanılarını belirlemek için DSM-IV için yapılandırılmış klinik görüşme ölçeği kullanıldı. Dürtü kontrol bozuklukları saptamak için Minnesota Dürtü Kontrol Bozukluğu Görüşme Ölçeği'nin modifiye edilmiş şekli hastalara uygulandı. Dürtüsellik için Barratt Dürtüsellik Ölçeği-11(BDÖ-11) kullanıldı. Ayrıca tüm hastalar Zuckerman Heyecan Arama Ölçeğini de tamamladılar.
Bulgular: Psikiyatrik yatan hasta örneklem grubunda en az bir dürtü kontrol bozukluğu eştanısı alan hasta sıklığı %37.9 (n= 39) idi. En sık görülen dürtü kontrol bozukluğu kompulsif satın alma iken (n= 17, %16) bunu aralıklı patlayıcı bozukluk (n= 15, %14) ve patolojik kumar bozukluğu (n= 7, %7) izlemekteydi. Kleptomani tanısı konulan herhangi bir hasta yoktu. Dürtü kontrol bozukluğu eştanısı konan ve konmayan hastalar arasında yaş, cinsiyet, medeni hal, hastaneye yatış sayısı yönünden anlamlı bir farklılık yoktu. Bununla birlikte, eğitim süresi, ilk hastaneye yatışta konulan birincil tanı ve birincil tanının başlangıç yaşı açısından dürtü kontrol bozukluğu eştanısı alan grup farklılık gösteriyordu. Eğitim süresi dürtü kontrol bozukluğu eştanısı alan grupta daha fazla iken, birincil hastalığın başlangıç yaşı bu grupta daha düşüktü.Sadece kompulsif satın alma bozukluğu eştanısı alan hastalar dürtü kontrol bozukluğu eştanısı almayan hastalara gore daha gençti (31.5 yıla karşılık 39.5 yıl). Diğer tüm dürtü kontrol bozuklukları eştanıları arasında demografik ve klinik özelliklere göre yapılan karşılaştırmalarda anlamlı bir farklılık saptanmadı. BDÖ-11'de ölçüldüğü üzere, toplam dürtüsellik , plansız eylem ve motor dürtüsellik skorları dürtü kontrol bozukluğu eştanısı olan grupta olmayan gruba gore daha yüksekti. Aralıklı patlayıcı bozukluğu ve kompulsif satın alma bozukluğu olan hastaların toplam dürtüsellik skorları dürtü kontrol bozukluğu olmayan hastalara kıyasla anlamlı olarak yüksekti.
Tartışma: Bu çalışma sonuçları kliniğimize başvuran hastaların ortalama üçte birinin DSM-IV'e göre en az bir dürtü kontrol bozukluğu eştanısı aldıklarını göstermektedir. Bulgularımız daha önce özgül tanılı hasta gruplarında yapılmış iki Fransız çalışması ve iki farklı hastanede erişkin yatan psikiyatrik hasta grubunda dürtü kontrol bozukluğu sıklığını araştıran bir Kuzey Amerika çalışmasının sonuçlarıyla uyumlu bulunmuştur. Dürtü kontrol bozuklukların oldukça sık oranda görülmesi ve buna bağlı olarak psikiyatrik bozuklukların seyri sırasında ortaya çıkabilecek komplikasyonlardan kaçınabilmek için, psikiyatristlerin bu bozuklukların farkında olmalı ve gerekli tedavi yaklaşımlarını sergilemelidirler.

Anahtar sözcükler: Dürtü kontrol bozuklukları, yatan hastalar, kompulsif satın alma, dürtüsellik, heyecan arama

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ABSTRACT:
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Objective: Like other comorbid disorders, comorbidity of impulse control disorders (ICDs) in various psychiatric disorders may complicate the diagnostic work-up of patients which might further influence the outcome and the treatment. As these disorders are not routinely screened for in regular psychiatric evaluations and several commonly used semi-structured interviews, it is highly probable that these disorders may go unrecognized and untreated. Despite the inclusion of ICD category under two widely used classification systems a long time ago, relatively little research has been done on this area. We conducted this study to find out the frequency of ICDs and search for relevant clinical and sociodemographic variables in a group of psychiatric inpatients.
Method: One hundredandthree consecutive adult patients hospitalized in our psychiatric inpatient unit within 6 months period were included in the study. Axis I diagnoses were rendered using a Structured Clinical Interview for DSM-IV (SCID-I). ICDs were investigated with using the modified version of Minnesota Impulsive Disorders Interview. Impulsivity was measured with the Barratt Impulsiveness Scale Version 11 (BIS-11). Also all patients completed Zuckerman Sensation Seeking Scale Form V.
Results: The prevalence rate for all comorbid ICD in this sample was 37.9% (n= 39). The most common ICD subtype was compulsive buying (CB) (n= 17, 16%) followed by intermittent explosive disorder (IED) (n= 15, 14%) and pathological gambling (n= 7, 7%). There were no cases meeting the criteria for kleptomania. There was no statistical difference between the characteristics of patients with and without ICDs with regards to age, sex, marital status, and number of hospitalizations. Some characteristics of the ICD(+) group (i.e. duration of education, primary admission diagnosis, and age of onset for primary diagnosis) were significantly different from ICD(-) patients. The duration of education in ICD(+) group was significantly longer than ICD(-) group. On the other hand, age at onset for primary psychiatric disorder in ICD(+) inpatients was lower than ICD(-) inpatients. Only patients with comorbid CB were significantly younger than ICD(-) group (31.5 vs 39.5 respectively). The comparison of sociodemographic and clinical variables among all other ICD subgroups did not show any significant differences. A significant difference was observed between ICD(+) and ICD(-) groups in terms of total impulsivity, nonplanning activity, and motor impulsivity scores as determined by BIS-11. Total impulsivity score was significantly higher in patients with IED and CB than ICD(-) group.
Discussion: The results of this study revealed that about one third of patients admitted to our inpatient unit had at least one co-morbid impulse control disorder according to DSM-IV TR. Our findings are consistent with the results of two earlier French studies conducted among specific group of patients and another North American study searching for impulse control disorders in adult psychiaric inpatient units of two different hospitals.The high prevalence rate of impulse control disorders among psychiatric inpatients should alert mental health professionals to look for and treat these disorders in order to avoid any further complications.

Key words: Impulse control disorders, inpatients, compulsive buying, impulsivity, sensation seeking

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INTRODUCTION

Impulsivity is the fundamental component of the initiation of behavior which can be a characteristic of normal behavior or a psychopathological part of many mental disorders (i.e. disruptive behavior disorders, substance abuse, personality disorders, bipolar disorder, and other potentially destructive behavioral problems) (1-7). Impulsivity is the core symptom of impulse control disorders (ICDs) which are characterized by the repetitive occurrence of impulsive behavior (8). Other clinical characteristics of ICDs are failure to resist on impulse; the drive or

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temptation to perform some act harmful to oneself and/or to others; 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 (8). They have been categorized in DSM-IV-TR as "impulse control disorders" which includes pathological gambling (PG), kleptomania, intermittent explosive disorder (IED), trichotillomania, pyromania and impulse control disorder not otherwise specified (NOS) (9).

Several studies have provided data suggesting that ICDs are common in both psychiatric patients and general population (10-14). Despite high number of studies on several aspects of PG, studies on other ICDs are relatively scarce (15-17). In a recent study conducted among 1709 psychiatric outpatients with a semistructured diagnostic interview, Zimmerman et al. (17) found 2.3% of patients had a lifetime diagnosis of PG, all of whom also had at least one other DSM-IV axis-I disorder. Recently, several other studies have been done on other ICDs especially on compulsive buying (CB) to search for their prevalence and their relationship with sociodemographic and clinical variables (11,13,18-21). Lejoyeux et al. reported in three different French studies that 19% of patients with major depression, 38% of patients with alcoholism, and 23% of patients with obsessive-compulsive disorder had at least one lifetime diagnosis of several ICDs (10,11,13). Grant et al (12), in a recent pioneering North American study among psychiatric inpatients, found lifetime estimates of ICD comorbidity as 32.8%, a number quite consistent with other estimates.

Like other comorbid disorders, comorbidity of ICDs in different psychiatric disorders may complicate the diagnosis of patients which might further influence the outcome and the treatment of cases. As these disorders are not routinely asked for in regular psychiatric interviews and several commonly used semi-structured interview questionnaires, it is highly probable that these disorders may go underdiagnosed in several different patient populations. Thus as like the comorbidity of other axis I disorders, identifying ICDs with a regular screening method become quite important for psychiatrists to avoid unpleasant complications (12).

Despite inclusion of ICDs category under two widely used classification systems for a long time, relatively little research has been done on this area. To contribute to this research area, we have conducted a study aiming to evaluate the prevalence of ICDs in a group of psychiatric inpatients and search for relevant clinical and sociodemographic variables.

METHOD

Study Setting and Subjects

The sample of current study included 103 consecutive adult inpatients aged between 18 and 72 years who have been hospitalized at inpatient clinic of the Department of Psychiatry, Cukurova University Faculty of Medicine between January 1, 2006 and June 30, 2006. The Hospital of Cukurova University Medical School is a tertiary level hospital located in Adana, southern part of Turkey, serving to a population of 3 million including surrounding provinces. After the approval of the study protocol by institutional review board, written informed consent was obtained from all patients before participating in study.

All patients older than 18 years of age hospitalized during aforementioned period were approached for inclusion into study. Potential subjects who had organic brain syndrome, younger than 18 years of age, unable to cooperate with psychiatric interview and other scales, and who were unable to provide written informed consent to participate in the study were excluded from the study. 142 patients were approached, 39 patients were excluded due to these factors, resulting in a sample size of 103.

Socio-demographic variables (i.e. age, gender, marital status, education, socioeconomic status, employment), admission diagnosis, familial and medical histories were directly obtained from patient's psychiatric records. The interviews with patients who were confused, anxious or agitated, were postponed until the patient's psychiatric status improved to conduct a psychiatric examination. The information obtained from the patients was confirmed with the collateral information gathered from other accessible sources (e.g. living parents or siblings, spouses, medical files of those under follow-up, etc.).

Procedures and Assessment Instruments

All patients underwent two semi-structured psychiatric interviews for evaluation of primary axis I psychiatric diagnosis and lifetime ICD diagnosis. The presence of lifetime ICDs were evaluated with a modified Turkish version of Minnesota Impulsive Disorders Interview (MIDI) (22) and questioning of DSM-IV criteria if available. MIDI is a 36-item semistructured interview that includes separate screening modules for exploring DSM-IV criteria for ICDs (i.e PG, IED, trichotillomania, kleptomania, pyromania, CB, compulsive sexual behaviour (CSB) and compulsive exercise (CE)) (22). In MIDI, for ICDs already covered in DSM-IV, patients were asked questions mirroring DSM criteria after a general question. However for other disorders that have not yet included in DSM (i.e. compulsive buying, compulsive sexual behavior, compulsive exercise) on its own but reviewed under the topic of ICD-NOS, the questions in MIDI reflect the ICD criteria of DSM of increasing tension before the related act followed by relief after the completion of act and subsequently assess distress and impairment.

Turkish version of ***Structured Clinical Interview for DSM-IV Clinical version*** (***SCID-I CV***) was administered to all patients to determine and confirm the primary diagnosis of the patients (23). The SCID-I (24) examines both current and lifetime axis I psychiatric disorders according to DSM-IV. For statistical purposes in the study, we only took into account lifetime axis I psychiatric diagnosis of SCID-I. Along with SCID interview, a detailed psychiatric interview was conducted to obtain further information regarding, sociodemographic features, familial and medical history of patients. Along with comorbid disorders determined in SCID-I primary admission diagnosis based on patients referal were also noted and used for grouping of primary diagnosis.for statistical purposes, primary diagnosis were categorized according to DSM-IV-TR (9) into six different groups (i.e: psychotic disorder, mood disorders, anxiety disorders, substance use disorders including alcohol use disorder, somatoform disorder and other disorders.) Impulse control disorders, eating disorders and axis II disorders were categorized within "other disorders" group.

All patients also completed Turkish versions of the Zuckerman Sensation-Seeking Scale Form V (SSS) (25) and the Barratt Impulsiveness Scale Version 11 (BIS-11) (26) for the assessment of different aspects of impulsivity and sensation seeking.

Barratt Impulsiveness Scale version 11 (BIS-11) (27), is a self-report questionnaire that uses a 3 factor impulsivity model that includes both motor and cognitive impulsivity. BIS-11 includes 30 items grouped into three subscales: attentional (inattention and cognitive instability), motor (motor impulsiveness and lack of perseverance), and non-planning (lack of self-control and intolerance of cognitive complexity). The evaluation of BIS-11 gives 4 different sub-scores; total score, nonplanning activity, attentional (cognitive) impulsivity and motor impulsivity. Turkish version of BIS-1126 has been found to be valid and reliable presenting similar psychometric properties like the original version of BIS-11.

The Zuckerman Sensation-Seeking Scale form V (SSS) (28,29) is composed of four 10-item subscales: Thrill and Adventure Seeking (TAS), Experience Seeking (ES), Disinhibition (DIS), and Boredom Susceptibility (BS). These subscales may be administered in isolation or as a test battery and can be combined into a total score. The TAS subscale evaluates involvement in sports or physically risky activities like parachuting or scuba diving; the ES subscale evaluates the desire to engage in novel experiences like music and art; the DIS subscale evaluates social sensation seeking through drinking, sex, and parties; and the BS subscale evaluates intolerability toward repetitive, routine, and familiar occurrences (29). The total score provides an overall assessment of sensation seeking. In the Turkish adaptation study of the scale Ongel concluded that the Turkish version of the scale had sufficient reliability (25).

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. Particularly in the comparison of the groups with individual ICDs and

without lifetime ICD, non-parametric Mann Whitney U test was performed for continuous variables as the data were not normally distributed. 95% confidence intervals (CI) were provided for prevalence rates of ICDs in this sample. All *p* values were two-tailed and statistical significance was set as p<0.05.

RESULTS

The sample of the present study included 103 of 142 inpatients (45 female, 58 male) hospitalized during six months period. The 39 patients were excluded as they did not meet inclusion criteria. Mean age of the sample was 38.1±13.1 years (range: 18-72 years). There was no significant difference between gender groups in terms of age (for female 37.6±(13.5) years; for males 38.5±(12.7) years; t= -3.2, df=101, p=0.75). Primary admission diagnosis of whole inpatients were grouped according to DSM-IV-TR categories as mood disorders (n=37), psychotic disorders (n=28), substance use disorders (SUD) (n=21), anxiety disorders (n=7), somatoform disorders (n=5) and other psychiatric disorders (n=5). Dissociative disorders, ICDs, organic mental disorders like delirium, dementia, and other disorders are included under other disorders category. Only one patient was admitted to our inpatient clinic with the primary diagnosis of ICD (trichotillomania).

The prevalence rate for all comorbid ICD in this sample was 37.9% (n=39). Table 1 presents the lifetime prevalence rates for all ICDs. The most common ICD subtype was CB (n=17, 16.5%) followed by IED (n=15, 14.6 %) and PG (n=7, 6.8%). There was no case meeting the criteria for kleptomania. Of 39 patients with lifetime ICD diagnosis, 27 had one, 10 had two, and 2 patients had three lifetime comorbid ICDs diagnosis. One of the patients with three ICDs had met diagnosis of pyromania, trichotillomania and CSB; whereas the other patient met diagnosis of CB, CSB and IED.

Table 1: Lifetime Prevalance of Impulse Control Disorders Among Psychiatric Inpatients

Impulse Control Disorder	n	%	95% CI (%)
All ICDs	39	37.9	28.5 - 47.9
Kleptomania	0	0	0
Pathological gambling	7	6.8	2.8 - 13.5
Intermittent Explosive Disorder	15	14.6	8.3 - 22.8
Pyromania	1	1	0.02 - 5.2
Trichotillomania	3	2.9	0.6 - 8.2
ICD-NOS			
Compulsive Buying	17	16.5	9.9 - 25.1
Compulsive sexual behaviour	6	5.8	2.1 - 12.2
Compulsive exercise	5	4.9	1.6 - 10.9

ICD: Impulse Control Disorder; CI: Confidence Intervals; NOS: Not otherwise specified

The sociodemographic and clinical characteristics of the patients with and without lifetime comorbid ICDs are presented in Table 2. There was no statistically significant difference between the characteristics of patients with and without ICDs in regard to age, sex, marital status, and number of hospitalizations. Some characteristics of the ICD (+) group (i.e. duration of education, primary admission diagnosis and age of onset for primary diagnosis) were significantly different from ICD (-) patients. The duration of education in ICD (+) group was significantly longer than ICD (-) group. On the other hand, age at onset for primary psychiatric disorder in ICD (+) inpatients was lower than ICD (-) inpatients.

The most common primary diagnosis for ICD (+) group was SUD (38.5%) contrary to ICD (-) group who had mood disorders as the most frequent primary admission diagnosis. The second common diagnosis in ICD (-) group was mood disorders (23.1%) followed by psychotic disorders (20.5%).

The comparison of patients with ICD subtypes with ICD (-) group with regards to several demographic and clinical features is presented in Table 3. Only patients with comorbid CB was significantly younger in ICD(+) group than ICD (-) group (31.5 vs 39.5 years respectively, p<0.05). The differences in all other ICD patients did not reach to a significant level. All patients who received a comorbid diagnosis of PG (n=7) and CE (n=5) were male. But in comparison with ICD (-) group only PG cases achieved a statistical significance (p<0.001). Additionally; the only pyromanic in the sample was female. Majority of patients with CB and trichotillomania were female, whereas majority of patients with ?CS and IED were male. The comparison of there variables (66.7%) with ICD (-) group didn't result in a significant difference (p>0.05). A significant difference was found for the duration of education between ICD (+) and ICD (-) groups. The difference in terms of education years in the evaluation of ICD individually were not significant except for IED(+) and CB (+) cases (Table 3)

Table 2: Demographic and Clinical Features of Psychiatric Inpatients With or Without a Comorbid Lifetime Impulse Control Disorder

Characteristics	ICD (+) (n=39)	ICD (-) (n=64)	T / X	df	p
Current Age (years) (mean (SD))	35,7 (13,0)	39,5 (13,2)	-1.43	101	0.156
Gender n(%)			1.54	1	0.213
Male	25 (64,1)	33 (51,6)			
Female	14(35,9)	31(48,4)			
Marital Status n (%)			0.617	1	0.432
Married	17 (43.6)	33 (51.6)			
Single	22 (56.4)	31 (48.4)			
Education			9.81	2	0.07
Elementary School	7 (17.9)	29 (45.3)			
High School	15 (38.5)	22 (34.4)			
College Graduate	17 (43.6)	13 (20.3)			
Education (years)	12.3 (4.1)	9.1 (4.1)	3.75	101	<0.001
Age of onset of primary disorder (years)	25.2 (9.9)	31.5 (12.7)	-2.61	101	<0,01
Duration of primary disorder (years)	9.8 (9.4)	7.1 (5.6)	1.81	101	0.073
Number of hospitalizations	1.9 (1.0)	2.4 (2.2)	1.4	101	0.160
Primary Admission Diagnosis			18.67	5	0.002
Psychotic disorder	8 (20.5)	20 (31.3)			
Mood disorder	9 (23.1)	28 (43.8)			
Anxiety disorder	2 (5.1)	5.(7.8)			
Substance use disorder	15 (38.5)	6 (9.4)			
Somatoform disorder	1(2.6)	4 (6.3)			
Other	4 (10.3)	1 (1.6)			

Table 3: Comparison of Sociodemographic and Clinical Characteristics of Patients according to presence of Each Impulse Control Disorder (ICD)

	ICD -	ICD +						
		PG	IED	Trich	Pyromania	CB	CS	CE
n (%)	64 (62.1)	7 (6.8)	15(14.6)	3 (2.9)	1 (1)	17 (16.5)	6 (5.8)	5 (4.9)
Age (years) mean (SD)	39.5 (3.1)	45.4 (16.5)	33.7(11.9)	29.7 (3.8)	28	31.5 (11.1) #	30.5 (10.2)	46.8 (11.7)
Male (n,%)	33 (51.6)	7 (100) *	10 (66.7)	1 (33.3)	0 (0)	6 (35.3)	4 (66.7)	5 (100)
Single n,%)	31 (48.4)	2 (28.6)	9 (60)	2 (66.7)	1 (100)	9 (52.9)	4 (66.7)	0 (0)
Education (Year)	9.1 (4.1)	10.1 (3.9)	12.2 (3.8) +	13.7 (2.3)	15	11.7 (3.7) ##	13.2 (5.6)	11.4 (4.1)
Admission Diagnosis								
Psychotic D	20 (31.3)	0 (0)	3 (20)	1 (33.3)	0 (0)	3 (17.6)	1 (16.7)	0 (0)
Mood D.	28 (43.8)	1 (14.3)	4 (26.7)	0 (0)	0 (0)	5 (29.4)	0 (0)	0 (0)
Anxiety D.	5.(7.8)	0 (0)	1 (6.7)	0 (0)	0 (0)	0 (0)	1 (16.7)	1 (20)
SUD	6 (9.4)	6 (85.7)	4 (26.7)	0 (0)	0 (0)	7 (41.2)	1 (16.7)	4 (80)
Somatoform.D.	4 (6.3)	0 (0)	1 (6.7)	1 (33.3)	0 (0)	0 (0)	0(0)	0 (0)
Other	1 (1.6)	0 (0)	2 (13.3)	1 (33.3)	1 (100)	2 (11.8)	3 (50)	0 (0)

PG: Pathological gambling; IED: Intermittent Explosive Disorder; Trich: Trichotillomania; CB: Compulsive Buying; CSB: Compulsive Sexual Behavior; CE: Compulsive Exercise; SUD: Substabnce use Disorder;

ICD(-) vs PG; * Fisher exact test, p=0.016

ICD (-) vs IED; + U=291.5, p=0.016

ICD (-) vs CB; # U=341.5, p=0.019; ## U=361.5, p=0.031

Psychometric Scales

General factor and subscale scores (i.e. thrill and adventure seeking (TAS), disinhibition (dis), boredom susceptibility (bs), experience seeking (es)) of SSS did not show any statistical differences between ICD (+) and ICD (-) groups. Regarding the subtypes of ICDs, SSS-Dis score of IED group, total and SSS-TAS subscale scores of CB group were significantly higher than the scores of ICD (-) group. We did not find any other significant differences between groups of ICD subtypes and ICD (-) group in terms of SSS scores (p>0,05).

A significant difference was observed between ICD

Table 4: Comparison of Impulsivity and Sensation Seeking Scores of Patients with and without Lifetime Impulse Control Disorder (ICD)

	ICD (-) N=65	ICD(+) PG (n=7)	IED (n=15)	Trich (n=3)	Pyromania (n=1)	CB (n=17)	CSB (n=6)	CE (n=5)	Total ICD + (n=39)
BIS-Total	67.0 (8.6)	66.3 (7.3)	75.5(10.9)$^{\#}$	70.3 (7.6)	77	75.3(9.6)$^{+}$	68.5 (9.4)	72.6 (7.7)	72.2(10.0)*
BIS-NPA	26.3 (4.4)	25.0 (4.9)	25.3(1.4)$^{\#\#}$	27.3 (3.5)	31	30.5(5.9)$^{++}$	28.5 (5.7)	28.0 (4.3)	28.6 (5.7)**
BIS-CI	19.2 (2.8)	21.3 (2.5)	20.5(2.9)	18.6 (1.2)	20	20.9(1.6)$^{+++}$	19.3 (2.8)	20.6 (2.5)	20.2 (2.3)
BIS-MI	21.6 (4.6)	20.0 (2.1)	25.3(5.5)$^{\#\#\#}$	24.3 (6.7)	26	23.9(4.3)	20.7 (3.1)	24.0 (4.4)	23.4(4.5)***
SSS-Total	12.0 (5.4)	15.6 (6.5)	13.5(6.6)	15.3 (4.9)	21	15.9(6.5)$^{++++}$	14.3 (7.1)	11.6 (3.9)	13.9 (5.9)
SSS-TAS	4.5 (2.5)	5.4 (2.9)	4.9(2.2)	4.7 (1.5)	6	6.1(2.4)$^{+++++}$	4.8 (3.3)	5.2 (1.5)	5.0 (2.4)
SSS-ES	2.8 (1.6)	3.1 (1.9)	2.7(1.8)	4.0 (2.0)	6	3.4 (1.8)	3.0 (1.8)	2.4 (1.5)	2.9 (1.6)
SSS-Dis	2.2 (1.7)	4.0(1.8)$^{\varnothing}$	2.5(2.1)	3.3 (2.3)	6	3.2 (1.8)	3.7 (1.6)	1.6 (1.1)	2.9 (1.8)
SSS-BS	2.5 (1.6)	3.0 (1.5)	3.3(1.9)	3.3 (0.6)	3	3.2 (1.9)	2.8 (1.9)	2.2 (1.6)	2.9 (1.6)

$^{\varnothing}$As there was no cases in the sample, Kleptomania is not included in the table

PG: Pathological gambling; IED: Intermittent Explosive Disorder; Trich: Trichotillomania; CB: Compulsive Buying; CSB: Compulsive Sexual Behavior; CE: Compulsive Exercise; BIS:Barratt Impulsiveness Scale; NPA: Non-planning; CI: Cognitive Impulsivity; MI:Motor Impulsivity; SSS: Sensation Seeking Scale; TAS: Thrill and Adventure Seeking; ES: Experience Seeking; Dis: Disinhibition; BS: Boredom Susceptibility

ICD (-) vs PG; $^{\varnothing}$U=102.5, p=0.017

ICD (-) vs IED; $^{\#}$U=249.5, p=0.004; $^{\#\#}$U=307, p=0.03; $^{\#\#\#}$U:283.5, p=0.014

ICD (-) vs CB; $^{+}$U=297.5, p=0.004; $^{++}$U=300, p=0.005; $^{+++}$U=316, p=0.008; $^{++++}$U=357.5, p=0.03; $^{+++++}$U=363.5, p=0.035

ICD (-) vs ICD (+); * t=2.76 df=101, p=0.007; ** t=2.36, df=101, p=0.02; *** t=1.93, df=101, p=0.056

(+) and ICD (-) groups in terms of total impulsivity, nonplanning activity, and motor impulsivity scores as determined by BIS-11. Total impulsivity score was significantly higher in patients with IED and CB than ICD (-) group (for IED 75.5 vs 67, p=0.004; for CB 75.3 vs 67, p=0.004). CB patients also had significantly higher scores of unplanned activity and cognitive impulsivity whereas patients with IED had higher unplanned activity and motor impulsivity scores than ICD (-) (Table 4). We did not find a significant difference among inpatients with remaining ICD subtypes (i.e. PG, trichotillomania, pyromania, CSB, CE) in terms of any impulsivity scores in BIS-11.

DISCUSSION

The results of the present study revealed that 37.9% of inpatients admitted to a psychiatry inpatient unit during a six-month period had at least one comorbid impulse control disorder based on DSM-IV TR criteriae. Our findings were consistent with two earlier French studies conducted on a specific group of patients (i.e. alcohol use disorder (13) and depression (10)) and another North American study (12) screened for impulse control disorders in adult inpatients of two different hospitals.

Despite being included in diagnostic classification systems for a long time, ICDs are not regularly considered during routine psychiatric interviews. Mental health professionals are not quite aware of these disorders. Also individuals with ICDs may not seek treatment as they are possibly unaware of presence of such disorders and available treatments for ICDs. This argument is clearly supported by the findings of present study. Among 103 inpatients included in this study, only 1 patient (0,9%) had a primary admission diagnosis of an ICD (e.g. trichotillomania). Similarly Grant et al (12) reported that only 1.3% of inpatients have ICD diagnosis as the admission diagnosis. In the similar vein, ICDs has been found to be more common in patients with different psychiatry diagnosis (e.g. depressive and alcohol dependent patients) than predicted (10,13). Lejoyeux et al showed that 28.9% of depressed patients (10) and 38% of alcohol dependent patients (13) had ICDs. Besides, Grant et al (12) found that 30.9% of psychiatric inpatients were diagnosed with at least one type of ICD in a heterogenous adult sample. In one pioneer study (14) systematically investigating the frequencies and clinical correlates of a broad range of formal impulse-control disorders in 102 adolescent psychiatric inpatients, a high proportion of adolescents (40%) was found to have a current ICD, but only a very small proportion (1%) given an admission diagnosis of

an ICD. The findings in these recent studies from several different countries along with our results confirm that ICDs are common disorders in psychiatric inpatient populations.

We established that CB and IED are the most common ICD diagnosis in the present sample. CB is classified within the category of ICD-NOS in DSM-IV-TR 9 and also included in putative "obsesive compulsive spectrum disorders" and “affective spectrum disorders” (30). According to this hypothesis compulsive buying is a type of compulsion that helps patients to cope with anxiety and soothe themselves (18,19). Lifetime prevalence of CB (16.5%) in the present study was higher than the lifetime prevalence rate of CB (9.3%) estimated in Grant’s study (12). Black et al. (31) reported that patients with CB disorder had significantly more major depression than other patients. IED was the second more frequent ICD in our patient sample. The lifetime prevalence of IED (14.6%) in our population was quite similar with the rate reported in a group of depressed psychiatric inpatients (16.8%) (10), and in a similar number of adolescent inpatient groups (12.7%) (14). However, it was quite higher than the lifetime prevalence rate of IED in an adult inpatient group reported by Grant et al (%6.9) (15). The differences in prevalence rates of CB and IED in Grant’s study (15) compared to mentioned studies might be explained by the number of cases included and the distribution of psychiatric diagnoses in the samples.

The recent studies have shown us that the prevalence rate of PG in psychiatric inpatients and in general population is not as rare as once thought (17). Along with IED, PG is most widely recognized ICD both by medical professionals and lay persons. Zimmerman et al (17) found that among 1709 psychiatric outpatients, 40 (2.3%) patients had a lifetime diagnosis of DSM-IV PG, all of whom had at least one other DSM-IV axis I disorder. Patients with PG had significantly more axis I disorders than patients without PG, and had significantly higher rates of other impulse control disorders along with other disorders. In the current study, we found a prevalence rate of 6.8% for PG in our psychiatric inpatients which was higher than the rate found in the Zimmerman’s study conducted among psychiatric outpatients (17), but quite similar with the rate (6.9%) reported in a sample of psychiatric inpatients (12). The psychiatric disorders of the inpatients may be much more complicated and more severe than outpatients resulting in higher number of comorbid disorders more likely as in our sample.

PG is closely related to substance use disorders (SUD) (16). In the current study, 6 of 7 patients with PG (85%) had an SUD as an admission diagnosis pointing to the close relationship between these two disorders. Our figure was quite high with regards to previous findings. Leiseur and Heineman (17) found that only 14% of alcohol or drug dependent patients met diagnostic criteria for PG whereas Lejoyeux et al. (13) found much lower rate (8.9%) of PG in alcohol dependent patients.

Like many studies in literature, we found the kleptomania and pyromania to be very rare (18,21). We didn't observe any patient with a diagnosis of lifetime kleptomania in our sample and diagnosed only one patient with pyromania. Sociocultural influence and legal consequences may have prevented the patients to admit to the symptoms and disorder eventually. Besides If there had been more patients with a diagnosis of obsessive compulsive disorder or other anxiety disorders in our sample, the frequency of kleptomania or other ICDs could have been higher, as in literature kleptomania and some other ICDs were found to be closely associated with obsessive compulsive disorder (30).

Among several clinical and demographic variables, the most significant difference is observed in gender distribution of the ICDs. Even though, it does not reach statistical significance in several comparisons, the gender distribution still presents us an idea about the gender differences in impulse control disorders. Similar to common notion, both IED and PG were found to be more common in males than females, whereas CB and trichotillomania were more common in female patients. In the current sample all patients who received a diagnosis of PG (n=7) and compulsive exercise (n=5) were males.

There are several limitations of this study to be mentioned. First, we can not generalize our findings to general community or all psychiatric population as the study was conducted among inpatients at a university hospital. Thus we could not assume that our sample

reflect the features of general psychiatric population. Additionally sample size was relatively small preventing us to collect sufficient number of cases in several ICDs (i.e. pyromania, kleptomania) for drawing any statistical conclusions. Most of the patients involved in this study had a primary diagnosis of SUD and mood disorders, therefore we were not able to construct an homogenous sample to avoid bias. Additionally, individuals with ICDs might have not disclosed their symptoms or disorders (like kleptomania, PG) in order to avoid legal consequences or public stigmatization. They might also have not been aware of the availability of an effective treatment of these disorders and not seeking for a help which could decrease the number of patients hospitalized with these diagnoses. As casinos are banned for locals by law in Turkey, the frequency of PG among psychiatric inpatients may be much lower than other countries that had legal casinos or other gambling facilities.

In conclusion, the frequency of ICDs are quite high (37.9%) among psychiatric inpatients. However only a small percent (less than 1%) of these patients seeked treatment for their problems initially and most of them were unaware of their diseases. This might be a result of an approach that do not regard these symptoms as illnesses or patients not report symptoms or seek treatment. Additionally clinicians do not assess for these disorders adequately resulting in underdiagnosis and undertreatment. The incidence, prevalance, prognosis and management of this illness group depends on attentive mental examination. Currently there are only limited data concerning the management and pharmacological treatment options for ICDs. Thus this topic definitely deserves much more interest and many more studies to improve our understanding about its phenomenology, epidemiology and treatment approaches.

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