



Impulse control disorders in psychiatric inpatients

Astrid Müller ^{a,*}, Katharina Rein ^a, Ines Kollei ^a, Andrea Jacobi ^b, Andrea Rotter ^b, Patricia Schütz ^b, Thomas Hillemacher ^c, Martina de Zwaan ^a

^a Department of Psychosomatic Medicine and Psychotherapy, University Hospital of Erlangen, Germany

^b Department of Psychiatry and Psychotherapy, University Hospital of Erlangen, D-91054 Erlangen, Germany

^c Center for Addiction Research (CARE), Department of Psychiatry, Socialpsychiatry and Psychotherapy, Hannover Medical School, Germany

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ABSTRACT

The aim of this study was to examine the prevalence of impulse control disorders (ICDs) in a European psychiatric inpatient sample. Two hundred thirty four consecutive psychiatric inpatients (62% female) were examined using a module of the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders fourth edition (DSM-IV) that has been developed for ICDs (SCID-ICD). In addition to intermittent explosive disorder, pyromania, kleptomania, pathological gambling, and trichotillomania, the proposed ICDs not otherwise specified were assessed, including compulsive buying, nonparaphilic compulsive sexual behavior, pathological internet use, and pathological skin picking. Based on the SCID-ICD, a lifetime ICD rate of 23.5% and a current ICD rate of 18.8% were found. The most frequent ICDs were pathological skin picking (lifetime 7.3%, current 6.8%), compulsive buying (lifetime 6.8%, current 6.0%), and intermittent explosive disorder (lifetime 5.6%, current 3.4%). In contrast, referring to admission diagnoses taken from patients' charts only 3.8% of the inpatients were diagnosed with any current ICD. Individuals with comorbid ICD were significantly younger and had more admission diagnoses other than ICD. The results suggest high rates of ICDs among psychiatric inpatients that remain to be under-diagnosed in clinical routine.

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1. Introduction

Impulse control disorders (ICDs) are characterized by repetitive urges leading to impulsive behaviors that cannot be controlled and are potentially harmful to oneself and/or others (Dilling et al., 2000). Typically, patients feel an increasing sense of tension or excitement before acting out. A sense of relief, pleasure or gratification arises while acting out or shortly thereafter, and the behavior is followed by remorse and guilt. ICDs represent an eclectic group of partially heterogenic conditions (Kuzma and Black, 2005). The Diagnostic and Statistical Manual of Mental Disorders fourth edition (DSM-IV) (APA, 2000) contains pathological gambling, kleptomania, pyromania, intermittent explosive disorder, and trichotillomania as separate diagnostic categories within the ICDs. In addition, several excessive behaviors characterized by difficulties resisting temptations to engage in ultimately harmful behaviors are conceptualized as ICDs not otherwise specified (ICD-NOS), including compulsive buying, pathological skin picking, nonparaphilic compulsive sexual behavior, and pathological internet use (Kuzma and Black, 2005; Dell'Osso et al., 2006).

Studies examining the prevalence of ICDs in adult patients with alcohol dependence (Lejoyeux et al., 1999), depression (Lejoyeux et al., 2002), obsessive compulsive disorder (OCD) (Grant et al., 2006a), and eating disorders (Fernandez-Aranda et al., 2006, 2008), as well as in psychiatric inpatients (Grant et al., 2005) have suggested high rates of comorbid ICD.

As can be seen in Table 1, most of these studies focused on formal ICDs and did not assess the proposed ICD-NOS, in particular nonparaphilic compulsive sexual behavior, pathological skin picking, and pathological internet use. Thus, the present study aimed to systematically examine the occurrence of ICDs in adult inpatients with various psychiatric disorders also including the proposed ICD-NOS. Based on previous findings we expected high rates of ICDs among consecutive psychiatric inpatients.

2. Methods

2.1. Procedure

Data were collected at the Department of Psychiatry and Psychotherapy of the University Hospital of Erlangen. Since the University Hospital of Erlangen does not include a specific unit for patients with substance abuse/dependence, we additionally interviewed consecutive inpatients which were treated at the unit for substance dependence at the Department of Psychiatry of the Hannover Medical School. The inclusion criteria were age 18 years and older and the ability to read and understand the consent form. After complete description of the study to the patients, written informed consent was obtained. The protocol was approved by the Institutional Ethics

* Corresponding author at: Department of Psychosomatic Medicine and Psychotherapy, University Hospital of Erlangen, Schwabachanlage 6, D-91054 Erlangen, Germany. Tel.: +49 09131 8544890; fax: +49 09131 8534145.

E-mail address: astrid.mueller@uk-erlangen.de (A. Müller).

Table 1

Previous results on prevalence estimates of impulse control disorders (ICDs) in adult clinical samples based on structured interviews.

Impulse control disorder	Current prevalence								Lifetime prevalence							
	Alcohol-dependent inpatients ^a		Depressive inpatients ^b		Psychiatric inpatients ^c		Adults with OCD ^d		Psychiatric inpatients ^e		Adults with OCD ^d		Inpatients with bulimia nervosa ^e		Eating disorder patients ^f	
	N = 79		N = 107		N = 204		N = 293		N = 204		N = 293		N = 227		N = 709	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Any ICD ^g	30	(38.0)	31	(28.9)	63	(30.9)	34	(11.6)	67	(32.8)	48	(16.4)	54	(23.8)	118	(16.6)
Intermittent explosive disorder	19	(24.0)	18	(16.8)	13	(6.4)	n/a	n/a	14	(6.9)	n/a	n/a	30	(13.2)	4	(0.6)
Kleptomania	3	(3.8)	4	(3.7)	16	(7.8)	1	(1.0)	19	(9.3)	3	(1.0)	7	(3.1)	32	(4.5)
Pyromania	0	(0)	3	(2.8)	7	(3.4)	0	(0)	12	(5.9)	1	(0.3)	0	(0.0)	2	(0.3)
Pathological gambling	7	(8.9)	3	(2.8)	14	(6.9)	1	(0.3)	14	(6.9)	3	(1.0)	2	(0.9)	2	(0.3)
Trichotillomania	1	(1.3)	3	(2.8)	7	(3.4)	3	(1.0)	9	(4.4)	4	(1.4)	2	(0.9)	13	(1.8)
Compulsive buying	n/a	n/a	n/a	n/a	19	(9.3)	n/a	n/a	19	(9.3)	n/a	n/a	40	(17.6)	84	(11.8)
Nonparaphilic compulsive sexual behavior	n/a	n/a	n/a	n/a	9	(4.4)	n/a	n/a	10	(4.9)	n/a	n/a	n/a	n/a	n/a	n/a
Pathological skin picking	n/a	n/a	n/a	n/a	n/a	n/a	23	(7.8)	n/a	n/a	26	(8.9)	n/a	n/a	n/a	n/a

^a Lejoyeux et al.(1999).^b Lejoyeux et al.(2002).^c Grant et al.(2005).^d Grant et al.(2006a).^e Fernandez-Aranda et al.(2006).^f Fernandez-Aranda et al.(2008).^g With regard to ICDs assessed in the mentioned study.

Committees of the University of Erlangen-Nuremberg and the Hannover Medical School. The interviews were conducted between November 2008 and February 2010.

2.2. Subjects

Two hundred thirty four of 275 consecutive patients (85%) agreed to participate and gave written informed consent. The sample consisted of 145 women (62%) and 89 men (38%). The mean age was 38.4 years (S.D. = 13.4, range 18 to 73). Female and male participants did not differ in age (Mean_{female} = 37.7, S.D. = 13.2 and Mean_{male} = 39.6, S.D. = 13.7, $t = 1.033$, $p = 0.303$). The majority of patients were treated at the University Hospital of Erlangen ($n = 216$), 18 participants were recruited from the unit for substance dependence at the Hannover Medical School.

2.3. Assessment

Information on age, gender, and psychiatric diagnoses on admission was taken from the clinical charts. ICDs were assessed with a module of the Structured Clinical Interview for DSM-IV research version (First et al., 2002) that has been developed for ICDs (SCID-ICD). Besides sections for intermittent explosive disorder, pyromania, kleptomania, pathological gambling, and trichotillomania, this module also contains sections for the proposed ICD-NOS, such as compulsive buying (CB), nonparaphilic compulsive sexual behavior, pathological internet use, and pathological skin picking. The instrument has not been formally field tested. It was provided for research purposes to us by Dr. Michael First and translated into German with permission. The SCID-ICD interviews were conducted face-to-face by six psychiatrists and two psychologists who were experienced in working with psychiatric patients. All were trained in a standardized format beginning with observations of life interviews conducted by the first author who has ample experience with patients suffering from ICDs. Afterwards, they conducted a series of interviews which were reviewed by the first author. During the whole study period, all assessors were under continuous supervision by the first and the last author.

2.4. Statistical analysis

All analyses were performed with SPSS 18.0. The percentages of patients with current and lifetime ICDs were determined. Between group differences were calculated using two-tailed independent sample t -tests for continuous variables and Pearson chi-square tests or two-sided Fisher exact tests for categorical variables. An alpha level of 0.05 was applied.

3. Results

3.1. Diagnoses on admission

Most patients were admitted for multiple psychiatric disorders, 101 patients (43.2%) presented with only one diagnosis. Ninety three participants (39.7%) had two diagnoses, 28 patients (12.0%) had three, and 12 (5.1%) had four diagnoses on admission. Overall, 420 admission diagnoses were taken from the patients' charts, in particular any

affective disorder ($n = 152$; 36.1%), any anxiety disorder ($n = 95$; 22.6%), any psychotic disorder ($n = 21$; 5.0%), any substance use disorder ($n = 44$; 10.5%), any personality disorder ($n = 38$; 9.0%), any eating disorder ($n = 36$; 8.6%), any somatoform disorder ($n = 18$; 4.3%), adult ADHD ($n = 7$; 1.7%), and any ICD ($n = 9$; 2.1%). With regard to any ICD, the following admission diagnoses were given: compulsive buying ($n = 3$), pathological gambling ($n = 2$), pathological skin picking ($n = 2$), pathological internet use ($n = 1$), and nonparaphilic compulsive sexual behavior ($n = 1$). Referring to the patients' charts, the prevalence of ICDs in the present sample was 3.8%.

3.2. ICD prevalence assessed by the SCID-ICD

Based on the SCID-ICD interview, 44 patients (18.8%) met criteria for any current ICD and 55 (23.5%) for any lifetime ICD. Table 2 summarizes the numbers and percentages of patients with current and lifetime ICDs. With regard to current pathological internet use, online gaming was reported most frequently ($n = 6$). Seventeen of the 55 patients (30.9%) with any lifetime ICD diagnosis met criteria for two or more ICDs. Eight patients presented with two or more current ICDs. The diagnoses of the nine patients which were admitted to the hospital for an ICD based on patients' charts were concordant with the diagnoses assessed with the SCID-ICD.

Table 2

Current and lifetime prevalence of impulse control disorders among 234 consecutive psychiatric inpatients.

	Current prevalence		Lifetime prevalence	
	N	(%)	N	(%)
Any ICD	44	(18.8)	55	(23.5)
Intermittent explosive disorder	8	(3.4)	13	(5.6)
Kleptomania	–	–	2	(0.9)
Pyromania	–	–	–	–
Pathological gambling	4	(1.7)	5	(2.1)
Trichotillomania	2	(0.9)	3	(1.3)
Compulsive buying	14	(6.0)	16	(6.8)
Nonparaphilic compulsive sexual behavior	4	(1.7)	7	(3.0)
Pathological internet use	7	(3.0)	12	(5.1)
Pathological skin picking	16	(6.8)	17	(7.3)

Table 3
Comparison of psychiatric inpatients with (ICD+) and without (ICD–) impulse control disorder.

	Current prevalence							Lifetime prevalence						
	ICD+			ICD–				ICD+			ICD–			
	Mean	(S.D.)	N	Mean	(S.D.)	N		Mean	(S.D.)	N	Mean	(S.D.)	N	
Age	33.57	(11.13)	44	39.60	(13.67)	190	t	34.36	(11.74)	55	39.67	(13.67)	179	t
Number of psychiatric admission diagnoses other than ICD	2.30	(0.77)		1.67	(0.82)		d.f.	2.18	(0.75)		1.67	(0.84)		d.f.
							p							p
	N	(%)	N	(%)	Chi ²	d.f.	p	N	(%)	N	(%)	Chi ²	d.f.	p
Gender														
Male	17	(38.6)	72	(37.9)	0.008	1	0.927	25	(45.5)	64	(35.8)	1.68	1	0.207
Female	27	(61.4)	118	(62.1)				30	(44.5)	115	(64.2)			
Admission diagnoses														
Affective disorder	31	(70.4)	121	(63.7)	0.520	1	0.471	39	(70.9)	113	(63.1)	0.202	1	0.653
Substance use disorder	6	(13.6)	38	(20.0)	2.147	1	0.143	8	(14.5)	36	(20.1)	1.920	1	0.166
Anxiety disorder	19	(43.2)	76	(40.0)	0.387	1	0.534	23	(41.8)	72	(40.22)	0.468	1	0.494
Psychotic disorder	2	(4.5)	19	(10.0)	– ^a		0.185	2	(3.6)	19	(10.6)	– ^a		0.077
Eating disorder	14	(31.9)	22	(11.6)	4.748	1	0.029	15	(27.3)	21	(11.7)	3.309	1	0.069
Somatoform disorder	5	(11.4)	13	(6.8)	0.322	1	0.570	7	(12.7)	11	(6.1)	1.365	1	0.243
Personality disorder	12	(27.3)	26	(13.7)	2.065	1	0.151	14	(25.4)	24	(13.4)	2.085	1	0.149
Adult ADHD	3	(6.8)	4	(2.1)	– ^a		0.189	3	(5.4)	4	(2.2)	– ^a		0.393

^a Fisher's exact test used because of low cell frequencies.

3.3. Comparison between patients with and without ICD

Table 3 presents age, gender, and admission diagnoses of patients with current and lifetime ICDs (ICD+) compared to those without ICDs (ICD–). Individuals with ICDs were significantly younger and had more admission diagnoses other than ICD. The sex ratio between patients with and without ICD was not significantly different. Only two patients among those with ICDs were also diagnosed with a psychotic disorder. One patient was diagnosed on admission with paranoid schizophrenia and met the SCID criteria for pathological internet use. The other patient suffered from delusional disorder and met criteria for both pathological internet use and nonparaphilic compulsive sexual behavior. Individuals with current ICDs had significantly higher rates of any eating disorder than patients without ICDs. In terms of subtypes of eating disorders, the ICD+ group did not differ from the ICD– group with regard to rates of anorexia nervosa (4.5% and 4.2%, respectively, n.s.), and bulimia nervosa (13.6% and 6.8%, respectively, n.s.) but with regard to binge eating disorder (13.6% and 0.5%, respectively; Fisher's exact test $p = 0.001$).

4. Discussion

To date, this study is the first to systematically evaluate ICDs in a European psychiatric inpatient sample. Besides intermittent explosive disorder, kleptomania, pyromania, pathological gambling, trichotillomania, compulsive buying, and nonparaphilic compulsive sexual behavior, the structured clinical interview (SCID-ICD) used here also included sections for pathological internet use, and pathological skin picking. Hence, the present study extends earlier findings.

Based on the SCID-ICD we found a lifetime ICD rate of 23.5% and a current ICD rate of 18.8%. In contrast, referring to admission diagnoses taken from patients' charts, only 3.8% of the inpatients were diagnosed with any ICD. In this regard, our results are in line with the findings of an earlier study conducted in the US. Grant et al. (2005) reported a similar gap between ICD recognized on admission by clinicians and prevalence estimates of ICDs based on structured clinical interviews. In their study exploring ICDs among 204 adult psychiatric inpatients, only 1.5% of the participants were diagnosed on admission with an ICD while the lifetime and current prevalence estimates assessed by a structured interview were much higher with 32.8% and 30.9%, respectively.

Several reasons for this gap can be considered. First of all, we can assume that in busy inpatient units, persons may not have enough time to gather the diagnostic criteria for all possible mental disorders in detail unless mentioned by the patient. It also cannot be excluded that ICDs could have been interpreted as an epiphenomenon of other mental disorders and that to diagnose an ICD had been assumed as superfluous. In addition, with regard to the NOS category, most conditions (e.g., compulsive buying and pathological internet use) are still not formally included in the DSM, and there exists an ongoing discussion about their appropriate classification. These uncertainties might have contributed to the underdiagnosis of ICDs in clinical practice. From another point of view, the gap might just occur due to the fact that some ICDs (e.g., kleptomania and pyromania) are more troubling for patients to admit given the legal consequences and that is why patients may have concealed them.

In addition to earlier studies, we also screened for pathological internet use and pathological skin picking. Although both disorders were observed relatively frequently in our sample the estimates of any ICD were somewhat lower compared to Grant et al.'s (2005) findings from their psychiatric inpatient sample. Besides possible differential diagnostic thresholds between US and Germany, cultural differences in the threshold for reporting symptoms or in the willingness of respondents to admit symptoms during an interview the difference might probably be due to divergent sample compositions. For example, the proportion of patients with any mood disorder, substance use disorder, or psychotic disorder was smaller in our study compared to Grant et al.'s (2005) report.

Based on the SCID-ICD results, pathological skin picking (lifetime 7.3%, current 6.8%), compulsive buying (lifetime 6.8%, current 6.0%), and intermittent explosive disorder (lifetime 5.6%, current 3.4%) were the most frequently diagnosed ICDs. Pathological skin picking (synonyms: dermatillomania, psychogenic excoriation) is characterized by uncontrolled, repetitive scratching or picking of skin resulting in tissue damage not attributable to another condition (e.g., itchiness, acne, and dermatitis). The prevalence rate in our sample was much higher than that found in a recently published representative telephone survey which indicated the lifetime prevalence of pathological skin picking among US adults being 1.4% (Keuthen et al., 2010) and somewhat higher than self-report data of a community based US study reporting a current prevalence rate of 5.4% (Hayes et al., 2009). The high rates of pathological skin picking in our study may partly be

due to the inclusion of nail cuticle biting as a form of skin picking that was frequently reported in the present sample. Overall, our results are in accordance with previous clinical studies which revealed high rates of skin picking in treatment seeking samples. For example, 44.6% of individuals with body dysmorphic disorder (Grant et al., 2006b), 8.9% of patients with OCD (Grant et al., 2006a), and 8.3% of patients with trichotillomania (Odlaug and Grant, 2010) presented with a lifetime diagnosis of pathological skin picking. Furthermore, in a study conducted by Grant et al. (2007) in adolescent psychiatric inpatients, current pathological skin picking was diagnosed in 12 of 102 (11.8%) individuals.

Our findings regarding compulsive buying are consistent with the results of other studies. Grant et al. (2005) reported that compulsive buying was the most common ICD among adult psychiatric inpatients with a current prevalence rate of 9.3%. Likewise, compulsive buying was the most prevalent lifetime ICD with relatively high rates of 11.8% (Fernandez-Aranda et al., 2006) and 17.8% (Fernandez-Aranda et al., 2008) among patients with eating disorders. Certainly, since the prevalence of compulsive buying in population-based samples is estimated to be about 5% to 7% (Koran et al., 2006; Mueller et al., 2010), it appears that in the present psychiatric inpatient sample compulsive buying did not occur more frequently than in the general population. However, one limitation of the representative surveys was the potential overestimation of compulsive buying by using a screening instrument to determine compulsive buying (Koran et al., 2006; Mueller et al., 2010). Thus, since different methodologies were used in the representative surveys (self-ratings) and our study (semi-structured interview), one should not draw conclusions about similarities in prevalence estimates.

With regard to intermittent explosive disorder, the prevalence in our sample is comparable to previous reports in psychiatric inpatients (Grant et al., 2005) but does not exceed interview-based prevalence estimates of population-based samples (Kessler et al., 2006; Kessler and Wang, 2008).

Another finding worth noting in the present sample is that although the ICD+ group reported more admission diagnoses than the ICD− group, we did not find an association between ICDs and categories of comorbid axis I disorders, with the exception of eating disorders. Participants with any current ICD suffered more often from any eating disorder, and most often from binge eating disorder in particular. In the past, some authors have argued that binge eating disorder belongs to the impulsive end of obsessive–compulsive spectrum disorders (Hollander and Wong, 1995; McElroy et al., 1995). Thus, the overlap between ICDs and binge eating disorder may be explained by the sharing of many features between the disorders. Our findings in terms of this overlap are also in accordance with a previous European study exploring the association of ICD with various eating disorder subtypes (Fernandez-Aranda et al., 2008). In this study most of the eating disorder patients with comorbid ICDs suffered from an eating disorder subtype including binge eating. The authors concluded that ICDs were closely linked to impulsive eating behaviors (e.g., bulimia nervosa and binge eating disorder).

None of the patients presented with current or previous pyromania and only two individuals had previous kleptomania but reported no symptoms of kleptomania within the last year. The findings match results of an earlier French study assessing 79 alcohol-dependent inpatients (Lejoyeux et al., 1999) indicating that pyromania and kleptomania are rare among inpatients. In contrast, Grant et al. (2005) found kleptomania to be one of the most common ICDs among psychiatric inpatients with lifetime estimates of 9.3%. With regard to pyromania, they reported a lifetime rate of 5.9%. Also, Lejoyeux et al. (2002) reported four cases of kleptomania (13%) and three cases of pyromania (9.7%) among 31 depressed inpatients.

Interestingly, only two patients in our sample presented with simultaneous ICD and any psychotic disorder. The low comorbidity of ICD and psychotic disorders in the present study may be due to

assessors' adherence toward the diagnostic rule that a diagnosis of ICD was not made if the pathological impulsive behavior occurred only during psychotic episodes.

In the present sample, patients with ICD were younger than those without ICD. Previous studies reported mixed results with regard to age differences between adult patients with ICD and those without. For instance, Grant and colleagues did not find an age difference in psychiatric inpatients (Grant et al., 2005) and OCD patients (Grant et al., 2006a), while Lejoyeux and colleagues reported that alcohol-dependent (Lejoyeux et al., 1999) and depressed patients (Lejoyeux et al., 2002) with ICD were younger than those without.

Several limitations of this study should be considered. First of all, the interview used here is not formally tested yet, which limits conclusions. We did not validate the diagnoses of the proposed ICDs by using disorder specific questionnaires or by contacting a third person to verify the diagnosis. Also, we did not delineate the timing of the relationship between psychiatric disorders and ICDs. Furthermore, the applicability of our results is constricted to voluntarily hospitalized psychiatric inpatients.

Overall, a crucial issue to consider is the high rates of ICDs among psychiatric patients who still remain under-diagnosed in clinical routine. The results of this study may point to the need for a specific screening for ICDs in clinical practice. Otherwise, patients with these disorders will not receive appropriate treatment. In addition, longitudinal studies are warranted to examine the directionality of the relationship between psychiatric disorders and ICDs in order to provide early interventions.

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