

Inpatient Cognitive Behavioral Therapy for Obsessive-Compulsive Disorders: Effectiveness and Predictors of Success in Routine Care

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Keywords

Obsessive-compulsive disorder · Cognitive behavior therapy · Psychotherapy research · Treatment outcome · Predictors · Routine clinical practice · Effectiveness · Inpatient therapy

Summary

Background: Studies examining the effectiveness of inpatient or outpatient cognitive behavior therapy (CBT) for obsessive-compulsive disorder (OCD) in routine clinical practice are rare. Multi-morbid, psychotherapeutically pre-treated patients are mostly excluded in randomized controlled trials (RCTs). In the present study, effectiveness and outcome predictors of inpatient CBT in a routine clinical setting were examined in a largely unselected sample, and the results were compared with those of RCTs. **Methods:** 108 patients with OCD were treated with inpatient CBT (mean treatment duration = 52.0 days; SD = 11.9) and examined in a naturalistic design. 91% were psychotherapeutically pre-treated, 76% had co-morbid disorders and 63% received antidepressive medication at admission. The outcome measures (Yale-Brown Obsessive-Compulsive Scale-Self-Rating (Y-BOCS-SR); Beck's Depression Inventory (BDI)) were administered at the beginning and at the end of treatment. Predictor variables were assessed via routine clinical documentation. **Results:** Obsessive-compulsive and depressive symptoms significantly declined. Effect sizes were large (Y-BOCS-SR: $d = 1.7$; BDI: $d = 0.9$), even when prematurely discharged patients were included in the analysis. At the end of treatment, half of the patients were improved and one-third recovered. None of the examined features (symptom severity, co-morbid disorder, depressive disorder, personality disorder, psychotherapeutic pre-treatment, sexual trauma, couple problems, unemployment) had an effect on treatment outcome. **Conclusions:** Cognitive behavior therapy in a routine clinical inpatient setting can achieve very good results for multi-morbid, pre-treated OCD patients. Compared with inpatient RCTs, the effects were somewhat smaller but, on the other hand, treatment duration was shorter. Adequate evaluation of the effects of different studies requires careful documentation and comparison of relevant study features, e.g. therapy dose, sample characteristics, exclusion criteria/rate and applied measures.

Schlüsselwörter

Zwangsstörung · Verhaltenstherapie, kognitive · Psychotherapieforschung · Therapieerfolg · Erfolgsprädiktoren · Routineversorgung, klinische · Effektivität · Behandlung, stationäre

Zusammenfassung

Hintergrund: Effektivitätsstudien zur Behandlung von Zwangsstörungen unter klinischen Routineversorgungsbedingungen sind im ambulanten und stationären Bereich bisher rar. Multimorbide, bereits vorbehandelte Patienten werden in randomisierten, kontrollierten Studien (RCTs) meist ausgeschlossen. In der vorliegenden Studie wurde untersucht, ob sich durch stationäre kognitive Verhaltenstherapie (KVT) in einer wenig selektierten Stichprobe unter alltäglichen Routinebedingungen gleich hohe Effekte erzielen lassen wie in RCTs und welche Prädiktoren den Therapieerfolg beeinflussen. **Methoden:** 108 Zwangspatienten wurden in einer naturalistischen Studie untersucht. 91% nahmen bereits Psychotherapie in Anspruch, 76% hatten zusätzliche komorbide Störungen, 63% wurden bei Aufnahme mit Antidepressiva behandelt. Zu Beginn und am Ende einer stationären multimodalen KVT (mittlere Verweildauer = 52,0 Tage; SD = 11,9) wurden die Yale-Brown Obsessive-Compulsive Scale-Selbstrating (Y-BOCS-SR) und das Beck-Depressionsinventar (BDI) zur Veränderungsmessung eingesetzt. Prädiktorvariablen wurden über die Routinebasisdokumentation erfasst. **Ergebnisse:** Zwangssymptomatik und Depressivität nahmen deutlich ab. Es ergaben sich hohe Effekte (Y-BOCS-SR: $d = 1,7$; BDI: $d = 0,9$), auch wenn vorzeitig entlassene Patienten in die Analysen einbezogen wurden. Bei Therapieende war die Hälfte der Patienten gebessert, ein Drittel remittiert. Keines der untersuchten Merkmale (Symptomschwere, komorbide Störung, depressive Störung, komorbide Persönlichkeitsstörung, psychotherapeutische Vorbehandlung, sexuelle Traumatisierung, Partnerschaftsprobleme, Arbeitslosigkeit) hatte einen Einfluss auf den Therapieerfolg. **Schlussfolgerungen:** Unter stationären Routineversorgungsbedingungen lassen sich mit kognitiver Verhaltenstherapie bei multimorbiden, bereits vorbehandelten Zwangspatienten sehr gute Therapieeffekte erzielen. Im Vergleich zu RCTs, die im stationären Setting durchgeführt wurden, fielen sie etwas geringer aus, allerdings bei ebenfalls geringerer Behandlungsdauer. Um die in verschiedenen Studien erzielten Therapieeffekte sinnvoll miteinander vergleichen zu können, müssen weitere Studienmerkmale wie beispielsweise Therapiedosis, Stichprobenmerkmale, Ausschlusskriterien/-rate oder eingesetzte Messinstrumente sorgfältig dokumentiert und gegenübergestellt werden.

Introduction

Obsessive-compulsive disorder is a chronic, highly debilitating disease. Without adequate treatment, it is chronic in most cases, only rarely leading to spontaneous remission [Eddy et al., 2004; Skoog and Skoog, 1999]. The breakthrough in treatment came in the 1960s with the introduction of the behavioral therapeutic approaches of exposure and response prevention [Meyer, 1966]; before this, OCD was considered to be untreatable by psychotherapy [Deacon and Abramowitz, 2004]. In the meantime, effective cognitive behavioral treatment methods have become available that can influence obsessive thoughts and compulsive actions in an effective and long-lasting way, significantly improving the prognosis [for an overview, see, e.g., Abramowitz et al., 2008; Fricke et al., 2006]. Cognitive behavioral therapy (CBT) is now recommended as the standard for treatment of OCD [NICE, 2005]. The effectiveness of CBT for treatment of OCD has been impressively confirmed in recent years, in a number of methodologically sophisticated, internally valid, randomized controlled trials (RCTs). Exposure and response prevention, cognitive methods, and a combination of these led to high, clinically relevant therapeutic effects [Eddy et al., 2004]. In meta-analysis, the usual practice is to present the level of therapeutic effects using the Cohen's *d* measure of effect size [Cohen, 1992]. In single-group pre-post comparisons, the mean effect sizes for the various behavioral methods is $d = 1.5$ (mean therapeutic dose = 21.6 h of treatment; standard deviation [SD] = 11.2) [Eddy et al., 2004], and standardized effect comparison with unspecified control groups at the end of treatment between $d+ = 1.0$ – 1.5 [Deacon and Abramowitz, 2004; Eddy et al., 2004; Kathmann, 2007; Rosa-Alcázar et al., 2008], and thus a large effect ($d \geq 0.8$). It makes scarcely any difference in the effects, whether the behavioral or the cognitive elements of the interventions are more prominent [Rosa-Alcázar et al., 2008]. Earlier studies suggest that group therapy is less effective than individual therapy. In single-group pre-post comparisons, the mean effect size is $d = 1.2$ [Jónsson and Hougaard, 2009].

Up to now, improvement (response) rates and remission rates have been reported as treatment outcome criteria only in one-quarter of the RCTs [Eddy et al., 2004], although several authors [e.g., Simpson et al., 2006] have called for this to be done. OCD patients are classified as 'improved' (= responders) if the percentage reduction in symptoms exceeds a certain cutoff value on the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) [Goodman et al., 1989]. Percentages between 20 and 50% were used in various studies as the cutoff value [Eddy et al., 2004]. A Y-BOCS cutoff value of ≤ 12 is recommended in the literature as a criterion for remission, to identify the proportion of patients who display no or only 'minimal symptoms' after treatment [Eddy et al., 2004; Simpson et al., 2006]. A meta-analysis by Eddy et al. [2004] showed that two-thirds of the 'completers' (study participants who

also completed the treatment) had improved by the end of the treatment. At least one-third of them were actually in remission. In so-called intent-to-treat (ITT) analyses, therapy dropouts were included as non-responders, with half of the patients considered as having improved by the end of therapy. The remission rate according to ITT analyses was only one-quarter. This remission rate shows that the majority of patients were still suffering from OCD symptoms after treatment.

The generalizability of results from RCTs to everyday clinical practice (external validity) is limited by various considerations: the therapeutic method in RCTs is more standardized and manualized than in routine care, plus the therapists usually receive specific training or supervision. Therapeutic dose and/or number of sessions are often determined ahead of time in RCTs. Furthermore, the screening process in the majority of RCTs is not (properly) documented, and strict inclusion and exclusion criteria lead to highly selected patient samples and extremely high exclusion rates (average rate: 53%) [Eddy et al., 2004]. Often patients are excluded who have already received a pharmacological or psychotherapeutic treatment or have a comorbid disorder, including those, such as depression or personality disorders, that frequently accompany OCD [see Eddy et al., 2004].

These observations show that the results from RCTs cannot easily be transferred to routine care, but that evidence of so-called 'effectiveness' is necessary (this corresponds to Phase IV in pharmaceutical research). Naturalistic studies of effectiveness of routine care under clinical conditions outside specialized university settings, however, have so far been rare. The only two studies of outpatient psychotherapy known to us show that CBT can be effective in routine care. Warren and Thomas [2001] found a high effect size ($d = 2.0$) and response rate (84%) for study participants who completed therapy. However, all the patients ($n = 19$) were treated by the same therapist; therapy dropouts, who constituted one-quarter of the patients originally recruited, were not included in the analysis, and the selection process and exclusion rate were not documented, so the validity of this study is limited. Niedermeier et al. [2007] reported on the therapeutic effects on 58 study participants who were treated in an outpatient practice specializing in OCD, in which behavioral therapy was used (mean treatment dose = 41.4 sessions of therapy) and most of the participants (72%) also took antidepressants (primarily serotonin reuptake inhibitors (SSRIs)). Patients were also included in the study who had previously been treated in psychotherapy. Patients who wanted 'an outpatient flooding treatment' ($n = 34$) or who received an outpatient flooding immediately after inpatient behavioral therapy ($n = 11$) attained high therapeutic effects ($d = 2.6$ and $d = 1.4$, respectively), while other patients, who were not prepared for stimulus confrontation therapy and were treated with 'purely cognitive' means ($n = 13$), attained relatively lower effects ($d = 0.9$) or did not participate in the post measurement at all (the re-

ported standardized effect sizes [Kazis et al., 1989] were calculated by the authors of the present paper). In evaluating the high effects attained, it must be considered, however, that after a preliminary briefing phase (up to 5 sessions), in which treatment motivation (willingness to undergo flooding, attitude to use of medication) was also clarified and the prognosis estimated, only fewer than half of the originally enrolled OCD patients were given further treatment in the specialized medical practice. It therefore appears likely that the high exclusion rate resulted in selection effects in favor of patients with a clear motivation for treatment and a favorable prognosis.

The effectiveness of *inpatient* CBT for OCD has likewise been given hardly any systematic study. One reason for this is that in the USA and other countries that strongly influence OCD research, treatments are almost exclusively outpatient: intensive, frequent, short-term therapy in the patient's natural environment. In Germany, the first treatment efforts are also mostly outpatient. Often, however, inpatient treatment is arranged in a specialist clinic if outpatient treatment efforts have previously failed, massive behavioral excesses require continuous therapeutic supervision, a temporary distancing from the home environment is indicated, or patients show clear deficits in social skills. Against this background, it is not surprising that the few more recent studies on the efficacy of inpatient CBT come from the German-speaking countries: various controlled studies examined whether the flanking of inpatient CBT with selective SSRIs [Hohagen et al., 1998; Kordon et al., 2005; Rufer et al., 2005] or with disorder-specific group therapy [Althaus et al., 2000] leads to a higher treatment effect; in another study, the inpatient CBT was compared with a within-subjects wait list control group from the same hospital [Müller-Svitak et al., 2002]. The results of these studies suggest that by means of intensive multi-modal inpatient CBT (treatment duration 9–12 weeks), even higher effect sizes and response rates can be achieved than by outpatient CBT. For example, for 49 OCD patients who were treated for a total of 9 weeks, Hohagen et al. [1998] reported response rates of 60% (inpatient CBT alone) and 88% (inpatient CBT flanked with SSRIs), and Kordon et al. [2005] reported a standardized effect size of $d = 2.5$ (single-group pre-post comparison) for patients ($n = 74$) who were treated for 10 weeks with inpatient CBT (alone or flanked with SSRIs). ITT analyses, however, were performed only in the study by Müller-Svitak et al. [2002]. In that study, there was a standardized effect size of $d = 1.7$ (single-group pre-post comparison), with a treatment duration of 10.3 weeks.

These observations show that there is so far little evidence that CBT is also effective in everyday clinical practice for multi-morbid conditions or previously treated patients. We know of no study with a large sample and as little selection as possible, in which the therapy dropouts were included in the analysis. The following central question was therefore posed for the present study: Can inpatient CBT in a largely unse-

lected sample in routine clinical practice achieve effects as high as those in RCTs? The conduct of the study and data analysis took into consideration the recommendations of Eddy et al. [2004] for improvement of the quality of RCTs, in order to allow comparison with meta-analyses or other RCTs. These include: a) careful documentation of inclusion and exclusion of study participants; b) clear, generally accepted criteria for success; c) representation of effect sizes, response rates, and remission rates separately for completer and ITT samples (ITT analyses are conservative estimates of treatment outcome, which also include therapy dropouts); d) recording of comorbid disorders and their impact on treatment outcome; and e) minimization of exclusion criteria.

The second analytical step was to investigate to what extent the following variables influenced treatment outcome: a) symptom severity, b) duration of illness, c) other comorbid disorders, d) comorbid personality disorder, e) comorbid depressive disorder, f) prior psychotherapeutic treatment, g) sexual trauma, h) couples problems, and i) unemployment. The aim was also particularly to investigate features that often constitute an exclusion criterion in RCTs and have therefore so far seldom been investigated. We present briefly below the current state of research on these variables [for details, see Keeley et al., 2008]. The results for *symptom severity* are inconsistent: while symptom severity was identified in 3 recent studies as a negative predictor of treatment outcome [Franklin et al., 2000; Keijsers et al., 1994; Mataix-Cols et al., 2002], Rufer et al. [2006] established no such connection. One study found that long *duration of illness* was associated with lower treatment success [Keijsers et al., 1994]. The majority of studies, however, found no association between duration of illness and treatment outcome [Foa et al., 1983; McLean et al., 2001; Moritz et al., 2004]. Regarding the relationship between *depression* and treatment outcome, the results are also inconsistent: some studies found no relationship, while others identified depression as a negative predictor of success [for an overview: Keeley et al., 2008]. It must be considered, however, that patients with depressive disorders are often excluded from RCTs [Eddy et al., 2004; Keeley et al., 2008]. Studies that investigated 'severe depression' (Beck Depression Inventory [BDI] value > 30) or a depressive disorder (diagnosed according to DSM-IV, Diagnostic and Statistical Manual of Mental Disorders) as predictors [e.g., Abramowitz, 2004; Abramowitz and Foa, 2000; Abramowitz et al., 2000; Steketee et al., 2001], agree that patients with a depressive disorder or severe depression have worse treatment outcomes [Keeley et al., 2008]. The relationship between personality disorders and treatment outcome has so far scarcely been studied at all. With Steketee et al. [2001], comorbid personality disorders were associated with lower treatment success, while Ruppert et al. [2001] found such an association only in the therapist's assessment, but not in that of the patient. Fricke et al. [2003], on the other hand, found no association between comorbid personality disorder and treatment outcome. Also, the rela-

relationship between *prior psychotherapeutic treatment* and treatment outcome has hitherto scarcely been studied. One exception is a study by Buchanan et al. [1996], who found that patients who had previously had no psychotherapeutic treatments benefited more from the treatment. The same study examined the influence of employment status, e.g., *unemployment*, on treatment outcome: patients who were employed at baseline benefited more from the treatment. We know of no study that has examined the influence of *couples problems* on treatment outcome. In various studies, however, it was shown that adverse familial interactions [Steketee, 1993; Barrett et al., 2005] or a high degree of familial hostility or criticism [Chambless and Steketee, 1999] were negative predictors of success. The variable *prior sexual trauma* has not yet been studied. A study by Gershuny et al. [2002] demonstrated the role of comorbid post-traumatic stress disorder, independent of the type of trauma, as a negative predictor of success in the symptom-specific treatment of OCD patients, whereas prior sexual abuse, according to a study by Fricke et al. [2007], had no influence on therapeutic outcome.

Patients and Methods

Sample

The following diagnoses represent contraindications for admission to the Bad Durkheim AHG Specialized Hospital for Psychosomatics and were thus automatically exclusion criteria for participation in the study: organic mental disorders, alcohol or drug dependence, and acute schizophrenic or schizotypic disorders. Only patients were included in the study who were given upon admission an initial diagnosis of OCD (ICD-10 F42, International Classification of Diseases) and for whom the Y-BOCS-SR value was > 16 . This cutoff value defines the existence of clinically significant symptom severity and is a common inclusion criterion in clinical trials [Eddy et al., 2004]. Of 139 patients assessed, 23 were excluded because OCD was present only as a secondary diagnosis, and treatment was therefore focused on another disorder. Another 8 patients who concluded the therapy in the regular way were excluded, because when discharged, they did not participate in the routine diagnostics and thus the data set was not complete. The dropout rate was thus 7%. Dropout analysis showed no significant differences between study participants and dropouts with regard to clinical and sociodemographic variables. Sociodemographic and clinical data from the sample are presented in table 1.

Intervention

All study participants received multi-modal cognitive-behavioral therapy at the Bad Durkheim AHG Specialized Hospital for Psychosomatics. The average length of stay was 52.0 days (SD = 11.9). The hospital's treatment approach for obsessive-compulsive disorder [see details in Leidig and Dehmlow, 2005] includes classic disorder-specific treatment elements such as psychoeducation based on the cognitive model, development of an individual disorder model and treatment rationale, therapist-led and self-controlled exposure with response management, cognitive restructuring of disorder-related assumptions, processing of the background to the disorder/perpetuating factors, and special exercises for mindfulness, perception, and body-orientation [Ecker, 2001; Fricke et al., 2006; Lakatos and Reinecker, 2007]. There are 1-2 individual therapy sessions per week of 50 min each with a psychological or medical therapeutic caregiver. Exposure exercises also are performed partly with support from co-therapists. In addition, OCD patients take part in manualized, semi-standard-

ized disorder-specific group therapy (8 therapist-led sessions of 90 min and 4 sessions on their own), the main goal of which is to guide the participants in daily, self-controlled exposure exercises [Gönner et al., 2007]. Regardless of their particular symptoms, all patients in the hospital participate in a psychosomatic or problem-solving group (2 sessions per week for 100 min), a relaxation group (2 sessions per week for 50 min), and in sports therapy (2 group sessions per week for 100 min). According to individual indications, patients receive additional therapeutic services, such as couples and family sessions, a self-confidence training group, body-oriented methods, or occupational therapy.

Measuring Instruments

International Diagnostic Checklists for ICD-10 (IDCL) [Hiller et al., 1995]: The IDCL assure a standardized diagnostic approach to psychiatric diagnoses according to the ICD-10. The checklists provide an operationalized diagnostic for 30 different symptoms. In several studies, the instrument has shown good clinical applicability and satisfactory to very good inter-rater reliability for various types of disorders. Comparing different structured interviews (such as the SCID [Structured Clinical Interview for DSM Disorders]) with the IDCL showed at least equivalent values for reliability.

Symptom Checklist of the Y-BOCS (self-report version, Y-BOCS-SR) [Baer, 1993]: The Y-BOCS-SR is an adaptation of the Y-BOCS [Goodman et al., 1989], a widely used external assessment instrument to measure the severity of OCD. The definitions of obsessions and compulsions and the items of the original version were translated into a self-reporting format. A study by Federici et al. [2010] showed that there is moderate agreement between self-rating and external rating.

BDI [Hautzinger et al., 2001]: The BDI is a widely used instrument for one-dimensional measurement of the severity of depressive symptoms. It comprises 21 items, with the total score ranging between 0 and 63. The psychometric quality and validity of the German version has been well established.

Research Procedure

All participants used the questionnaire method along with other instruments in the course of the standardized routine admission diagnostics that are performed for each patient at the beginning and end of their inpatient stay. The participants gave their consent, after it was explained to them that their data could be used anonymously for scientific purposes. The diagnostics were performed for all patients by medical or psychological psychotherapists experienced in diagnostics and therapy. The IDCL [Hiller et al., 1995] were used as part of the diagnostic interviews to verify that the ICD-10 criteria were met for OCD or comorbid disorders. The therapists had been thoroughly trained in diagnostics and differential diagnostics for OCD, and in the use of the IDCL checklists. All other variables were collected by means of the standardized basic documentation that is routinely handled by the treating therapist.

Criteria of Success, Data Analysis, and Statistical Procedures

In the present study, the effect size d [Cohen, 1992] was calculated by means of standardized effect sizes [Kazis et al., 1989] (the mean difference between the pre and post measurement is divided by the SD of the pre values). Such a procedure is recommended for single-group pre-post comparisons [Leonhart, 2004]. Patients were classified as improved if they attained a pre-post reduction in the Y-BOCS-SR of $\geq 30\%$. Tolin et al. [2005] showed in an empirical study that a reduction criterion of 30% is optimal to identify a clinically meaningful improvement. Patients were considered to be in remission if, by the end of therapy, they had achieved a Y-BOCS-SR value of ≤ 12 [Cf. Eddy et al., 2004; Simpson et al., 2006].

Both completer and ITT analyses are reported. Of the 108 study participants, 102 were discharged in the usual way and 6 (5.6%) 'prematurely with medical consent'. No patient was discharged 'prematurely for a medical reason', 'prematurely against medical advice', or for 'disciplinary' reasons. Patients who were discharged 'prematurely with medical con-

Table 1. Sociodemographic and clinical data of the samples

Age, years		M = 36.0 (SD = 10.7)
Gender	female	54.6% (n = 59)
Education	without completion	2.8% (n = 3)
	general secondary school graduation	24.1% (n = 26)
	intermediate school completion	43.5% (n = 47)
	Baccalaureate	26.9% (n = 29)
	other completion	2.8% (n = 3)
Symptom severity		
ITT analysis	Y-BOCS-SR value at admission	M = 25,6 (SD = 5,4)
Completer analysis (n = 102)	Y-BOCS-SR value at discharge	M = 16,6 (SD = 7,9)
	Y-BOCS-SR value at admission	M = 25,6 (SD = 5,4)
	Y-BOCS-SR value at discharge	M = 16,6 (SD = 8,0)
Depression	BDI value at admission ^a	M = 23.3 (SD = 8.4)
	BDI value at discharge ^a	M = 15.9 (SD = 10.8)
Duration of illness since onset, years		M = 10.1 (SD = 7.9)
Initial diagnoses	F42.0	4.6% (n = 5)
	F42.1	45.4% (n = 49)
	F42.2	48.1% (n = 52)
	F42.8	1.9% (n = 2)
Main symptom areas ^b		
Obsessions	aggressive obsessions	37.0% (n = 40)
	sexual/religious obsessions	9.3% (n = 10)
	fears of contamination	35.2% (n = 38)
	symmetry preferences	13.0% (n = 14)
	obsessions about hoarding	7.4% (n = 8)
Compulsions	control compulsions	47.2% (n = 51)
	cleaning compulsions	39.8% (n = 43)
	counting compulsions	13.0% (n = 14)
	repetition compulsions	21.3% (n = 23)
	compulsive orderliness	15.7% (n = 17)
	hoarding compulsions	5.6% (n = 5,6)
Comorbidity	depressive disorder (F32-34)	40.7% (n = 44)
	anxiety disorder (F40/41)	10.2% (n = 11)
	Personality disorder (F60/61)	19.4% (n = 21)
	rate of comorbidity (at least one other F-diagnosis)	75.9% (n = 82)
Prior outpatient or inpatient psychotherapeutic treatment		90.7% (n = 98)
Antidepressant treatment during hospital stay (almost exclusively SSRIs)	none	35.2% (n = 38)
	newly administered	1.9% (n = 2)
	continued	41.7% (n = 45)
	reduced	8.3% (n = 9)
	discontinued	13.0% (n = 14)
Neuroleptic treatment during the hospital stay	none	84.2% (n = 91)
	newly administered	1.9% (n = 2)
	continued	6.5% (n = 7)
	reduced	1.9% (n = 2)
	discontinued	5.6% (n = 6)

^aOnly patients were included who had a BDI \geq 11 (at least mild to moderate symptoms), for whom the BDI values at admission and discharge were available (n = 79).

^bBased on the selected main symptoms of the Y-BOCS-SR symptom checklist, patients were assigned to various main symptom areas.

sent' were only considered as potential therapy dropouts in the ITT analysis, but not in the completer analysis.

Binary logistic regression analysis was performed to check which predictors forecast the treatment outcome. Preliminary analysis showed that gender, age, education, and marital status have no influence on treatment outcome. The statistical analysis was performed using SPSS 17.0.

Results

Therapeutic Effects

Between the beginning and end of treatment, there was a significant reduction of symptoms shown in the Y-BOCS-SR

Table 2. Predictor analyses

Continuous variables		Responders		Non-Responders		Binary logistic regression				
		M	SD	M	SD	B	W	SE	df	p
Symptom severity		26.0	5.3	25.1	5.5	0.03	0.80	0.04	1	0.37
Duration of illness, years		9.9	8.3	10.4	7.4	-0.01	0.46	0.32	1	0.50
Dichotomous variables		Responders		Non-Responders		Binary logistic regression				
		n	%	n	%	B	W	SE	df	p
At least one other ICD-10-F diagnosis	yes	42	38.9	40	37.0	-0.26	0.33	0.45	1	0.57
	no	15	13.9	11	10.2					
Personality disorder (F60/61)	yes	8	7.4	13	12.0	-0.74	2.20	0.50	1	0.14
	no	49	45.4	38	35.2					
Depressive disorder (F32-34)	yes	22	20.4	22	20.4	-0.19	0.23	0.39	1	0.63
	no	35	32.4	29	26.9					
Prior psychotherapeutic treatment	yes	51	47.2	47	43.5	-0.32	0.23	0.68	1	0.63
	no	6	5.6	4	3.7					
Sexual trauma	yes	2	1.9	5	4.6	-1.0	1.62	0.86	1	0.20
	no	55	50.9	46	42.6					
Couples problems ^a	yes	12	17.9	13	19.4	-0.67	1.69	0.51	1	0.19
	no	27	40.3	15	22.4					
Unemployment ^b	yes	14	15.9	14	15.9	0.13	0.09	0.46	1	0.77
	no	32	36.4	28	31.8					

Responders = Y-BOCS-SR reduction > 30%; non-responders = Y-BOCS-SR reduction ≤ 30%; n = sample size; % = (non-)responder rate; B = regression coefficient; W = Wald statistic; SE = standard error, df = degrees of freedom; * p > 0.05 (two-sided).

^aOnly the 67 subjects were included in the analysis who lived in intimate relationships.

^bOnly the 88 study participants were included in the analysis who were either employed or unemployed (those excluded were, among others, study participants who were on a disability allowance, in school, or in a job-creation program).

(table 1; completers: $t = 11.6$; $df = 101$; $p < 0.001$; ITT: $t = 12.0$; $df = 107$; $p < 0.001$). The effect sizes were well within the range of a large effect ($d_{\text{completers}} = 1.7$, $d_{\text{ITT}} = 1.7$). In the ITT analysis, the response criterion of 57 patients (52.8%) and the remission criterion of 37 patients (34.3%) were achieved; in the completer analysis, the response criterion of 54 patients (52.9%) and the remission criterion of 36 patients (35.3%) were also achieved.

The BDI was used as a nonspecific measurement of change. Only 94 study participants used the BDI at both measurement points, so the sample size was reduced in the following analysis. Only patients ($n = 79$) were included in the evaluation who had at least one mild to moderate depressive symptom ($BDI \geq 11$). Between the beginning and end of treatment there was a significant decrease in depression (table 1; $t = 7.6$; $df = 78$; $p < 0.001$). This also corresponds to a high effect size ($d_{\text{ITT}} = 0.9$).

Predictor Analyses

None of the variables examined (symptom severity, duration of illness, presence of another comorbid disorder, comorbid depressive disorder or comorbid personality disorder, prior psychotherapeutic treatment, sexual trauma, couples problems, or unemployment) had a significant influence on treatment outcome. The results of the analysis are cited in table 2.

A nonsignificant trend was found for personality disorders as a negative predictor of treatment outcome. The results on the impact of sexual trauma must be interpreted with caution, since only 7 patients in the total sample were found to have a history of sexual trauma.

Discussion

The results of the present naturalistic study show that multimorbid patients who had previously been given inpatient cognitive-behavioral routine treatment attained very high effects ($d = 1.7$). Half of the patients experienced significant improvement of their OCD symptoms during their inpatient treatment and one-third went into remission, even when patients who had been discharged prematurely were included in the ITT analysis. The therapeutic effects are thus comparable to those achieved in RCTs with outpatient CBT ($d = 1.5$). In the few controlled studies that have been conducted in an inpatient setting, on the other hand, higher effects were usually reported ($d = 1.7$ – 2.5 ; response rates of 60–88%). A comparison of the therapeutic effects achieved in the present study with those from RCTs, however, requires comparison of additional characteristics that could influence the measured effectiveness of treatment:

- In most controlled studies of inpatient CBT, no ITT analysis was performed; i.e., only patients were included who had also completed the treatment.
- In the controlled studies of inpatient CBT, patients received a higher therapeutic dose (9–12 weeks) than in our study (7.4 weeks); in the outpatient RCTs, on the other hand, there was a lower therapeutic dose ($M = 21.6$ outpatient care hours; $SD = 11.2$) [Eddy et al., 2004].
- RCTs usually study highly selected patient samples; for example, patients are often excluded who have already received psychotherapeutic treatment or medication, or who suffer from a comorbid depressive disorder or personality disorder. Some studies also exclude patients who are not willing to participate in exposure exercises. In the present study, on the other hand, an attempt was made to investigate a sample that was as unselected as possible. In many controlled studies, the sample was almost completely selected, such that over 90% had already received outpatient or inpatient psychotherapy; almost two-thirds of the patients were already being treated with antidepressants at admission; about two-fifths suffered from a comorbid depressive disorder, and one-fifth from a comorbid personality disorder.
- Although in the present study we attempted to exclude as few patients as possible, our sample is in no way representative. OCD patients in the German health care system are usually hospitalized only if outpatient treatment efforts have little chance of success or have already failed. Therefore we surmise that in our study, the selection effects of inpatient referral yielded a disproportionate share of people who are ambivalent about treatment, or ‘therapy-resistant’ patients in the outpatient setting.
- In controlled studies, the Y-BOCS version for external rating is most often used, whereas we used only the self-rating version of the Y-BOCS. The comparability of the results is therefore limited. A meta-analysis by Rosa-Alcázar et al. [2008] indicates that the effect sizes obtained in self-rating turn out to be lower than in external rating ($d+ = 0.7$ vs. $d+ = 1.2$).

The present study also examined potential predictors of treatment outcome. None of the variables examined (symptom severity, duration of illness, comorbidity, comorbid depressive disorder, comorbid personality disorder, prior psychotherapeutic treatment, sexual trauma, couples problems, unemployment) had a significant impact on response to therapy. Our study confirms the results of previous studies [e.g., Moritz et al., 2004] that generally found no association between treatment outcome and duration of illness. On the other hand, our results are in contradiction to some recent studies that particularly identified symptom severity [e.g., Mataix-Cols et al., 2002] and the existence of a depressive disorder or severe depression [Abramowitz, 2004] as being quite consistently negative predictors of success. The other variables that we studied had so far scarcely been studied at all as potential pre-

dictors [for an overview: Keeley et al., 2008]. Patients with comorbid personality disorders have tended to benefit less than patients without a personality disorder. This nonsignificant trend is consistent with the results of Steketee et al. [2001], but not those of Fricke et al. [2003]. In contrast to the results of Buchanan et al. [1996], neither ‘unemployment’ nor ‘prior psychotherapeutic treatment’ turned out to be negative predictors of treatment outcome. However, we think it likely that the few patients ($n = 10$; 9%) who were directly referred to inpatient care without a prior attempt at outpatient treatment were not representative of the total population of untreated OCD patients, but that a selection had already occurred in the inpatient referral, thereby limiting the validity of these results. Only in a sample that is not preselected by the referring doctors can it be reliably verified whether a psychotherapeutic treatment actually has a negative impact on therapeutic outcome. Our finding that a history of sexual trauma does not predict treatment outcome is confirmed by the results of Fricke et al [2007], which found no association between sexual abuse and outcome. However, in our sample, the proportion of patients with a history of sexual trauma was quite small ($n = 7$), and consequently the power of the statistical tests was low, limiting the validity of this result. Only 2 of the 7 patients who had been traumatized were among the responders. In our view this is an indication that it might be instructive to examine this relationship systematically in further studies.

Some of the negative predictors of success that were identified in outpatient RCTs could not be replicated in our study. These include features such as symptom severity, comorbid depressive disorder, comorbid personality disorder, couples problems, and unemployment [cf. Keeley et al., 2008]. One possible explanation may be that a multi-modal inpatient CBT is better suited to favorably affect OCD-nonspecific ‘background conditions’ such as comorbid disorders, lack of career prospects, or social problems, than is a manualized, disorder-specific outpatient CBT. At the Bad Dürkheim AHG Specialized Hospital for Psychosomatics, patients are referred for other treatments (in addition to disorder-specific treatment), according to their individual indications, problems, or deficits. These include specific group services for patients with depressive disorders, personality disorders, interaction deficits, or workplace problems, as well as specific measures for vocational reintegration. Possibly the adverse impact of these potential predictors was mitigated by such measures. So-called publication bias could also be a reason that some of the negative predictors discussed in the literature could not be replicated in our study. Publication bias refers to the tendency for plausible, desirable, hypothesis-confirming, or significant results to be published more frequently than undesired, implausible, or insignificant results. This leads to distortion of the presentation of results in meta-analyses. The meaning or impact of potential predictors could thus be overestimated.

Some limitations should be considered when interpreting our results. First, symptom severity was assessed in our study

only by self-rating, rather than by interview. Self-rating and external rating are in only moderate agreement [Federici et al., 2010]; therefore, the comparability of our results is limited compared to studies that used the interview format. Secondly, the number of disorder-specific interventions, particularly the number of exposure sessions, that were guided by therapists or co-therapists was not systematically recorded for each patient. The therapeutic dose can thus be compared with other studies only with respect to the duration of inpatient treatment, but not the number of individual disorder-specific interventions. Thirdly, the study examined psychotherapy in inpatient routine care. The disorder-specific group therapy was manualized and standardized in part; this was not the case, however, for individual therapeutic interventions. Fourthly, due to the lack of a control group in the naturalistic study design, the improvements cannot be attributed with certainty to the treatment. Studies of OCD indicate, however, that under control-group or wait-list conditions, there are no placebo effects or spontaneous remissions ($d = 0.1$) [Eddy et al., 2004], so that an improvement in symptoms without treatment would be highly unlikely.

The results show that inpatient CBT is effective in patients who suffer from comorbid disorders, or for whom previous psychotherapy or drug treatment did not lead to sustained improvement. Thus they support the common practice in Germany of initiating inpatient treatment after unsuccessful attempts at outpatient treatment. Whether such patients can also benefit sufficiently from outpatient treatment services has not yet been adequately investigated, since they are usually excluded from controlled studies. It is our view that the

current structural framework of outpatient preferred provider care in Germany is not aimed at providing an appropriate density and frequency of treatment to OCD patients whose symptoms are highly chronic or who have additional treatment-related diagnoses [see also Niedermeier et al., 2007], but that more flexible treatment services are required, which, for example, would also provide several-day intervals of intensive treatment.

To investigate the efficacy of outpatient and inpatient treatment concepts, further controlled and naturalistic studies are needed, with the samples subject to as little selection as possible, and in which the influences of potential outcome predictors are controlled, such as the occurrence of prior psychotherapeutic treatment, the degree of chronicity, comorbidity, treatment motivation, and functionality of the symptoms. A study of the most representative samples possible is the precondition for a reliable and externally valid evaluation of the *actual* efficacy of outpatient or inpatient CBT. The generalizability of the results of RCTs would thereby be increased. Data that empirically justify a referral to outpatient or inpatient CBT do not yet exist, to our knowledge. Again, further research is needed to develop empirically based criteria for making decisions that justify a differential indication for specific treatment.

Disclosure Statement

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