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Effects of inpatient, residential, and day-patient treatment on obsessive–compulsive symptoms in persons with obsessive–compulsive disorder: A systematic review and meta-analysis

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ABSTRACT

Introduction: Patients with severe or treatment-refractory obsessive–compulsive disorder (OCD) often need an extensive treatment which cannot be provided by outpatient care. Therefore, we aimed to estimate the effects and their moderators of inpatient, residential, or day-patient treatment on obsessive–compulsive symptoms in patients with OCD.

Methods: PubMed, PsycINFO, and Web of Science were systematically screened according to the PRISMA guidelines. Studies were selected if they were conducted in an inpatient, residential, or day-patient treatment setting, were using a number of pre-defined instruments for assessing OCD symptom severity, and had a sample size of at least 20 patients.

Results: We identified 43 eligible studies in which inpatient, residential, or day-patient treatment was administered. The means and standard deviations at admission, discharge, and—if available—at follow-up were extracted. All treatment programs included cognitive-behavioral treatment with exposure and response prevention. Only one study reported to not have used psychopharmacological medication. Obsessive–compulsive symptoms decreased from admission to discharge with large effect sizes ($g = -1.59$, 95%CI [−1.76; −1.41]) and did not change from discharge to follow-up ($g = 0.06$, 95%CI [−0.09; 0.21]). Length of stay, age, sex, and region did not explain heterogeneity across the studies but instrument used did: effects were larger for clinician-rated interviews than for self-report measures.

Conclusions: Persons with OCD can achieve considerable symptom reductions when undertaking inpatient, residential, or day-patient treatment and effects are—on average—maintained after discharge.

1. Introduction

Obsessive–compulsive disorder (OCD) is a debilitating and disabling mental disorder which affects approximately 2% of the general population (Murphy et al., 2010). The disorder is characterized by the occurrence of obsessions and/or compulsions (American Psychiatric Association, 2013; World Health Organization, 1993). Obsessions are repetitive and persistent thoughts, images, or impulses that are intrusive and mostly perceived as unpleasant and disturbing. Compulsions are recurrent acts which are often performed to neutralize obsessions and, therefore, perceived as relieving. OCD frequently has severe consequences on the daily functioning and quality of life of affected persons as well as their friends and family members (Eisen et al., 2006; Hauschildt et al., 2010; Macy et al., 2013). If not treated adequately, the disorder has a chronic course in many cases (Skoog and Skoog, 1999).

According to international guidelines for the treatment of OCD, cognitive-behavioral therapy (CBT) with exposure and response prevention (ERP) is the first-line, evidence-based treatment for the disorder (American Psychiatric Association, 2013; DGPPN, 2022; National Collaborating Centre for Mental Health, 2006; Voderholzer et al., 2022).

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ERP is a crucial element in CBT for patients with OCD and comprises the repeated and prolonged confrontation with stimuli provoking obsessions while refraining from compulsions which results in breaking the vicious cycle of OCD through a process of habituation (Abramowitz et al., 2009; Foa and Kozak, 2004; Himle and Franklin, 2009) and/or inhibitory learning (Arch and Abramowitz, 2015; Craske et al., 2014). CBT comprising ERP is considered highly effective in treating OCD with large effect sizes (Öst et al., 2015).

If suitable guideline-based outpatient treatment is not available or the patient does not respond to it, a higher-threshold treatment, such as inpatient treatment, may be required (DGPPN, 2022). Inpatient treatment is the highest level of stepped care and may include various treatment elements besides CBT and ERP (e.g., individual group and family therapy sessions, occupational therapy, sport therapy, and psychopharmacological medication; Veale et al., 2016a). Besides inpatient treatment, there is also residential treatment which offers therapeutic care throughout the day but not at night and is one step below psychotherapeutic treatment in an inpatient setting (Veale et al., 2016b). To be eligible for residential treatment, patients must not be suicidal and need to be able to demonstrate a certain degree of self-care (Veale et al., 2016a). Another step below residential treatment is day-patient treatment which shows considerable similarity to residential treatment. Yet, the main difference between these two treatment settings is that patients in residential treatment stay overnight, while patients in day-patient treatment are only present in the clinic during the day and go home in the evening (Veale et al., 2016b).

However, as inpatient, residential, and day-patient treatment are intensive therapy options, it must be considered carefully whether such an intervention is necessary and promising for patients with OCD. In addition to the advantages of such an intensive treatment, it can also have disadvantages. First, inpatient, residential, and day-patient treatment are more expensive than outpatient treatment and second, patients are taken out of their homes which can limit the generalizability of treatment effects and increase the likelihood of relapse after discharge (Veale et al., 2016a). Yet, there are several primary studies showing that especially inpatient treatment for OCD comes along with large effect sizes for changes in obsessive–compulsive symptoms from admission to discharge and, therefore, the benefits may outweigh the costs (Boschen et al., 2008; Herzog et al., 2022).

To the best of our knowledge, there is only one systematic review and meta-analysis having examined the effects of inpatient, residential, or day-patient treatment from admission to discharge across several studies (Veale et al., 2016a). Specifically, Veale et al. 2016b aimed to determine the effect size of inpatient, residential, or day-patient treatment programs in persons with OCD and found a large improvement ($g = 1.87$) between admission and discharge. Yet, only studies which used the Yale–Brown Obsessive Compulsive Scale (Y–BOCS) interview version and no studies with follow-up measures were included in this systematic review and meta-analysis. To get an even broader picture of the effects of inpatient, residential, and day-patient treatment on obsessive–compulsive symptoms, it is necessary to include studies in a systematic review and meta-analysis in which data are collected with other instruments as well (e.g., the Y–BOCS self-report or the Obsessive–Compulsive Inventory–Revised), which may have higher feasibility in clinical practice. In addition, follow-up data collected after discharge from inpatient, residential, and day-patient treatment should be included to gain insights on whether such an intensive and expensive treatment is effective in the long run. Conducting moderator analyses allows to see whether inpatient, residential, or day-patient treatment is particularly effective under several conditions.

Thus, to expand knowledge on this topic, the current systematic review and meta-analysis aimed to assess the effects of inpatient, residential, or day-patient treatment on obsessive–compulsive symptoms (as measured with several self-report questionnaires and the Y–BOCS interview version) in persons with OCD from admission to discharge as well as from discharge to follow-up. Furthermore, it was aimed to assess the impact of other variables (i.e., length of stay, age, sex, and region) on the effect of treatment from admission to discharge to explain heterogeneity across the studies included.

2. Method

2.1. Eligibility criteria

A protocol was developed before literature search and registered with PROSPERO before data collection (CRD42023408323). We included studies both randomized, quasi-randomized, and uncontrolled studies assessing the effects of inpatient, residential, or day-patient treatment on compulsive–compulsive symptoms in children, adolescents, or adults with OCD. Assessment of obsessive–compulsive symptoms had to be based on self-report or interview measures at admission, discharge, and/or follow-up using the following measures: Yale–Brown Obsessive Compulsive Scale (Y–BOCS self-report or interview version; Baer, 1991; Goodman et al., 1991), Children's Yale–Brown Obsessive Compulsive Scale (CY-BOCS; Scahill et al., 1997), Obsessive–Compulsive Inventory–Revised (OCI–R; Foa et al., 2002), and Dimensional Obsessive–Compulsive Scale (DOCS; Abramowitz et al., 2010). Besides studies in English—which is the primary language for scientific articles—we additionally included studies in our native language German. Studies were excluded if psychopharmacological treatment only was applied or sample sizes were smaller than 20 persons.

2.2. Search strategy

This meta-analysis was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A two-part comprehensive search strategy based on previously published systematic reviews and meta-analyses as well as our expertise was developed in order to cover the vast number of studies which assessed obsessive–compulsive symptoms in inpatient, residential, or day-patient treatment at admission, discharge, and/or follow-up in children, adolescents, and adults with OCD. Searches were run between 16th and March 17, 2023 in PubMed (NCBI), PsycINFO (Ovid), and Web of Science (Clarivate Analytics). Furthermore, a backward search was conducted in order to discover further relevant studies by reviewing the reference lists of eligible studies for further potentially eligible reports. We included the following types of publications: clinical studies, (randomized controlled) clinical trials (phase I, II, III, and IV), comparative studies, evaluation studies, multicenter studies, observational studies, and validation studies. We did not include grey literature, such as dissertations, essays, or conference abstracts.

The following search terms were used for electronic data base search: ("obsessive–compulsive disorder" [title/abstract] OR "obsessive-compulsive disorder" [title/abstract] OR "obsessive compulsive disorder" [title/abstract] OR "OCD" [title/abstract] AND "inpatients [title/abstract] OR "day patients" [title/abstract] OR "daypatients" [title/abstract] OR "inpatient treatment" [title/abstract] OR "in-patient treatment" [title/abstract] OR "residential treatment" [title/abstract] OR "day patient treatment" [title/abstract] OR "day-patient treatment" [title/abstract] OR "day patient care" [title/abstract] OR "day-patient care" [title/abstract] OR "day care" [title/abstract] OR "daycare" [title/abstract] OR "inpatient care" [title/abstract] OR "in-patient care" [title/abstract] OR "stationary treatment" [title/abstract] OR "stationary care" [title/abstract] OR "hospital treatment" [title/abstract] OR "hospital care" [title/abstract] OR "intensive residential treatment" [title/abstract] OR "IRT" [title/abstract] OR "day patient program" [title/

abstract] OR "day-patient program" [title/abstract] OR "treatment" [title/abstract] OR "therapy" [title/abstract]).[1]

2.3. Study selection and data extraction

Records were managed with EndNote (Version 20.4), Microsoft Excel (Version 16.70), and Rayyan (Ouzzani et al., 2016) and were identified in a two-step approach. First, duplicates were excluded and the abstracts and titles of remaining records were screened. Second, full texts of eligible studies were screened and data originating from selected studies were collected by EMZ and three research assistants with sufficient experience by using an electronic data extraction form specifically developed in accordance with the research question. The following data from each eligible study were extracted: year of publication, sample sizes at admission, discharge, and follow-up (if applicable), mean age, percentage of males and females, type of treatment, country, period covered, length of stay, length of follow-up period (if applicable), instrument used, means and standard deviations at admission, discharge, and follow-up (if applicable) as well as type of psychopharmacological treatment if applied. If multiple instruments including the Y–BOCS were used in a study, the Y–BOCS was preferred. If multiple instruments including OCI–R but not Y–BOCS were used in a study, OCI–R was preferred. If multiple instruments including DOCS but not Y–BOCS or OCI–R were used, DOCS was preferred. For studies that examined children and adolescents only, the CY–BOCS was used. In case of multiple follow-up measurements, data of the latest follow-up measurement were extracted.

If data necessary for calculation of effect sizes could not be accessed in the paper, the corresponding authors were contacted by EMZ via email in order to obtain either the full text or additional information. Such studies were excluded if no response was received within two weeks. Any ambiguous decisions in the study selection and data extraction process were discussed among EMZ and the three research assistants. Authors were not blinded to any aspect of identified studies during the selection and data collection process.

2.4. Risk of bias

Risk of bias in individual studies was assessed with the "Risk Of Bias In Non-randomised Studies – of Interventions" (ROBINS–I) tool (Sterne et al., 2016). The ROBINS–I tool comprises the following seven categories: bias due to confounding, bias due to selection of participants, bias in classification of interventions, bias due to deviations from intended interventions, bias due to missing data, bias in measurement of outcomes, and bias in selection of the reported outcomes. For each category, studies are rated as low, moderate, and serious. The risk of bias figure was created by using the *robvis* package (McGuinness and Higgins, 2021).

Publication bias was assessed by three procedures for the effect from admission to discharge. We did not assess publication bias for the effect from discharge to follow-up as the number of studies included was too small. First, a funnel plot was created which plots the effect size of each study against the standard error of the effect sizes. Publication bias is indicated by asymmetries in the plot. Second, the rank correlation test for funnel plot asymmetry (which computes a rank-order correlation between the effect sizes and their precision) was calculated (Begg and Mazumdar, 1994). Third, we applied the WAAP-WLS (a hybrid of weighted average of the adequately powered studies and weighted least squares) procedure which iteratively removes studies with insufficient power to detect the meta-analytic effect size (cf., Bartoš et al., 2022). We did not apply the PET-PEESE procedure (which corrects for the correlation between effect sizes and standard errors or effect sizes and standard errors squared; cf., Bartoš et al., 2022) as it performs badly when the between-study heterogeneity is substantial (Harrer et al., 2021; Stanley, 2017).

2.5. Statistical analyses

If at least three eligible studies were available, meta-analyses were performed. Analyses were conducted using *R* version 4.2.1 (RCore Team, 2022), *RStudio* version 2022.07.1 (RStudio Team, 2022), and *JASP* version 0.16.4.0 (JASP Team, 2022). For conducting meta-analyses, the outcomes in Y–BOCS, CY–BOCS, OCI–R, and DOCS of individual studies were transferred to standardized mean differences and combined to calculate a pooled effect size and a 95% confidence interval. Using the *meta* (Schwarzer and Schwarzer, 2012) and *dmetar* (Harrer et al., 2021) packages in *R*, two separate meta-analyses were conducted, one for calculating the pooled effect size for changes from admission to discharge and one for calculating the pooled effect size for changes from discharge to follow-up. Random-effects models were used as they assume that the observed estimates of treatment effect can vary across studies because of real differences in the treatment effect in each study as well as sampling variability (Borenstein et al., 2010). As pooled effect size, we calculated Hedges' *g* with negative numbers representing reductions in OCD symptom severity measures. Effects were pooled by using the inverse variance method and—given its robust performance in continuous outcome data—the between-study variance (τ^2) was estimated by using the restricted maximum-likelihood estimator (Harrer et al., 2021). The Knapp–Hartung adjustments were applied to reduce the risk of a false positive result (Harrer et al., 2021). Prediction intervals were calculated to estimate the range into which the expected effects of future studies fall based on the present evidence (Harrer et al., 2021).

To assess the impact of length of stay, age, sex, region (i.e., Europe versus USA, as there were only few studies from other world regions), and instrument used (i.e., self-report versus interview versions) and, thus, explain heterogeneity across the studies included, we conducted meta-regressions for effects of changes from admission to discharge. Moderator analyses were not conducted for the effects of changes from discharge to follow-up as there were only few studies available. The *R* code and data which can be used to reproduce all analyses are available at https://osf.io/hcf3g/.

3. Results

3.1. Study selection

The search yielded a total of 2443 studies. After removing duplicates (n = 570), titles and abstracts of the remaining studies found in the database search (n = 1873) were independently screened by EMZ, which lead to exclusion of 1744 records. In the next step, 129 studies were sought for retrieval, six of which could not be retrieved. Hence, 123 records were assessed for eligibility by screening full texts by EMZ, which lead to exclusion of 82 studies. Adding the two studies found in the second literature search (see Footnote 1) led to a total of 43 studies which were included in the review. Fig. 1 depicts a PRISMA flow chart that includes the reasons for study exclusions.

3.2. Study characteristics

All included studies were non-randomized studies conducted in the USA (n = 22), Germany (n = 12), United Kingdom (n = 4), Norway (n = 1), Czech Republic (n = 1), Australia (n = 1), and India (n = 2). At admission, data of 7878 persons taking part in the included studies were available (median = 103, Range = 23–1595). At discharge, data of 7336 persons were available (median = 102, Range = 23–1595) while at

[1] Based on a comment by a reviewer, we repeated the literature search on 4th of April 2024 by adding the search term "partial hosp* [title/abstract]". We found two additional studies (Bystritsky et al., 1996, 1999), which were included in the systematic review and meta-analysis.

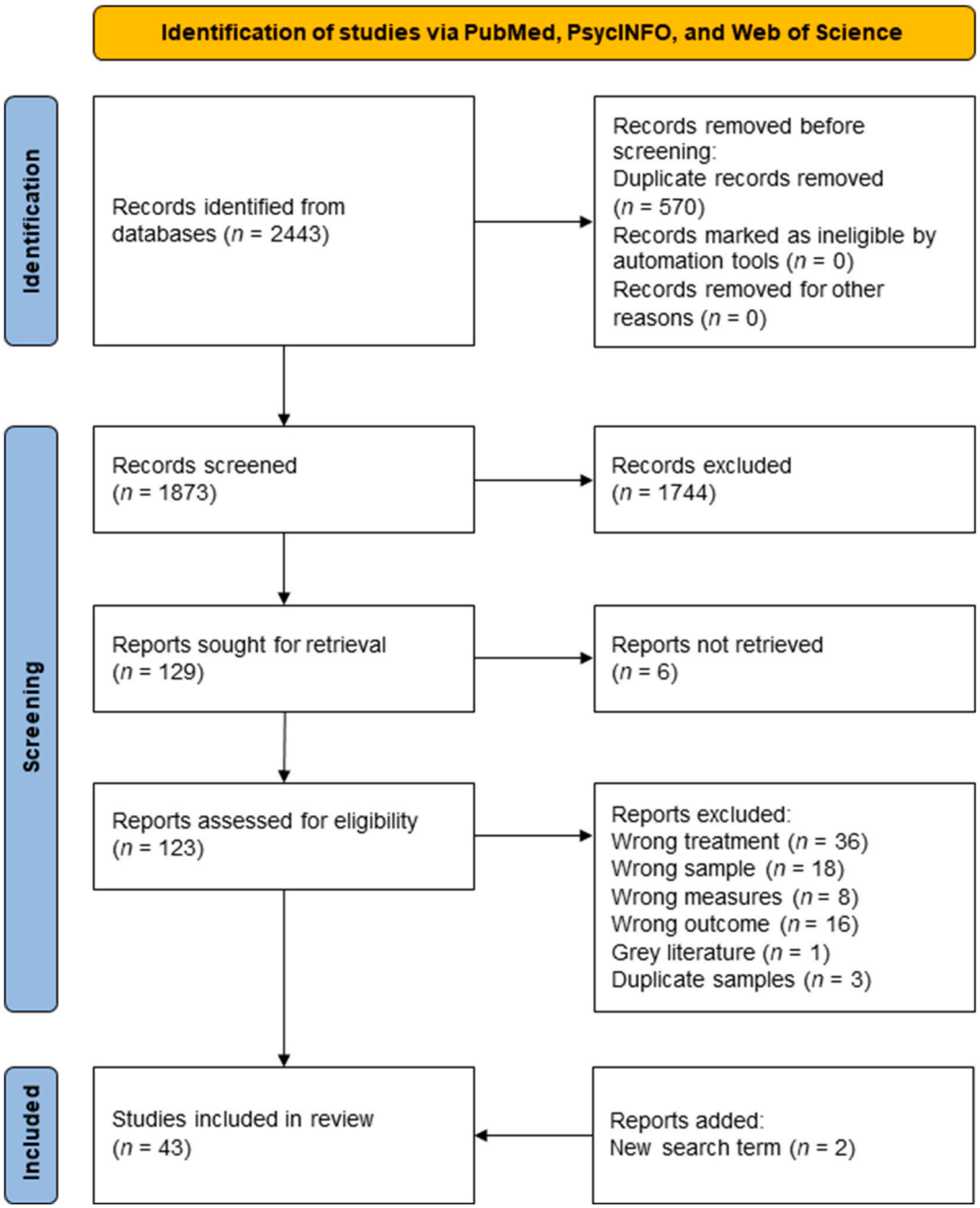

Fig. 1. PRISMA flow diagram.

follow-up, data of 910 persons were available (median = 53, Range = 7–420). In 37 studies (N = 6655; information not available for six studies), 3454 persons (43.84%) were female and 3201 (40.63%) were male. In 40 studies (N = 7301; information not available for 3 studies), mean age was 31.26 years. In eight studies (information not available for 10 studies) only children and adolescents were included. In 39 studies (N = 7214), mean length of stay was 59.74 days (Range = 10.40–135.51). In 22 studies, patients received some form of residential treatment, in 18 studies, patients received some form of inpatient treatment. In three studies, patients received day-patient treatment. Ten studies included follow-up measurements with a mean follow-up period of 11.94 months (Range = 1–24).

Instruments used were Y–BOCS self-report (n = 18), Y–BOCS interview (n = 19), CY–BOCS (n = 4), OCI–R (n = 1), and DOCS (n = 1). Mean Y–BOCS self-report scores were 26.03 (SD = 1.67, Range = 21.27–28.69) at admission, 16.71 (SD = 2.35, Range = 13.08–21.24) at discharge, and 22.40 (no standard deviation or range available as it was only one study) at latest follow-up. Mean Y–BOCS interview scores were 28.64 (SD = 3.06, Range = 24.82–34.80) at admission, 17.05 (SD = 3.00, Range = 12.50–24.37) at discharge, and 17.13 (SD = 2.77, Range = 15.10–22.61) at follow-up. Mean CY–BOCS scores were 25.21 (SD = 0.90, Range = 23.90–25.90) at admission, 13.02 (SD = 1.76, Range = 10.50–14.30) at discharge, and 10.25 (SD = 0.07, Range = 10.20–10.30) at follow-up. In the two single studies that used the OCI–R and DOCS, mean OCI–R scores were 26.66 at admission, 19.50 at discharge, and 18.37 at follow-up, and mean DOCS scores were 32.73 at admission and 16.59 at discharge. Thirty-seven studies reported that psychopharmacological medication was part of their treatment program, one study reported not having used medication throughout treatment, and five studies did not report whether medication was used. Characteristics of the single studies are displayed in Table 1.

Table 1
Characteristics of studies included in the meta-analysis.

Study	Country	Mean (*SD*) length of stay in days	Treatment program	Instrument used	Mean (*SD*) at admission	Mean (*SD*) at discharge	Mean (*SD*) at follow-up	Sample size at admission	Sample size at discharge	Sample size at latest follow-up	Time of latest follow-up in months
Adams et al. (2012)	USA	57.99 (25.84)	Residential treatment program; behavioral and cognitive treatment elements, 25 prolonged exposures per day, cognitive restructuring	Y–BOCS self-report	27.38 (6.53)	15.21 (6.92)	n.a.	160	n.a.	n.a.	n.a.
Balachander et al. (2020)	India	42.70 (n.a.)	Inpatient treatment; intensive CBT (4–5 sessions/week) including psychoeducation, ERP with cognitive restructuring, relapse prevention, therapist-assisted ERP sessions and self-guided ERP sessions, family member stayed in the clinic and was actively involved in therapy	Y–BOCS interview	29.94 (4.50)	18.13 (7.73)	n.a.	420	420	169	24
Björgvinsson et al. (2008)	USA	66.50 (n.a.)	Intensive inpatient treatment program; 90 min of ERP in the morning with staff supervision, self-directed exposures for 60 min; psychoeducational, cognitive-behavioral groups and individualized family interventions	CY–BOCS self-report	23.90 (8.60)	14.30 (9.30)	n.a.	23	23	n.a.	n.a.
Björgvinsson et al. (2013)	USA	43.40 (n.a.)	Residential treatment program; information on treatment provided from Björgvinsson et al. (2008): 90 min of ERP in the morning with staff supervision, self-directed exposures for 60 min; psychoeducational, cognitive-behavioral groups and individualized family interventions	Y–BOCS self-report	26.50 (5.90)	19.00 (7.60)	n.a.	46	46	n.a.	n.a.
Blakey et al. (2017)	USA	n.a.	Residential treatment program; ERP, cognitive restructuring, additional interventions (e.g., behavioral activation for symptoms of depression), non-CBT work (e.g., psychoeducation with family members), process group 1x per week, experiential therapy groups several times per week	DOCS self-report	32.73 (15.07)	16.59 (11.74)	n.a.	187	187	n.a.	n.a.
Boger et al. (2020)	Germany	68.77 (17.30)	Specialist inpatient treatment; CBT, OCD group therapy with main component ERP 300 min per week, individual therapy 50 min per week, mindfulness group therapy and sports therapy or art therapy 100 min per week	OCI–R self-report	26.66 (13.45)	19.50 (12.72)	18.37 (12.86)	68	62	54	6
Boschen et al. (2010)	United Kingdom	135.51 (59.62)	Specialized inpatient treatment; information on treatment provided from Drummond et al. (2007): cognitive-behavioral treatment, medication change, cognitive	Y–BOCS interview	34.74 (4.18)	24.37 (10.62)	n.a.	52	n.a.	n.a.	n.a.

(*continued on next page*)

Table 1 (*continued*)

Study	Country	Mean (*SD*) length of stay in days	Treatment program	Instrument used	Mean (*SD*) at admission	Mean (*SD*) at discharge	Mean (*SD*) at follow-up	Sample size at admission	Sample size at discharge	Sample size at latest follow-up	Time of latest follow-up in months
			reattribution, psychoeducational methods								
Browning et al. (2022)	USA	n.a.	Intensive/residential treatment; intensive CBT-based approach based on ERP, acceptance and commitment therapy, emotion regulation skills, interpersonal effectiveness, daily group therapy	Y–BOCS self-report	25.28 (5.68)	14.25 (6.47)	n.a.	279	279	n.a.	n.a.
Bystritski et al. (1996)	USA	42.00 (n.a.)	Partial hospital treatment; combination of medication, behavior therapy, cognitive restructuring, and psychosocial interventions	Y–BOCS interview	26.9 (4.80)	16.40 (6.80)	15.30 (9.00)	58	n.a.	7	18
Bystritski et al. (1999)	USA	42.00 (n.a.)	Partial hospital treatment; combination of medication, behavior therapy, cognitive restructuring, and psychosocial interventions	Y–BOCS interview	30.73 (3.82)	16.43 (6.08)	n.a.	30	30	n.a.	n.a.
Calvocoressi et al. (1993)	USA	101.8 (49.7)	Inpatient treatment; controlled medication trials, standard battery of psychosocial interventions	Y–BOCS interview	27.60 (8.80)	18.30 (9.20)	n.a.	66	66	n.a.	n.a.
Ching et al. (2023)	USA	33.53 (n.a.)	Intensive residential treatment; individual, group, and family therapy, medication management, dietary support, CBT, at least 3 h of ERP per day	Y–BOCS self-report	26.21 (5.54)	21.23 (6.86)	n.a.	43	43	n.a.	n.a.
Cole Monaghan et al. (2015)	USA	50.32 (n.a.)	Intensive residential treatment; individual, group, and milieu therapy, individual CBT for 50 min 2–3 times weekly, weekly case management with a social worker and psychopharmacology consultation, 2 h therapist-guided ERP and 2 h of self-directed ERP per day	Y–BOCS self-report	26.00 (6.80)	16.50 (6.20)	n.a.	324	235	n.a.	n.a.
Diedrich et al. (2016)	Germany	65.41 (24.15)	Intensive inpatient treatment program; group therapy 1-2x per week (occupational therapy, music therapy, sports therapy, and a disorder-specific group), individual therapy, all based on CBT	Y–BOCS interview	24.82 (5.96)	16.99 (7.50)	n.a.	71	69	n.a.	n.a.
Dowling et al. (2016)	Australia	21.00 (n.a.)	Intensive residential treatment; 10 h of CBT each week, 2 h of group-based therapist-directed ERP per day, 2 h self-directed ERP per day, psychoeducation, cognitive therapy, mindfulness, group therapy five days per week	Y–BOCS self-report	28.69 (5.67)	20.29 (6.25)	22.40 (7.04)	49	49	25	1
Drummond et al. (2012)	United Kingdom	–	Intensive inpatient treatment;	Y–BOCS interview	34.80 (3.10)	23.40 (9.20)	n.a.	104	n.a.	n.a.	n.a.

(*continued on next page*)

Table 1 (*continued*)

Study	Country	Mean (*SD*) length of stay in days	Treatment program	Instrument used	Mean (*SD*) at admission	Mean (*SD*) at discharge	Mean (*SD*) at follow-up	Sample size at admission	Sample size at discharge	Sample size at latest follow-up	Time of latest follow-up in months
			psychopharmacological medication, CBT, ERP								
Falkenstein et al. (2020)	USA	50.90 (25.70)	Intensive/residential treatment; CBT, individual and group therapy with 4 h of ERP daily and regular meetings with behavior therapists, family therapists and psychiatrists	Y–BOCS self-report	25.13 (5.90)	15.27 (6.40)	n.a.	446	400	n.a.	n.a.
Fricke et al. (2003)	Germany	71.50 (n.a.)	Inpatient or day-patient treatment program; multiple individual therapy sessions per week, individualized ERP sessions, CBT group therapy	Y–BOCS interview	25.60 (5.40)	15.30 (5.60)	n.a.	55	n.a.	n.a.	n.a.
Fricke et al. (2007)	Germany	59.00 (28.60)	Inpatient treatment program; multiple individual therapy sessions per week, individualized ERP sessions, CBT group therapy	Y–BOCS interview	26.90 (6.40)	18.20 (8.00)	n.a.	41	n.a.	n.a	n.a.
Gönner et al. (2012)	Germany	52.00 (11.90)	Inpatient treatment program; psychoeducation, therapist-led and self-controlled ERP, cognitive restructuring, exercises for mindfulness, perception and body orientation	Y–BOCS self-report	25.60 (5.40)	16.60 (7.90)	n.a.	102	102	n.a.	n.a.
Grøtte et al. (2018)	Norway	21.00 (n.a.)	Inpatient treatment program; psychoeducation, CBT, at minimum 3 ERP exercises per day (one accompanied by personnel, one partially assisted, and one without assistance), relapse prevention interventions	Y–BOCS interview	26.03 (4.80)	12.50 (7.60)	n.a.	187	166	104	6
Herzog et al. (2022)	Germany	54.88 (18.02)	Inpatient treatment; multimodal symptom-specific CBT, acceptance and commitment therapy, ERP, relapse prevention	Y–BOCS self-report	25.50 (5.60)	16.00 (7.20)	n.a.	1595	n.a.	n.a.	n.a.
Hohagen et al. (1998)	Germany	63.00 (n.a.)	Inpatient treatment; multimodal CBT, ERP (therapist-aided, co-therapist-aided, self-management), cognitive restructuring	Y–BOCS interview	28.20 (3.40)	14.15 (7.35)	n.a.	49	49	n.a.	n.a.
Højgaard et al. (2020)	USA	75.43 (34.24)	Intensive residential treatment; CBT, 26.5 h of ERP per week, pharmacotherapy when required	CY–BOCS self-report	25.65 (5.63)	14.13 (8.61)	n.a.	314	314	n.a.	n.a.
Kay et al. (2016)	USA	69.65 (26.78)	Residential treatment; 2–3 h of daily CBT, 5 days per week, ERP during the week and on weekends, two appointments with a psychiatrist per week	CY–BOCS self-report	25.90 (4.40)	10.50 (6.50)	10.20 (7.70)	72	n.a.	20	12
Kordon et al. (2005)	Germany	70.00 (n.a.)	Inpatient treatment; CBT, psychopharmacological medication	Y–BOCS interview	27.60 (5.80)	13.30 (7.40)	15.10 (10.00)	74	74	74	24
Krompinger et al. (2017)	USA	60.00 (n.a.)	Intensive residential treatment program; daily CBT and ERP, several	Y–BOCS self-report	26.90 (5.60)	17.50 (6.70)	n.a.	103	n.a.	n.a.	n.a.

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Table 1 (*continued*)

Study	Country	Mean (*SD*) length of stay in days	Treatment program	Instrument used	Mean (*SD*) at admission	Mean (*SD*) at discharge	Mean (*SD*) at follow-up	Sample size at admission	Sample size at discharge	Sample size at latest follow-up	Time of latest follow-up in months
			individual and family meetings with clinicians per week								
Leonard et al. (2016)	USA	78.00 (39.00)	Residential treatment program; CBT, five appointments per week with behavior therapist for staff assisted ERP, self-directed ERP seven days per week (in total: 26.5 h of ERP per week), cognitive restructuring, activity scheduling for depressive symptoms, interoceptive exposures for panic disorder symptoms, process groups five days per week, non-CBT work (e.g., psychoeducation, discharge planning), experiential therapy groups	CY–BOCS self-report	25.39 (5.36)	13.16 (7.57)	10.30 (7.88)	172	172	44	18
Nanjundaswamy et al. (2020)	India	46.13 (n.a.)	Inpatient treatment; CBT 5–6 times per week (60–90 min per session), pharmacotherapy, ERP, cognitive restructuring	Y–BOCS interview	29.38 (5.72)	16.62 (7.91)	16.75 (8.85)	58	58	58	1–2
Ociskova et al. (2021)	Czech Republic	n.a.	Inpatient treatment program; CBT, daily ERP, transdiagnostic group CBT (20 sessions per program, 90 min per day), daily community session (25 sessions per program, 90 min per session), psychoeducation, case conceptualization, weekly sessions of mental imagery and daily relaxation, sport and ergotherapy, five individual sessions with CBT therapist	Y–BOCS self-report	26.30 (5.54)	21.24 (7.11)	n.a.	94	94	n.a.	n.a.
Ponzini et al. (2019)	USA	50.76 (25.83)	Intensive/residential treatment; ERP (2–4 h daily), two CBT appointments per week, daily group therapy sessions (psychoeducation, CBT-oriented groups, symptom specific groups)	Y–BOCS self-report	25.92 (6.77)	16.31 (6.46)	n.a.	408	306	n.a.	n.a.
Rufer et al. (2006)	Germany	63.00 (n.a.)	Inpatient treatment; multimodal CBT, ERP, cognitive restructuring, group therapies (social skills training, stress-management, problem solving training)	Y–BOCS interview	26.80 (5.10)	17.00 (7.10)	n.a.	104	94	n.a.	n.a.
Saxena et al. (2001)	USA	40.50 (37.00)	Intensive residential treatment; daily CBT in individual and group settings for several hours a day, ERP, medication	Y–BOCS interview	28.00 (4.70)	15.80 (5.90)	n.a.	96	96	n.a.	n.a.
Schubert et al. (2022)	Germany	68.90 (n.a.)	Inpatient treatment; CBT-based specific group therapy (8 sessions of 100 min each within a 4-week period), individual therapy (1–2 times per week), therapist-guided	Y–BOCS self-report	23.87 (6.38)	15.86 (7.98)	n.a.	112	n.a.	n.a.	n.a.

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Table 1 (*continued*)

Study	Country	Mean (*SD*) length of stay in days	Treatment program	Instrument used	Mean (*SD*) at admission	Mean (*SD*) at discharge	Mean (*SD*) at follow-up	Sample size at admission	Sample size at discharge	Sample size at latest follow-up	Time of latest follow-up in months
			ERP, self-controlled ERP, disorder-specific group therapies for treatment of comorbid disorders, group therapy of social skills, mindfulness training, relaxation training, biofeedback, art therapy group and social counselling, medication								
Schultchen et al. (2019)	Germany	63.00 (n.a.)	Inpatient therapy program; CBT, group- and individual therapy elements, 2-week period of ERP, emotion-, mindfulness- and body-related therapy, schema therapy, mindfulness meditation, body psychotherapy, medication	Y–BOCS self-report	21.27 (8.13)	13.08 (6.94)	n.a.	26	n.a.	n.a.	n.a.
Simkin et al. (2022)	United Kingdom	98.00 (n.a.)	Residential treatment; CBT, ERP, activity scheduling, occupational therapy, weekly compassion focused group therapy	Y–BOCS interview	33.51 (3.27)	15.84 (5.84)	n.a.	137	n.a.	n.a.	n.a.
Siwiec et al. (2019)	USA	58.80 (29.70)	Intensive residential treatment; CBT, ERP (4,5 h per weekday, 2,5 h on weekends), medication, support and treatment groups (spirituality, communication skills, experiential therapy, dialectical behavior therapy)	Y–BOCS self-report	25.88 (5.21)	14.23 (4.25)	n.a.	379	379	n.a.	n.a.
Stewart et al. (2005)	USA	66.00 (n.a.)	Intensive residential treatment; CBT (2–4 h daily), weekly psychopharmacology assessments	Y–BOCS interview	26.60 (6.10)	18.60 (7.20)	n.a.	403	230	n.a.	n.a.
Veale et al. 2016a	United Kingdom	72.80 (n.a.)	Residential treatment; up to 4 individual CBT sessions per week, exposure/behavioral experiments, group behavioral experiments, occupational therapy, activity scheduling, weekly Compassionate Mind training and community meeting, at least one home visit or assessment with a resident's family, medication	Y–BOCS interview	30.75 (5.95)	18.55 (7.84)	22.61 (7.88)	383	290	124	6–12
Voderholzer et al. (2013)	Germany	91.00 (n.a.)	Inpatient treatment; CBT, psychoeducation, ERP (therapist-guided 2 h per week, self-guided), two therapeutic sessions per week (each session lasting about 50–60 min), group physiotherapy, ergo therapy (1 h per week)	Y–BOCS interview	25.30 (4.58)	14.10 (5.32)	n.a.	60	60	n.a.	n.a.
Wetterneck et al. (2020)	USA	63.70 (40.06)	Residential treatment program; CBT, ERP, cognitive restructuring; on weekdays: homework review group (30 min), therapist-aided and self-	Y–BOCS self-report	28.44 (5.26)	16.68 (6.38)	n.a.	150	150	n.a.	n.a.

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Table 1 (*continued*)

Study	Country	Mean (*SD*) length of stay in days	Treatment program	Instrument used	Mean (*SD*) at admission	Mean (*SD*) at discharge	Mean (*SD*) at follow-up	Sample size at admission	Sample size at discharge	Sample size at latest follow-up	Time of latest follow-up in months
			directed ERP (2.5 h), therapist-aided cognitive restructuring (1 h), recreational therapy (1 h), self-directed ERP and cognitive restructuring (90 min); on weekends: homework review group (30 min), self-directed ERP (2 h), therapist-aided group cognitive restructuring (1 h); pharmacotherapy								
Wheaton et al. (2020)	USA	49.57 (22.07)	Intensive residential treatment; ERP (2–4 h daily), weekly meetings with psychiatrists, case management	Y–BOCS self-report	26.02 (5.58)	14.84 (6.64)	n.a.	154	154	n.a.	n.a.
Wheaton et al. (2023)	USA	56.48 (44.33)	Intensive residential treatment; 6.5 h of treatment per day on weekdays (individual, group, milieu, and family therapy), therapy sessions on weekends, CBT, ERP	Y–BOCS self-report	27.67 (5.35)	16.69 (6.11)	n.a.	124	124	n.a.	n.a.

Notes. USA = United States of America, Y–BOCS = Yale–Brown Obsessive Compulsive Scale, CY–BOCS = Children's Yale–Brown Obsessive Compulsive Scale, OCI–R = Obsessive Compulsive Inventory–Revised, DOCS = Dimensional Obsessive–Compulsive Scale, CBT = Cognitive Behavioral Therapy, ERP = Exposure and response prevention.

3.3. Risk of bias

The majority of studies had low risk of bias and a small subset of studies had high risk of bias in four of the seven categories (Fig. 2). Although the funnel plot shows some symmetry around the mean, the scatter plot is not strictly a funnel shape (Fig. 3). Yet, this is likely based more on high between-study heterogeneity and less on publication bias (Sterne et al., 2011). The rank correlation test for funnel plot asymmetry was not significant ($\tau = -0.18$, $p = 0.100$), indicating that there was no publication bias. The WAAP-WLS procedure revealed that all 43 studies were adequately powered (power >80%) and the weighted least squares estimated effect size was −1.47 (95%CI [−1.58; −1.36], $p < 0.001$).

3.4. Effects from admission to discharge

The pooled effect size across all studies indicated significant and large reductions in obsessive–compulsive symptoms from admission to discharge ($g = -1.59$, 95%CI [−1.76; −1.41], $p < 0.001$; 95% prediction interval [−2.67; −0.51]) with substantial heterogeneity across studies ($Q(42) = 543.23$, $p < 0.001$; $I^2 = 92.3\%$, 95%CI [90.5%; 93.7%]; Fig. 4).

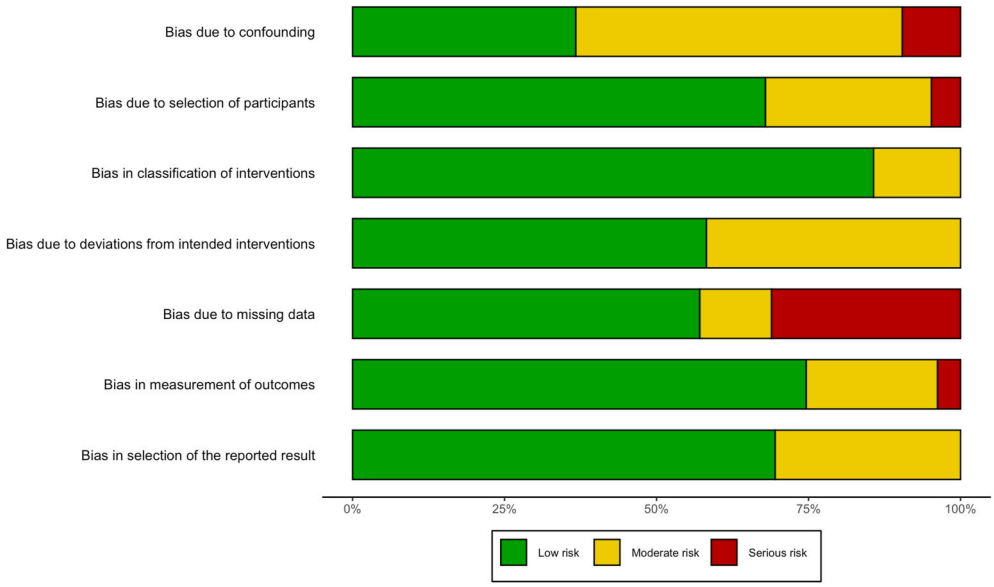

Fig. 2. Risk of bias assessment using the "Risk Of Bias In Non-randomised Studies – of Interventions" (ROBINS–I) tool.

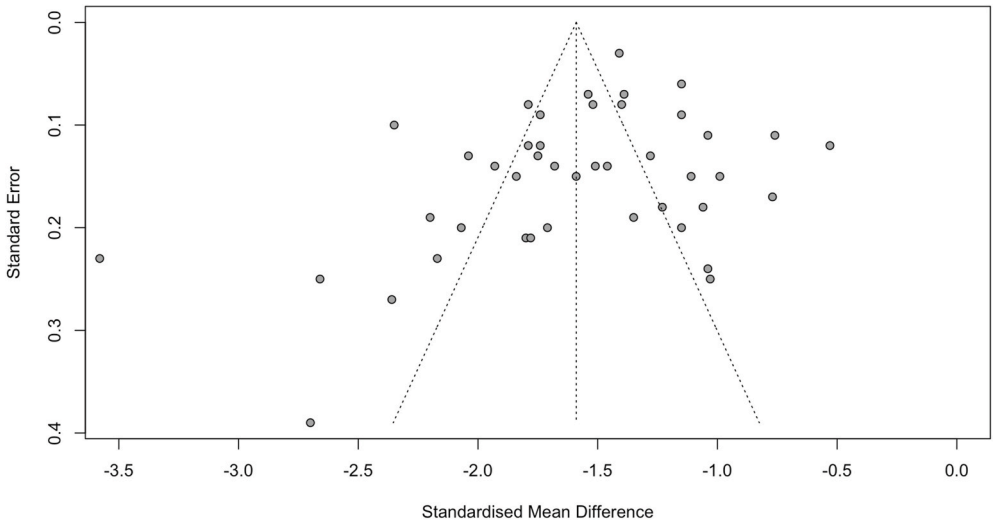

Fig. 3. Funnel plot assessing publication bias of studies included in the meta-analysis.

3.5. Effects from discharge to follow-up

The pooled effect size across the ten studies that reported follow-up measurements indicated no significant changes in obsessive–compulsive symptoms from discharge to follow-up ($g = 0.06$, 95%CI [−0.09; 0.21], $p = 0.389$; 95% prediction interval [−0.42; 0.54]) with substantial heterogeneity across studies ($Q(9) = 77.58$, $p < 0.001$; $I^2 = 88.4\%$, 95% CI [80.7%; 93.0%]; Fig. 5).

3.6. Moderator analyses

Meta-regressions showed that the predictors length of stay, age, sex, and region did not explain heterogeneity across the studies for the treatment effect from admission to discharge (all $ps > 0.142$). Instrument used (i.e., self-report versions versus interview version) partly explained heterogeneity in the treatment effect from admission to discharge across the studies ($b = -0.35$, $SE = 0.17$, $p = 0.043$), indicating that effect sizes were larger in studies using the Y–BOCS interview version than in studies using self-report questionnaires (Fig. 6).

4. Discussion

4.1. Summary of results

The current study meta-analytically examined effects of inpatient, residential, and day-patient treatment in persons with OCD from admission to discharge as well as from discharge to follow-up. In all studies, multimodal treatment programs that included CBT with exposure and response prevention were administered. Symptom severity was comparable to other studies with inpatients with OCD and, thus, higher than in outpatients with OCD (Grøtte et al., 2018). Results showed symptom reductions from admission to discharge with a large effect size ($g = -1.59$) for inpatient, residential, and day-patient treatment (Fig. 4). Risk of bias was low across studies and there was no indication of publication bias (e.g., weighted least squares based effect size [−1.47] was practically equivalent to the coefficient of the random effects model; Stanley and Doucouliagos, 2017). When examining changes from discharge to follow-up, there was no statistically significant effect, that is, OCD symptoms did not change on average. Heterogeneity in the estimate of the treatment effect was substantial in both meta-analyses. Length of stay, age, sex, and region did not explain heterogeneity in the treatment effect from admission to discharge across the studies. Yet, instrument used, that is, self-report versus interview versions, did partly explain heterogeneity in the treatment effect from admission to discharge across the studies such that effect sizes were larger in studies that used the interview version of the Y–BOCS. Moderator analyses for changes from discharge to follow-up were not conducted due to only a small number of studies with follow-up data being available.

4.2. Changes in obsessive–compulsive symptoms

The main result, specifically the large effect size for treatment from admission to discharge, is in line with the results of a previous meta-analysis on administering inpatient, residential, or day-patient treatment to persons with severe or treatment-refractory OCD by Veale et al. 2016a. Hence, in accordance with treatment guidelines for OCD, such as the German treatment guideline (DGPPN, 2022), these treatment variants are encouraging options for persons with OCD as significant improvements can be achieved which might not necessarily be possible in an outpatient setting. As there was no statistically significant effect for the period between discharge and follow-up measurement, this shows that symptom reductions were maintained by persons with OCD up to two years. This is of particular importance because persons with OCD are especially vulnerable for potential relapses after discharge from a hospital as they return to their private environment where they are usually confronted with stimuli provoking obsessions and compulsions (Rowa et al., 2007). Thus, the current results show that persons with OCD do not only achieve considerable symptom reductions from admission to discharge in inpatient, residential, or day-patient treatment but are also capable of maintaining their success.

Substantial heterogeneity in the estimate of the treatment effect size might be explained by several factors. First, although most variables included in moderator analyses (i.e., length of stay, age, sex, region of the study) did not explain heterogeneity in the treatment effect from admission to discharge, we could only find and include few studies from countries other than USA, Germany, or United Kingdom. Second, it is possible that treatments administered in individual studies differed in variables other than those tested in moderator analyses. Despite considerable similarities in the treatment programs, specifically the administration of CBT and ERP only, there might have also been several differences. For example, Boger et al. (2020) reported that in their study, patients received one session of individual psychotherapy per week while Fricke et al. (2003) reported that in their study, patients received multiple sessions of individual psychotherapy per week.

4.3. Moderator analyses

Age, length of stay, sex, and region did not explain heterogeneity

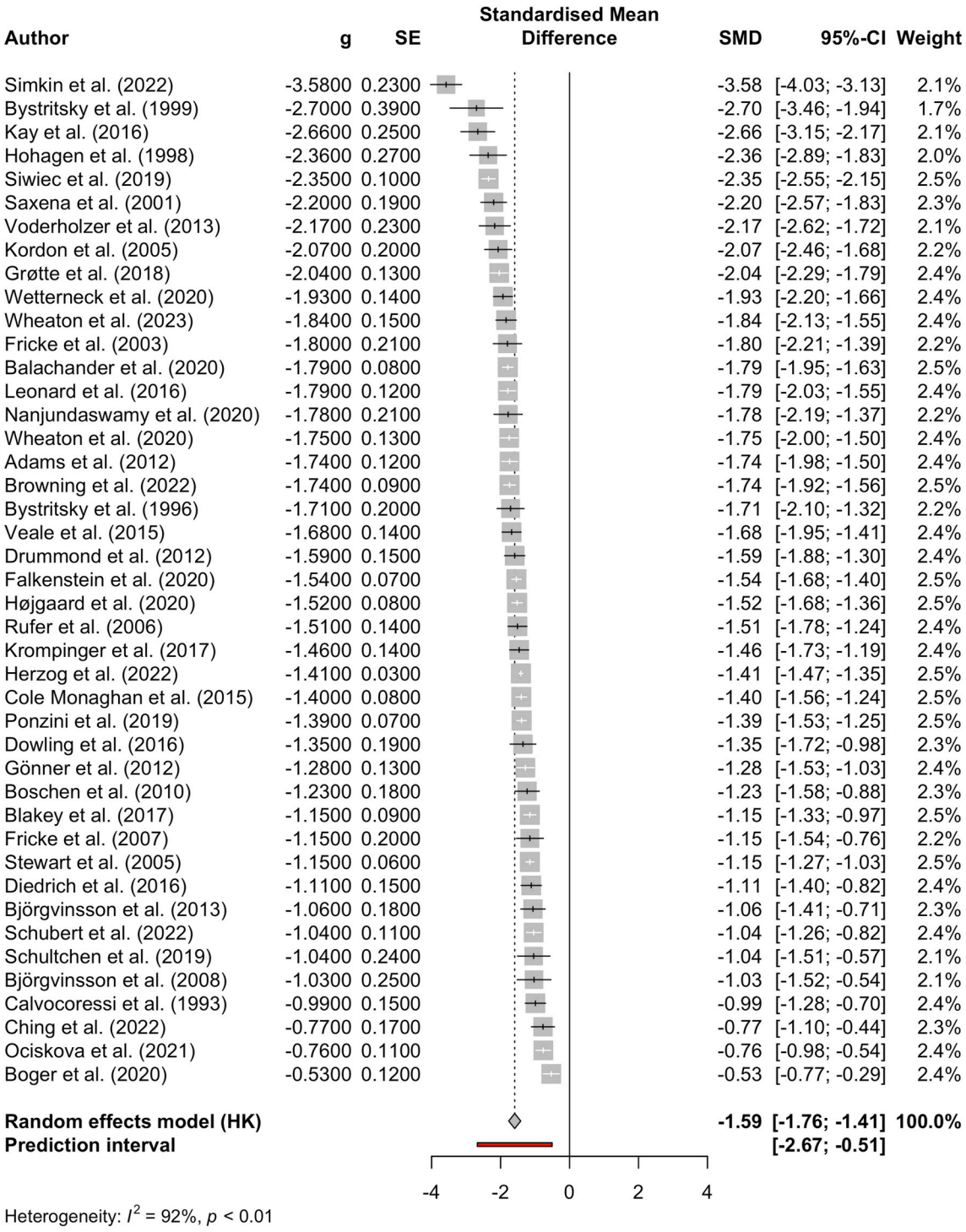

Fig. 4. Forest plot displaying the standardized mean difference for each study included in the meta-analysis for changes from admission to discharge as well as their weighted contributions to the overall estimate of change. The pooled effect size (i.e., overall estimate of change), the prediction interval, and the heterogeneity index is also displayed.

across the studies included, suggesting that inpatient, residential and day-patient treatment for OCD is equally effective across age groups and treatment durations, for both males and females, and in Europe and the USA. These results are in line with some results of a previous meta-analysis by Veale et al. 2016b. Their results also showed that length of stay did not explain heterogeneity in the effect size. In addition, a meta-analysis examining predictors and moderators of responses to psychological therapies in outpatients with OCD found that gender did not significantly explain heterogeneity for the outcome (Knopp et al., 2013). Nevertheless, it should be noted that most studies in the field of psychology are conducted by using so-called WEIRD (Western, educated, industrialized, rich, democratic) samples (Henrich, 2015; Muthukrishna et al., 2020). Thus, there are several sociodemographic factors (e.g., diverse ethnic groups, sexual orientation) that have largely been neglected in past and need to be addressed in future studies to examine whether treatment effects can be generalized to those persons as well.

The only moderator effect was found for instrument used (indicating

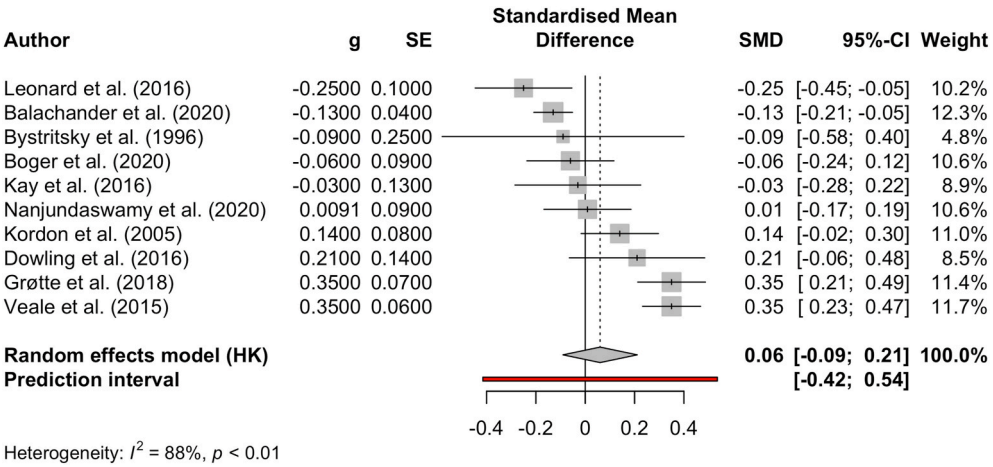

Fig. 5. Forest plot displaying the standardized mean difference for each study included in the meta-analysis for changes from discharge to follow-up as well as their weighted contributions to the overall estimate of change. The pooled effect size (i.e., overall estimate of change), the prediction interval, and the heterogeneity index is also displayed.

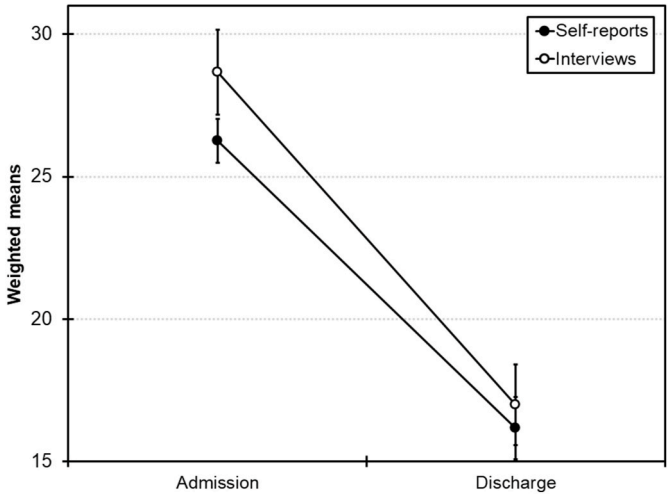

Fig. 6. Weighted means at admission and discharge as a function of instrument used (interview versus self-report). Means were calculated with the metamean function of the *R* package meta, which uses the inverse variance method for pooling. Error bars indicate 95% confidence intervals.

that treatment effects were larger when the interview version of the Y–BOCS was used than when self-report measures were used). Although we cannot fully explain this effect based on the current data and analyses, it might be due to two reasons. First, the Y–BOCS interview version may have higher validity than the self-report version (Federici et al., 2010; Goodman et al., 1989a; Goodman et al., 1989b; Rosenfeld et al., 1992; Steketee et al., 1996). For example, as many patients are unfamiliar with the concepts of obsessions and compulsions at admission, the values collected by the use of the Y–BOCS self-report version at admission might be systematically underestimated (Hauschildt et al., 2019). Second, it might also be that reductions in obsessive–compulsive symptoms may be overestimated if the interview is conducted by the patients' therapists who are not blinded to the treatment.

4.4. Clinical implications

The current study documents large symptom reductions in persons with OCD when they are treated with multimodal (partial) hospitalized programs and these treatment effects seem to remain stable after discharge. Such treatment options are currently recommended in treatment guidelines when prior treatments have been unsuccessful or when suitable guideline-based outpatient treatment is not available (DGPPN, 2022). Thus, a future avenue would be to test whether the benefits of such treatments (i.e., large symptom reductions) outweigh their costs (e.g., financial costs). If so, (partial) hospitalized treatments for OCD may be recommended earlier in future revisions of treatment guidelines. Yet, it should be noted that the current study only tested treatment effects without comparisons to alternative treatments. For example, a crucial issue when comparing "real world" effects of outpatient versus day-patient/inpatient treatment is that patients differ in certain characteristics (e.g., symptom severity, number of prior unsuccessful treatments). Thus, it is important that future studies that contrast these different treatment options do this in randomized controlled trials in order to remove such baseline differences and to carry out cost-benefit-analyses.

4.5. Limitations

Naturally, interpretation of the current findings is limited to data of original research studies which are already published. Yet, there may be a reporting bias as many hospitals which offer inpatient, residential, or day-patient treatment for persons with OCD are not interested in publishing the data of their patients in the form of studies. Accordingly, it can be assumed that there may be much more data on the research question of the current systematic review and meta-analysis which we could not include as it is not published. Another limitation is that in earlier studies, persons with hoarding disorder were included as this diagnosis belonged to the OCD category in the DSM-IV (Mataix-Cols and Pertusa, 2012). Thus, it is possible that the effect shown in this meta-analysis might be even higher if patients with hoarding disorder were excluded. Moreover, in the analyses, we were not able to control for psychopharmacological medication as this was only reported unsystematically in the included studies and there was only one study which did not use any psychopharmacological medication (Voderholzer et al., 2013). Although we could not include psychopharmacological medication in moderator analyses, it can be noted that the effect size reported in Voderholzer et al. (2013) was in the upper third of the largest effect sizes (Fig. 4). As a future direction, we would therefore suggest to report prescribed medication more transparently in future studies so that calculation of moderator analyses is possible in future meta-analyses.

Furthermore, we could not calculate moderator analyses for the effect from discharge to follow-up as the number of studies that reported follow-up data was too little for those analyses. Hence, future original

research studies assessing the effect of inpatient, residential, or day-patient treatment in persons with OCD might also collect follow-up data after discharge as this time period is especially important in regard of potential relapses and it is of particular interest if reductions in symptom severity can be maintained. Furthermore, interpretation of the current results is limited to studies and treatments in the USA and Europe and may not translate to other parts of the world or persons from other than WEIRD nations. Specifically, only three studies were included from Australia and Asia (India) and no studies from South America or Africa. Thus, there is an urgent need to conduct studies on treatment effects for OCD in these regions, which can then be included in future meta-analyses.

5. Conclusions

This systematic review and meta-analysis showed that inpatient, residential, and day-patient treatment is a promising treatment option for persons with OCD. By undergoing this treatment, persons with OCD can achieve large reductions in OCD symptom severity which can be maintained for a longer period of time after discharge from the hospital. While larger treatment effects can be observed when obsessive–compulsive symptoms are assessed with the interview version of the Y–BOCS than when self-report questionnaires are used, the current meta-analysis also shows that certain sociodemographic variables and treatment duration do not explain heterogeneity in the treatment effect across studies and, thus, that inpatient, residential, and day-patient treatment for OCD seems to be effective independent of patients' age, sex, location, and length of stay. Besides OCD symptom reductions, future meta-analyses might also assess effects of inpatient, residential, or day-patient treatment on quality of life, comorbidity rates, and social participation.

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CRediT authorship contribution statement

Eva M. Zisler: Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization. **Adrian Meule:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Dominique Endres:** Writing – review & editing. **Rebecca Schennach:** Writing – review & editing. **Lena Jelinek:** Writing – review & editing. **Ulrich Voderholzer:** Writing – review & editing, Supervision, Conceptualization.

Declaration of competing interest

The authors report that there are no competing interests to declare.

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References

Abramowitz, Taylor, S., McKay, D., 2009. Obsessive-compulsive disorder. Lancet 374 (9688), 491–499. https://doi.org/10.1007/978-3-319-24612-3_919.

Abramowitz, J.S., Deacon, B.J., Olatunji, B.O., Wheaton, M.G., Berman, N.C., Losardo, D., Timpano, K.R., McGrath, P.B., Riemann, B.C., Adams, T., 2010. Assessment of obsessive-compulsive symptom dimensions: development and evaluation of the Dimensional Obsessive-Compulsive Scale. Psychol. Assess. 22 (1), 180. https://doi.org/10.1037/a0018260.

Adams Jr., T.G., Riemann, B.C., Wetterneck, C.T., Cisler, J.M., 2012. Obsessive beliefs predict cognitive behavior therapy outcome for obsessive compulsive disorder. Cognit. Behav. Ther. 41 (3), 203–211. https://doi.org/10.1080/16506073.2011.621969.

American Psychiatric Association, 2013. Diagnostic and Statistical Manual of Mental Disorders: DSM-5, vol. 5. American Psychiatric Association.

Arch, J.J., Abramowitz, J.S., 2015. Exposure therapy for obsessive–compulsive disorder: an optimizing inhibitory learning approach. Journal of Obsessive-Compulsive and Related Disorders 6, 174–182. https://doi.org/10.1016/j.jocrd.2014.12.002.

Baer, L., 1991. Getting Control. Little Brown & Co.

Balachander, S., Bajaj, A., Hazari, N., Kumar, A., Anand, N., Manjula, M., Sudhir, P.M., Cherian, A.V., Narayanaswamy, J.C., Jaisoorya, T., 2020. Long-term outcomes of intensive inpatient care for severe, resistant obsessive-compulsive disorder: résultats à long terme de soins intensifs à des patients hospitalisés pour un trouble obsessionnel-compulsif grave et résistant. Can. J. Psychiatr. 65 (11), 779–789. https://doi.org/10.1177/0706743720927830.

Bartoš, F., Maier, M., Quintana, D.S., Wagenmakers, E.-J., 2022. Adjusting for publication bias in JASP and R: selection models, PET-PEESE, and robust Bayesian meta-analysis. Advances in Methods and Practices in Psychological Science 5 (3), 25152459221109259. https://doi.org/10.1177/25152459221109259.

Begg, C.B., Mazumdar, M., 1994. Operating characteristics of a rank correlation test for publication bias. Biometrics 1088–1101. https://doi.org/10.2307/2533446.

Björgvinsson, T., Hart, A.J., Wetterneck, C., Barrera, T.L., Chasson, G.S., Powell, D.M., Heffelfinger, S., Stanley, M.A., 2013. Outcomes of specialized residential treatment for adults with obsessive-compulsive disorder. J. Psychiatr. Pract. 19 (5), 429–437. https://doi.org/10.1097/01.pra.0000435043.21545.60.

Björgvinsson, T., Wetterneck, C.T., Powell, D.M., Chasson, G.S., Webb, S.A., Hart, J., Heffelfinger, S., Azzouz, R., Entricht, T.L., Davidson, J.E., 2008. Treatment outcome for adolescent obsessive-compulsive disorder in a specialized hospital setting. J. Psychiatr. Pract. 14 (3), 137–145. https://doi.org/10.1097/01.pra.0000320112.36648.3e.

Blakey, S.M., Abramowitz, J.S., Reuman, L., Leonard, R.C., Riemann, B.C., 2017. Anxiety sensitivity as a predictor of outcome in the treatment of obsessive-compulsive disorder. J. Behav. Ther. Exp. Psychiatr. 57, 113–117. https://doi.org/10.1016/j.jbtep.2017.05.003.

Boger, S., Ehring, T., Berberich, G., Werner, G.G., 2020. Impact of childhood maltreatment on obsessive-compulsive disorder symptom severity and treatment outcome. Eur. J. Psychotraumatol. 11 (1), 1753942 https://doi.org/10.1080/20008198.2020.1753942.

Borenstein, M., Hedges, L.V., Higgins, J.P., Rothstein, H.R., 2010. A basic introduction to fixed-effect and random-effects models for meta-analysis. Res. Synth. Methods 1 (2), 97–111. https://doi.org/10.1002/jrsm.12.

Boschen, M.J., Drummond, L.M., Pillay, A., 2008. Treatment of severe, treatment-refractory obsessive-compulsive disorder: a study of inpatient and community treatment. CNS Spectr. 13 (12), 1056–1065. https://doi.org/10.1017/s1092852900017119.

Boschen, M.J., Drummond, L.M., Pillay, A., Morton, K., 2010. Predicting outcome of treatment for severe, treatment resistant OCD in inpatient and community settings. J. Behav. Ther. Exp. Psychiatr. 41 (2), 90–95. https://doi.org/10.1016/j.jbtep.2009.10.006.

Browning, M.E., Van Kirk, N.P., Krompinger, J.W., 2022. Examining depression symptoms within OCD: the role of experiential avoidance. Behav. Cognit. Psychother. 50 (4), 367–380. https://doi.org/10.1017/s1352465821000497.

Bystritsky, A., Munford, P.R., Rosen, R.M., Martin, K.M., Vapnik, T., Gorbis, E.E., Wolson, R.C., 1996. A preliminary study of partial hospital management of severe obsessive-compulsive disorder. Psychiatr. Serv. 47 (2), 170–174. https://doi.org/10.1176/ps.47.2.170.

Bystritsky, A., Saxena, S., Maidment, K., Vapnik, T., Tarlow, G., Rosen, R., 1999. Quality-of-life changes among patients with obsessive-compulsive disorder in a partial hospitalization program. Psychiatr. Serv. 50 (3), 412–414. https://doi.org/10.1176/ps.50.3.412.

Calvocoressi, L., McDougle, C.I., Wasylink, S., Goodman, W.K., Trufan, S.J., Price, L.H., 1993. Inpatient treatment of patients with severe obsessive-compulsive disorder. Psychiatr. Serv. 44 (12), 1150–1154. https://doi.org/10.1176/ps.44.12.1150.

Ching, T.H., Pinciotti, C.M., Farrell, N.R., 2023. Causal attributions and OCD treatment response: a linguistic analysis of OCD patients' self-reported etiological explanations in intensive residential treatment. Scand. J. Psychol. 64 (4), 385–389. https://doi.org/10.1111/sjop.12896.

Cole Monaghan, S., Cattie, J.E., Mathes, B.M., Shorser-Gentile, L.I., Crosby, J.M., Elias, J. A., 2015. Stages of change and the treatment of OCD. Journal of Obsessive-Compulsive and Related Disorders. https://doi.org/10.1016/j.jocrd.2014.12.005.

Craske, M.G., Treanor, M., Conway, C.C., Zbozinek, T., Vervliet, B., 2014. Maximizing exposure therapy: an inhibitory learning approach. Behav. Res. Ther. 58, 10–23. https://doi.org/10.1016/j.brat.2014.04.006.

DGPPN, 2022. S3-Guideline obsessive compulsive disorder - short version. AWMF.

Diedrich, A., Sckopke, P., Schwartz, C., Schlegl, S., Osen, B., Stierle, C., Voderholzer, U., 2016. Change in obsessive beliefs as predictor and mediator of symptom change during treatment of obsessive-compulsive disorder–a process-outcome study. BMC Psychiatr. 16 (1), 1–10. https://doi.org/10.1186/s12888-016-0914-6.

Dowling, N., Thomas, N., Blair-West, S., Bousman, C., Yap, K., Smith, D.J., Ng, C.H., 2016. Intensive residential treatment for obsessive-compulsive disorder: outcomes and predictors of patient adherence to cognitive-behavioural therapy. Journal of Obsessive-Compulsive and Related Disorders 9, 82–89. https://doi.org/10.1016/j.jocrd.2016.04.006.

Drummond, L.M., Boschen, M.J., Cullimore, J., Khan-Hameed, A., White, S., Ion, R., 2012. Physical complications of severe, chronic obsessive-compulsive disorder: a comparison with general psychiatric inpatients. Gen. Hosp. Psychiatr. 34 (6), 618–625. https://doi.org/10.1016/j.genhosppsych.2012.02.001.

Drummond, L.M., Pillay, A., Kolb, P., Rani, S., 2007. Specialised in-patient treatment for severe, chronic, resistant obsessive–compulsive disorder. Psychiatr. Bull. 31 (2), 49–52. https://doi.org/10.1192/pb.bp.105.007609.
Eisen, J.L., Mancebo, M.A., Pinto, A., Coles, M.E., Pagano, M.E., Stout, R., Rasmussen, S. A., 2006. Impact of obsessive-compulsive disorder on quality of life. Compr. Psychiatr. 47 (4), 270–275. https://doi.org/10.1016/j.comppsych.2005.11.006.
Falkenstein, M.J., Schreck, M., Potluri, S., Nota, J.A., Kelley, K.N., Beard, C., Elias, J.A., 2020. Longitudinal relations of obsessive beliefs, obsessions, and compulsions during treatment for obsessive compulsive disorder. Cognit. Ther. Res. 44, 846–857. https://doi.org/10.1007/s10608-020-10093-5.
Federici, A., Summerfeldt, L.J., Harrington, J.L., McCabe, R.E., Purdon, C.L., Rowa, K., Antony, M.M., 2010. Consistency between self-report and clinician-administered versions of the Yale-Brown obsessive–compulsive scale. J. Anxiety Disord. 24 (7), 729–733. https://doi.org/10.1016/j.janxdis.2010.05.005.
Foa, E.B., Huppert, J.D., Leiberg, S., Langner, R., Kichic, R., Hajcak, G., Salkovskis, P.M., 2002. The Obsessive-Compulsive Inventory: development and validation of a short version. Psychol. Assess. 14 (4), 485–496. https://doi.org/10.1037/1040-3590.14.4.485.
Foa, E.B., Kozak, M.J., 2004. Mastery of Obsessive-Compulsive Disorder: A Cognitive-Behavioral Approach Therapist Guide. Oxford University Press.
Fricke, S., Köhler, S., Moritz, S., Schäfer, I., 2007. Frühe interpersonale Traumatisierungen bei Zwangserkrankungen: eine Pilotstudie. Verhaltenstherapie 17 (4), 243–250. https://doi.org/10.1159/000109739.
Fricke, S., Moritz, S., Andresen, B., Hand, I., Jacobsen, D., Kloss, M., Rufer, M., 2003. Einfluss von Persönlichkeitsstörungen auf den Erfolg einer multimodalen Verhaltenstherapie bei Zwangserkrankungen–Teil II: Ergebnisse einer empirischen Studie. Verhaltenstherapie 13 (3), 172–182. https://doi.org/10.1159/000074024.
Gönner, S., Limbacher, K., Ecker, W., 2012. Inpatient cognitive behavioral therapy for obsessive-compulsive disorders: effectiveness and predictors of success in routine care. Verhaltenstherapie 22, 17–26. https://doi.org/10.1159/000335776.
Goodman, Price, L.H., Rasmussen, S.A., Mazure, C., Delgado, P., Heninger, G.R., Charney, D.S., 1989a. The Yale-Brown obsessive compulsive scale: II. Validity. Arch. Gen. Psychiatr. 46 (11), 1012–1016. https://doi.org/10.1001/archpsyc.1989.01810110054008.
Goodman, Price, L.H., Rasmussen, S.A., Mazure, C., Fleischmann, R.L., Hill, C.L., Heninger, G.R., Charney, D.S., 1989b. The Yale-Brown obsessive compulsive scale: I. Development, Use, and Reliability. Arch. Gen. Psychiatr. 46 (11), 1006–1011. https://doi.org/10.1001/archpsyc.1989.01810110048007.
Goodman, Rasmussen, S., Price, L., Mazure, L., Heninger, G., Charney, D., 1991. Yale-Brown obsessive compulsive scale (Y-BOCS). Verhaltenstherapie 1 (3), 226–233. https://doi.org/10.1159/000257973.
Grøtte, T., Hansen, B., Haseth, S., Vogel, P.A., Guzey, I.C., Solem, S., 2018. Three-week inpatient treatment of obsessive-compulsive disorder: a 6-month follow-up study. Front. Psychol. 9, 620. https://doi.org/10.3389/fpsyg.2018.00620.
Harrer, M., Cuijpers, P., Furukawa, T., Ebert, D., 2021. Doing Meta-Analysis with R: A Hands-On Guide. Chapman and Hall/CRC.
Hauschildt, M., Dar, R., Schröder, J., Moritz, S., 2019. Congruence and discrepancy between self-rated and clinician-rated symptom severity on the Yale–Brown Obsessive-Compulsive Scale (Y-BOCS) before and after a low-intensity intervention. Psychiatr. Res. 273, 595–602. https://doi.org/10.1016/j.psychres.2019.01.092.
Hauschildt, M., Jelinek, L., Randjbar, S., Hottenrott, B., Moritz, S., 2010. Generic and illness-specific quality of life in obsessive-compulsive disorder. Behav. Cognit. Psychother. 38 (4), 417–436. https://doi.org/10.1017/S1352465810000275.
Henrich, J., 2015. The Secret of our success: How Culture is Driving Human Evolution, Domesticating our Species, and Making Us Smarter. In: The Secret of Our Success. Princeton University Press.
Herzog, Osen, B., Stierle, C., Middendorf, T., Voderholzer, U., Koch, S., Feldmann, M., Rief, W., Brakemeier, E.L., 2022. Determining prognostic variables of treatment outcome in obsessive-compulsive disorder: effectiveness and its predictors in routine clinical care. Eur. Arch. Psychiatr. Clin. Neurosci. 272 (2), 313–326. https://doi.org/10.1007/s00406-021-01284-6.
Himle, M.B., Franklin, M.E., 2009. The more you do it, the easier it gets: exposure and response prevention for OCD. Cognit. Behav. Pract. 16 (1), 29–39. https://doi.org/10.1016/j.cbpra.2008.03.002.
Hohagen, F., Winkelmann, G., Rasche-Räuchle, H., Hand, I., König, A., Münchau, N., Hiss, H., Geiger-Kabisch, C., Käppler, C., Schramm, P., Rey, E., Aldenhoff, J., Berger, M., 1998. Combination of behaviour therapy with fluvoxamine in comparison with behaviour therapy and placebo: results of a multicentre study. Br. J. Psychiatr. 173 (Suppl. 35), 71–78. https://doi.org/10.1192/S0007125000297924.
Højgaard, D.R.M.A., Schneider, S.C., La Buissonnière-Ariza, V., Kay, B., Riemann, B.C., Jacobi, D., Eken, S., Lake, P., Nadeau, J., Goodman, W.K., McIngvale, E., Storch, E. A., 2020. Predictors of treatment outcome for youth receiving intensive residential treatment for obsessive–compulsive disorder (OCD). Cognit. Behav. Ther. 49 (4), 294–306. https://doi.org/10.1080/16506073.2019.1614977.
JASP Team, 2022. JASP [Computer software]. https://jasp-stats.org.
Kay, B., Eken, S., Jacobi, D., Riemann, B., Storch, E.A., 2016. Outcome of multidisciplinary, CBT-focused treatment for pediatric OCD. Gen. Hosp. Psychiatr. 42, 7–8. https://doi.org/10.1016/j.genhosppsych.2016.06.001.
Knopp, J., Knowles, S., Bee, P., Lovell, K., Bower, P., 2013. A systematic review of predictors and moderators of response to psychological therapies in OCD: do we have enough empirical evidence to target treatment? Clin. Psychol. Rev. 33 (8), 1067–1081. https://doi.org/10.1016/j.cpr.2013.08.008.
Kordon, A., Kahl, K.G., Broocks, A., Voderholzer, U., Rasche-Räuchle, H., Hohagen, F., 2005. Clinical outcome in patients with obsessive-compulsive disorder after discontinuation of SRI treatment: results from a two-year follow-up. Eur. Arch. Psychiatr. Clin. Neurosci. 255 (1), 48–50. https://doi.org/10.1007/s00406-004-0533-y.
Krompinger, J.W., Monaghan, S.C., Gironda, C.M., Garner, L.E., Crosby, J.M., Brennan, B.P., Elias, J.A., 2017. Early response is predictive of outcome in intensive behavioral treatment for obsessive compulsive disorder. Journal of Obsessive-Compulsive and Related Disorders 15, 57–63. https://doi.org/10.1016/j.jocrd.2017.10.001.
Leonard, R.C., Franklin, M.E., Wetterneck, C.T., Riemann, B.C., Simpson, H.B., Kinnear, K., Cahill, S.P., Lake, P.M., 2016. Residential treatment outcomes for adolescents with obsessive-compulsive disorder. Psychother. Res. 26 (6), 727–736. https://doi.org/10.1080/10503307.2015.1065022.
Macy, A.S., Theo, J.N., Kaufmann, S.C., Ghazzaoui, R.B., Pawlowski, P.A., Fakhry, H.I., Cassmassi, B.J., IsHak, W.W., 2013. Quality of life in obsessive compulsive disorder. CNS Spectr. 18 (1), 21–33. https://doi.org/10.1017/S1092852912000697.
Mataix-Cols, D., Pertusa, A., 2012. Annual research review: hoarding disorder: potential benefits and pitfalls of a new mental disorder. JCPP (J. Child Psychol. Psychiatry) 53 (5), 608–618. https://doi.org/10.1111/j.1469-7610.2011.02464.x.
McGuinness, L.A., Higgins, J.P., 2021. Risk-of-bias VISualization (robvis): an R package and Shiny web app for visualizing risk-of-bias assessments. Res. Synth. Methods 12 (1), 55–61. https://doi.org/10.1002/jrsm.1411.
Murphy, D.L., Timpano, K.R., Wheaton, M.G., Greenberg, B.D., Miguel, E.C., 2010. Obsessive-compulsive disorder and its related disorders: a reappraisal of obsessive-compulsive spectrum concepts. Dialogues Clin. Neurosci. 12 (2) https://doi.org/10.31887/DCNS.2010.12.2/dmurphy.
Muthukrishna, M., Bell, A.V., Henrich, J., Curtin, C.M., Gedranovich, A., McInerney, J., Thue, B., 2020. Beyond Western, educated, industrial, rich, and democratic (WEIRD) psychology: Measuring and Mapping Scales of Cultural and psychological Distance. Psychol. Sci. 31 (6), 678–701. https://doi.org/10.1177/0956797620916782.
Nanjundaswamy, M.H., Arumugham, S.S., Narayanaswamy, J.C., Reddy, Y.C.J., 2020. A prospective study of intensive in-patient treatment for obsessive-compulsive disorder. Psychiatr. Res. 291 https://doi.org/10.1016/j.psychres.2020.113303.
National Collaborating Centre for Mental Health, 2006. Obsessive-compulsive disorder: core interventions in the treatment of obsessive-compulsive disorder and body dysmorphic disorder. British Psychological Society.
Ociskova, M., Prasko, J., Vanek, J., Holubova, M., Hodny, F., Latalova, K., Kantor, K., Nesnidal, V., 2021. Self-stigma and treatment effectiveness in patients with SSRI non-Responsive obsessive-compulsive disorder. Psychol. Res. Behav. Manag. 14, 85–97. https://doi.org/10.2147/PRBM.S287419.
Öst, L.-G., Havnen, A., Hansen, B., Kvale, G., 2015. Cognitive behavioral treatments of obsessive–compulsive disorder. A systematic review and meta-analysis of studies published 1993–2014. Clin. Psychol. Rev. 40, 156–169. https://doi.org/10.1016/j.cpr.2015.06.003.
Ouzzani, M., Hammady, H., Fedorowicz, Z., Elmagarmid, A., 2016. Rayyan—a web and mobile app for systematic reviews. Syst. Rev. 5, 1–10. https://doi.org/10.1186/s13643-016-0384-4.
Ponzini, G., Van Kirk, N., Schreck, M., Nota, J.A., Schofield, C.A., Gironda, C., Elias, J., 2019. Does motivation impact OCD symptom severity? An exploration of longitudinal effects. Behav. Ther. 50 (2), 300–313. https://doi.org/10.1016/j.beth.2018.06.001.
RCore Team, 2022. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria. https://www.r-project.org.
Rosenfeld, R., Dar, R., Anderson, D., Kobak, K.A., Greist, J.H., 1992. A computer-administered version of the Yale-Brown obsessive-compulsive scale. Psychol. Assess. 4 (3), 329–332. https://doi.org/10.1037/1040-3590.4.3.329.
Rowa, K., Antony, M.M., Summerfeldt, L.J., Purdon, C., Young, L., Swinson, R.P., 2007. Office-based vs. home-based behavioral treatment for obsessive-compulsive disorder: a preliminary study. Behav. Res. Ther. 45 (8), 1883–1892. https://doi.org/10.1016/j.brat.2007.02.009.
RStudio Team, 2022. RStudio: Integrated Development for R. *Rstudio Team*. PBC, Boston, MA URL. http://www.rstudio.com.
Rufer, M., Fricke, S., Moritz, S., Kloss, M., Hand, I., 2006. Symptom dimensions in obsessive–compulsive disorder: prediction of cognitive-behavior therapy outcome. Acta Psychiatr. Scand. 113 (5), 440–446. https://doi.org/10.1111/j.1600-0447.2005.00682.x.
Saxena, S., Winograd, A., Dunkin, J.J., Maidment, K., Rosen, R., Vapnik, T., Tarlow, G., Bystritsky, A., 2001. A retrospective review of clinical characteristics and treatment response in body dysmorphic disorder versus obsessive-compulsive disorder. J. Clin. Psychiatry 62 (1), 67–72. https://doi.org/10.4088/jcp.v62n0114b quiz 73.
Scahill, L., Riddle, M.A., McSwiggin-Hardin, M., Ort, S.I., King, R.A., Goodman, W.K., Cicchetti, D., Leckman, J.F., 1997. Children's Yale-Brown obsessive compulsive scale: Reliability and validity. Journal of the American Academy of Child & Adolescent Psychiatry 36 (6), 844–852. https://doi.org/10.1097/00004583-199706000-00023.
Schubert, C., Hilbert, S., Favreau, M., Wolstein, J., Voderholzer, U., 2022. Psychological flexibility as a potential change factor in cognitive behavioural therapy of OCD. Behav. Cognit. Psychother. 50 (4), 381–391. https://doi.org/10.1017/S1352465822000091.
Schultchen, D., Zaudig, M., Krauseneck, T., Berberich, G., Pollatos, O., 2019. Interoceptive deficits in patients with obsessive-compulsive disorder in the time course of cognitive-behavioral therapy. PLoS One 14 (5). https://doi.org/10.1371/journal.pone.0217237.
Schwarzer, G., Schwarzer, M.G., 2012. Package 'meta', vol. 9. The R foundation for statistical computing, p. 27.
Simkin, V., Hodsoll, J., Veale, D., 2022. The relationship between symptoms of obsessive compulsive disorder and depression during therapy: a random intercept cross-lagged

panel model. J. Behav. Ther. Exp. Psychiatr. 76, 1–9. https://doi.org/10.1016/j.jbtep.2022.101748.
Siwiec, S.G., Riemann, B.C., Lee, H.J., 2019. Predictors of acute outcomes for intensive residential treatment of obsessive–compulsive disorder. Clin. Psychol. Psychother. 26 (6), 661–672. https://doi.org/10.1002/cpp.2389.
Skoog, G., Skoog, I., 1999. A 40-year follow-up of patients with obsessive-compulsive disorder. Arch. Gen. Psychiatr. 56 (2), 121–127. https://doi.org/10.1001/archpsyc.56.2.121.
Stanley, T.D., 2017. Limitations of PET-PEESE and other meta-analysis methods. Soc. Psychol. Personal. Sci. 8 (5), 581–591. https://doi.org/10.1177/1948550617693062.
Stanley, T.D., Doucouliagos, H., 2017. Neither fixed nor random: weighted least squares meta-regression. Res. Synth. Methods 8 (1), 19–42.
Steketee, G., Frost, R., Bogart, K., 1996. The Yale-Brown obsessive compulsive scale: interview versus self-report. Behav. Res. Ther. 34 (8), 675–684. https://doi.org/10.1016/0005-7967(96)00036-8.
Sterne, J.A., Hernán, M.A., Reeves, B.C., Savović, J., Berkman, N.D., Viswanathan, M., Henry, D., Altman, D.G., Ansari, M.T., Boutron, I., 2016. ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions. BMJ 355. https://doi.org/10.1136/bmj.i4919.
Sterne, J.A., Sutton, A.J., Ioannidis, J.P., Terrin, N., Jones, D.R., Lau, J., Carpenter, J., Rücker, G., Harbord, R.M., Schmid, C.H., 2011. Recommendations for examining and interpreting funnel plot asymmetry in meta-analyses of randomised controlled trials. BMJ 343. https://doi.org/10.1136/bmj.d4002.
Stewart, S.E., Stack, D.E., Farrell, C., Pauls, D.L., Jenike, M.A., 2005. Effectiveness of intensive residential treatment (IRT) for severe, refractory obsessive-compulsive disorder. J. Psychiatr. Res. 39 (6), 603–609. https://doi.org/10.1016/j.jpsychires.2005.01.004.
Veale, D., Naismith, I., Miles, S., Childs, G., Ball, J., Muccio, F., Darnley, S., 2016a. Outcome of intensive cognitive behaviour therapy in a residential setting for people with severe obsessive compulsive disorder: a large open case series. Behav. Cognit. Psychother. 44 (3), 331–346. https://doi.org/10.1017/S1352465815000259.
Veale, D., Naismith, I., Miles, S., Gledhill, L., Stewart, G., Hodsoll, J., 2016b. Outcomes for residential or inpatient intensive treatment of obsessive–compulsive disorder: a systematic review and meta-analysis. Journal of Obsessive-Compulsive and Related Disorders 8, 38–49. https://doi.org/10.1016/j.jocrd.2015.11.005.
Voderholzer, U., Favreau, M., Rubart, A., Staniloiu, A., Wahl-Kordon, A., Zurowski, B., Kathmann, N., 2022. Therapie der Zwangsstörungen: Empfehlungen der revidierten S3-Leitlinie Zwangsstörungen [Therapy for obsessive-compulsive disorder: Recommendations of the revised S3-guideline obsessive-compulsive disorders]. Nervenarzt 1–9. https://doi.org/10.1007/s00115-022-01336-9.
Voderholzer, U., Schwartz, C., Freyer, T., Zurowski, B., Thiel, N., Herbst, N., Wahl, K., Kordon, A., Hohagen, F., Kuelz, A.K., 2013. Cognitive functioning in medication-free obsessive-compulsive patients treated with cognitive-behavioural therapy. Journal of Obsessive-Compulsive and Related Disorders 2 (3), 241–248. https://doi.org/10.1016/j.jocrd.2013.03.003.
Wetterneck, C.T., Leonard, R.C., Adams, T.G., Riemann, B.C., Grau, P., Franklin, M.E., 2020. The effects of depression on the treatment of OCD in a residential sample. Bull. Menninger Clin. 84, 12–33. https://doi.org/10.1521/bumc.2020.84.suppA.12.
Wheaton, M.G., Mcingvale, E., Van Meter, A.R., Björgvinsson, T., 2023. Quality of the therapeutic working alliance as a factor in intensive residential treatment of obsessive-compulsive disorder. Psychother. Res. 33 (4), 442–454. https://doi.org/10.1080/10503307.2022.2138618.
Wheaton, M.G., Pinto, A.M., Cervoni, C., Crosby, J.M., Tifft, E.D., Mathes, B.M., Garner, L.E., Van Kirk, N., Elias, J.A., Pinto, A., 2020. Perfectionism in intensive residential treatment of obsessive–compulsive disorder. Cognit. Ther. Res. 44, 136–144. https://doi.org/10.1007/s10608-019-10047-6.
World Health Organization, 1993. The ICD-10 Classification of Mental and Behavioural Disorders. World Health Organization.