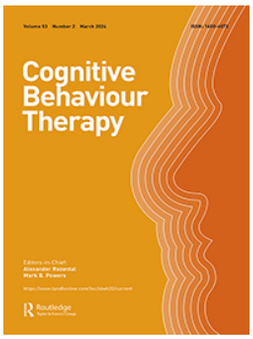

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Efficacy and acceptability of a self-guided internet-delivered cognitive-behavioral educational program for obsessive-compulsive symptoms with international recruitment

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ABSTRACT

Cognitive-behavioural therapy is an effective treatment for obsessive-compulsive disorder (OCD). However, there are many barriers in accessing this treatment, with stigma being a particularly prominent barrier for many patients. Self-guided internet-delivered cognitive-behavioural therapy (ICBT), which does not require any contact with a therapist, has the potential to overcome this barrier. However, there is limited research on the efficacy of self-guided ICBT for OCD. The aim of the current study was to examine the efficacy of self-guided ICBT for OCD in a large international sample. Two hundred and sixteen participants were included in the study (*M*age = 34.00; SD = 12.57; 72.7% female). On the primary outcome measure, the Yale-Brown Obsessive-Compulsive Scale (YBOCS), a medium within-group effect size was found from pre-treatment to post-treatment ($g = 0.63$), and a large within-group effect size was found from pre-treatment to 3-month follow-up ($g = 0.98$). Approximately one-quarter to one-third of participants met criteria for clinically significant improvement at post-treatment and 3-month follow-up (11% and 17% met criteria for remission at post-treatment and 3-month follow-up, respectively). These results demonstrate that self-guided ICBT may be an efficacious treatment for individuals with OCD who cannot or do not wish to engage with a mental health professional, resulting in medium to large effect sizes.

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Obsessive-compulsive disorder; OCD; cognitive behavioural therapy; CBT; internet-delivered treatment; treatment barriers

Obsessive-compulsive disorder (OCD) is a common mental health condition (Kessler et al., 2012) and is characterised by intrusive and unwanted thoughts, urges, or images, as well as repetitive and time-consuming compulsions (American Psychiatric Association, 2022). The disorder is chronic (Melkonian et al., 2022), results in considerable psychosocial distress and impairment in functioning (Eisen et al., 2006; Torres et al., 2006), and

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has a significant economic cost and societal burden (Lenhard et al., 2023; Pérez-Vigil et al., 2018; Tolin et al., 2010). While cognitive-behaviour therapy (CBT) has been demonstrated to be an effective treatment for OCD (Olatunji et al., 2013), there is often a significant delay between symptom onset and treatment being sought, with patients waiting on average more than a decade before seeking treatment (García-Soriano et al., 2014; Perris et al., 2021).

One of the most common barriers in accessing treatment for OCD is stigma (Belloch et al., 2009; Marques et al., 2010). For instance, Marques et al. (2010) found that more than half of their sample with OCD reported experiencing barriers related to stigma, specifically *"I felt ashamed of needing help for my problem", 58%; "I wanted to handle it on my own", 55%; and "I felt ashamed of my problems", 53%*. Similarly, other studies have demonstrated that many individuals with OCD wish to manage their own mental health symptoms rather than speaking to a mental health professional (Gentle et al., 2014; Goodwin et al., 2002). For these reasons it is essential that evidence-based educational programs are available to assist individuals who wish to manage their own symptoms, or who are reluctant to seek professional help because of stigma or other reasons.

Self-guided internet-delivered cognitive behavioural therapy (ICBT) can be used to provide education and basic intervention for those who wish to manage their own mental health symptoms. Self-guided ICBT involves the individual working though evidence-based educational materials without the guidance of a mental health professional. While historically self-guided interventions resulted in smaller treatment effects than guided treatments (Haug et al., 2012), more recent research has reported similar outcomes between guided and self-guided ICBT across multiple anxiety and related disorders (Oey et al., 2023).

Several clinical trials have now demonstrated the efficacy of self-guided ICBT for adults with OCD. In two early open trials, Wootton et al. (2014) demonstrated that large effect sizes could be obtained with an 8- or 10-week ICBT intervention at post-treatment (Study 1: $d = 1.05$; Study 2: $d = 1.37$), and 3-month follow-up (Study 1: $d = 1.34$; Study 2: $d = 1.17$), respectively. These results have also been found to be durable, with gains maintained up to 12 months post-treatment (Wootton et al., 2015). More recently, self-guided ICBT was evaluated in a randomised controlled trial comparing an 8-week self-guided ICBT intervention to a waitlist control group (Wootton et al., 2019). The results indicated large within-group effect sizes at post-treatment ($d = 1.35$) and 3-month follow-up ($d = 1.23$), as well as between-group effect sizes in favour of the self-guided ICBT intervention ($d = 1.05$). A recent three-group non-inferiority randomized controlled trial comparing self-guided ICBT, guided-ICBT and in-person CBT found that while guided ICBT did not result in statistically significant differences compared with in-person CBT, self-guided ICBT had significantly poorer outcomes. While the between-group effect sizes between guided-ICBT and self-guided ICBT at post-treatment were small and non-significant ($d = 0.16$; 95%CI −0.47-0.80), the between-group effect sizes between self-guided ICBT and face-to-face CBT were large ($d = 1.38$; 95%CI 0.56-2.19) (Lundström et al., 2022).

Several studies have also now demonstrated that self-guided ICBT can also be effective when delivered in routine care samples; however, lower effect sizes are typically seen in these studies compared with published clinical trials. For instance, Wootton et al. (2021) examined the effectiveness of an 8-week ICBT intervention for OCD symptoms in a large

open trial design with 225 participants. The results indicated that medium effect sizes were found at post-treatment (d = 0.6) and large effect sizes were found at 3-month follow up (d = 0.9). Similarly, Luu et al. (2020) investigated the effectiveness ICBT for OCD in an open trial with 309 patients. In this study, medium effect sizes were seen at post-treatment (d = 0.6); however, no follow-up data were available (Luu et al., 2020). It is important to highlight that these studies included participants who completed the ICBT intervention in guided or self-guided format; thus, the research evaluating self-guided ICBT in large samples is still limited. An additional limitation of previous research is that it has been limited to a small number of countries, raising questions about the generalisability of results to populations in a broader range of countries. Thus, the aim of the current study was to extend this research by examining the efficacy of a self-guided ICBT educational program in a large sample recruited internationally. Such an intervention may help patients with OCD to learn about their symptoms and basic self-management techniques. Thus, such an intervention may also be a first step in a stepped care model of treatment for OCD.

Method

Design

A large open trial comparing pre-treatment to post-treatment and pre-treatment to 3-month follow up was used to examine the hypotheses of interest. The trial was registered with the Australian and New Zealand Clinical Trials Registry (ACTRN12620000146998) and ethical approval was provided from the Human Research Ethics Committee at Macquarie University (REF No: 5201701075).

Participants

Five hundred and twenty-eight participants provided consent to participate in the treatment between 18 February 2020 and 7 December 2021, and of these, 243 completed the pre-treatment questionnaires and 216 commenced any treatment materials and were included in the analyses. Participant flow is outlined in Figure 1. Participant characteristics are outlined in Table 1 and symptom characteristics in Table 2. The sample was on average aged in their 30s (Mage = 34.00; SD = 12.57; range 18–78) and primarily identified as female (72.7%). Participants were located in all continents, but the greatest numbers were from the United States of America (28.7%) or Australia (27.3%) and in urban geographical locations (63.9%). Just under half the sample indicated using psychotropic medication for their OCD symptoms (43.5%). As indicated in Table 2, most participants had moderate (44.9%) or severe (44.0%) symptoms and had experienced OCD symptoms an average of 16.73 years (SD = 12.18 years). Participants were recruited from advertisements on social media, advertisements on the research page of the International OCD Foundation, and through direct emails to clinicians and relevant organisations.

To be included in the study, participants were required to (1) be English speaking (based on self-report); (2) be aged 18 years or older; (3) have regular access to the Internet; (4) have no suicidal plans or intention or recent history of suicide attempts or deliberate self-harm;

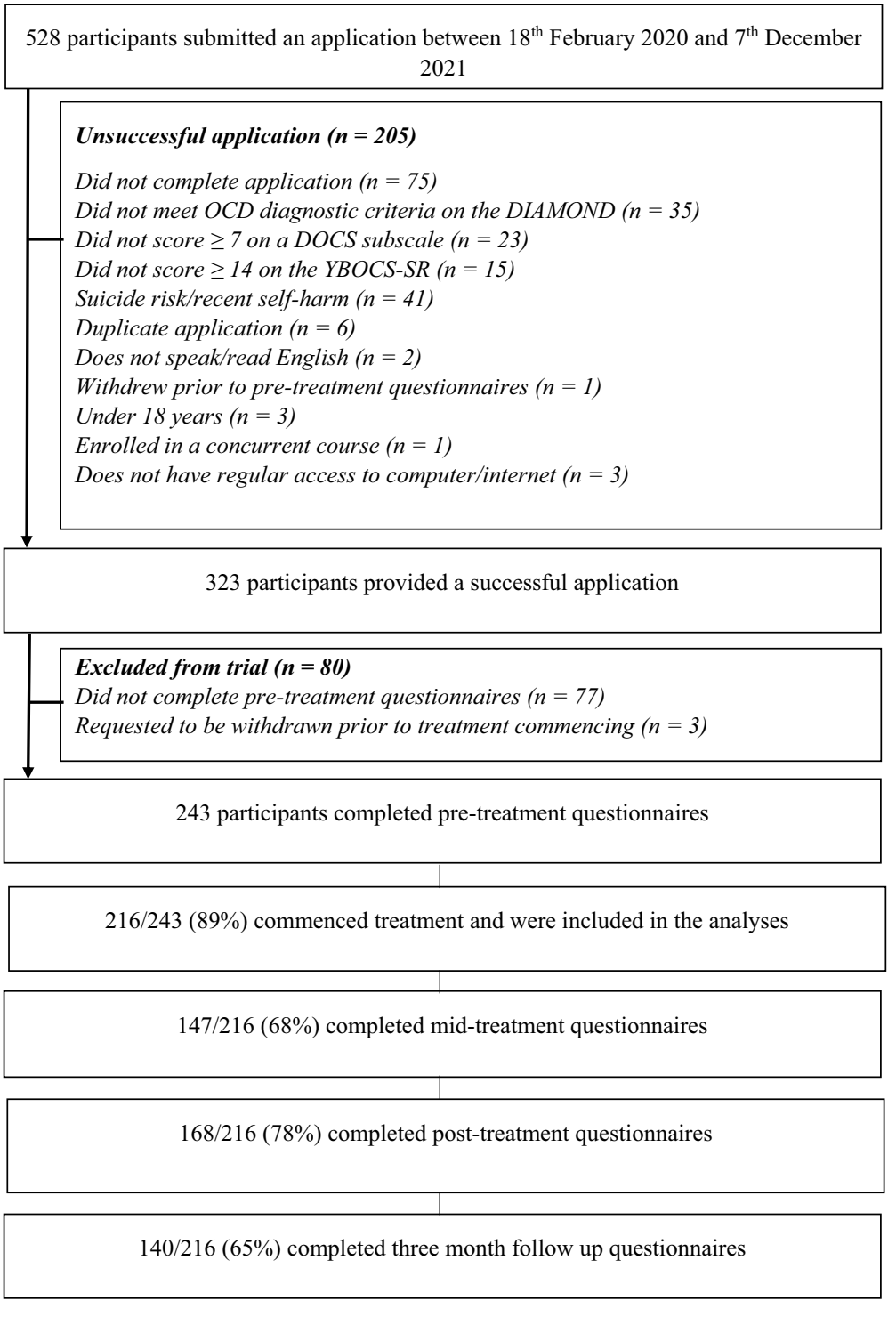

Figure 1. Study flow.

Table 1. Participant characteristics ($N = 216$).

Characteristic	
Age	
Mean (SD)	34.00 (12.57)
Range	18–78
Gender	
Female	157 (72.7%)
Male	53 (24.5%)
Other	6 (2.8%)
Country	
Australia	59 (27.3%)
United States of America	62 (28.7%)
Canada	23 (10.6%)
United Kingdom	23 (10.6%)
India	13 (6.0%)
New Zealand	6 (2.8%)
Asia Pacific	5 (2.3%)
Middle East	5 (2.3%)
Africa	2 (0.9%)
European Union	15 (6.9%)
Other	2 (0.9%)
Marital status (N/%)	
Single	112 (51.9%)
Married/defacto	87 (40.3%)
Widowed	8 (3.7%)
Divorced/separated	9 (4.2%)
Education (N/%)	
High school	51 (23.6%)
Trade/diploma/vocational certificate	45 (20.8%)
Tertiary education (Bachelors/Masters/Doctoral degree)	120 (55.6%)
Location (N/%)	
Urban	138 (63.9%)
Rural	43 (19.9%)
Other	35 (16.2%)
Employment status (N/%)[a]	
Working (full time, part time or casual work)	134 (62.0%)
Unemployed/seeking work/registered sick or disabled	41 (19.0%)
At home parent	16 (7.4%)
Retired	14 (6.5%)
Student (full-time or part-time)	40 (18.5%)
Taking psychotropic medication for OCD (N/% yes)	94 (43.5%)

[a]Percentages do not equate to 100% as participants were able to select multiple options.

Table 2. Symptom characteristics at assessment ($N = 216$).

Symptom characteristics	
YBOCS severity (N/%)	
Mild (0–13)	0 (0.0%)
Moderate (14–25)	137 (63.4%)
Moderate-severe (26–34)	70 (32.4%)
Severe (35–40)	2 (0.9%)
OCD symptom duration (in years)	
Mean (SD)	16.73 (12.18)
Range	0–60
OCD symptom duration before seeking treatment (in years)	
Mean (SD)	10.21 (10.65)
Range	0–70
PHQ-9 severity (N/%)	
No depression (0–4)	31 (14.4%)
Mild depression (5–9)	54 (25.0%)
Moderate depression (10–14)	51 (23.6%)
Moderately severe depression (15–19)	50 (23.1%)
Severe depression (20–27)	30 (13.9%)

score at least a 7 on one of the subscales of the Dimensional Obsessive-Compulsive Scale (DOCS; Abramowitz et al., 2010); score at least 14 on the self-report version of the Yale Brown Obsessive-Compulsive Scale (YBOCS; Goodman et al., 1989); and meet criteria for OCD on the Diagnostic Interview for Anxiety, Mood, Obsessive-Compulsive and other Neuropsychiatric Disorders (DIAMOND; Tolin et al., 2018), which was administered in a self-report format.

Measures

Demographics

Participants were asked to provide demographic information including age, gender, employment status, educational status, and medication use.

Diagnostic interview for anxiety, mood, obsessive-compulsive, and related neuropsychiatric disorders (DIAMOND; Tolin et al., 2018)

The DIAMOND is a semi-structured diagnostic interview that assesses DSM-5 diagnostic criteria for common mental health conditions. The DIAMOND has demonstrated good to excellent test-retest reliability and convergent validity (Tolin et al., 2018) when administered in a clinician-administered format. In the current study, only the OCD module was administered and the module was administered in a self-report format.

Yale-Brown obsessive compulsive scale – self report version (Y-BOCS-SR; Baer, 2012)

The Y-BOCS-SR was the primary outcome measure used in this study. The Y-BOCS-SR is a 10-item self-report measure of OCD symptom severity irrespective of symptom subtype. The Y-BOCS-SR is similar to the clinician-administered version (Goodman et al., 1989) and is comprised of two subscales related to items that assess the severity of obsessions and compulsions over the previous 7 days. Total scores range from 0 to 40, with scores of 0–13 indicating mild symptoms, 14–24 indicating moderate symptoms and 35–40 indicating severe symptoms (Storch et al., 2015). A cut-off score of 14 was utilized for the open trial as it has been demonstrated to indicate moderate symptoms of OCD (Storch et al., 2015). The self-report version has a moderate to high degree of correlation with the clinician-administered version (Federici et al., 2010; Steketee et al., 1996). The Y-BOCS-SR has demonstrated good internal consistency, ranging between α = 0.87 and 0.92 (Ólafsson et al., 2010; Wootton et al., 2014), and good divergent validity (Ólafsson et al., 2010). In the current study, the internal consistency was .821 at pre-treatment.

Dimensional obsessive-compulsive scale (DOCS; Abramowitz et al., 2010)

The DOCS is a 20-item self-report measure that evaluates the severity of four symptom dimensions of OCD, including contamination obsessions and associated cleaning compulsions, responsibility obsessions and associated checking compulsions, need for order/symmetry obsessions and associated ordering/arranging compulsions, and unacceptable obsessional thoughts and associated mental rituals (Abramowitz et al., 2010). Each symptom dimension includes five items, with each measured on a 5-point scale. Total scores range from 0 to 80, and subscale scores range from 0 to 20, with higher scores indicating greater severity of

symptoms. The DOCS has demonstrated good psychometric properties in previous samples (Abramowitz et al., 2010). In the current study, the internal consistency was .878 at pre-treatment.

Clinician global impression scale (self-report version) (CGI; Guy, 1976*)*

The CGI is a single item measure of the severity of symptoms (CGI-S) and improvement in symptoms (CGI-I). The CGI-S is rated on a 7-point scale from 1 ("normal, there is no problem") to 7 ("extreme problem") and the CGI-I is rated on a 7 point scale from 1 ("very much improved") to 7 ("very much worse"). The CGI was originally designed as a clinician-administered scale; however, it was delivered in a self-report format in this study. The self-report version has shown adequate concordance with the clinician-administered version in previous samples (Hannan & Tolin, 2007). In this study, participants were asked to rate the severity and improvement of their OCD symptom specifically. These are single-item measures; thus, internal consistency was not calculated.

Patient health questionnaire (9-item) (PHQ-9; Kroenke et al., 2001*)*

The PHQ-9 is a 9-item self-report measure of the severity of depressive symptoms. Total scores range from 0 to 27, with scores of 5–9 indicating mild symptoms, 10–14 indicating moderate symptoms, 15–19 indicating moderately severe symptoms, and 20–27 indicating severe symptoms (Kroenke et al., 2010). The PHQ-9 has demonstrated high internal consistency, ranging between $\alpha = 0.74$ and 0.89 (Kroenke et al., 2001), and good convergent and divergent validity (Beard et al., 2016). In the current study, the internal consistency was .856 at pre-treatment.

All outcome measures were administered online via the eCentreClinic secure platform and were administered at pre-treatment, mid-treatment, post-treatment, and 3-month follow up, with the exception of the CGI-I, which was administered at mid-treatment, post-treatment and 3-month follow-up

Treatment

The OCD Course comprises of five lessons which is delivered over 8 weeks. Each lesson provides information about symptoms and educates about evidence-based skills for managing OCD symptoms. Lesson 1 provides psychoeducation on OCD, lesson 2 provides information on unhelpful thinking styles in OCD, lesson 3 includes information on physical symptoms of anxiety, lesson 4 introduces exposure and response prevention, and lesson 5 provides information on relapse prevention. Each lesson takes approximately 30 minutes to complete, and participants are encouraged to practice the skills for an additional 4 hours per week. Throughout the duration of the course, participants are sent weekly automatic emails to support them throughout the course. There was no direct contact with a clinician as participants worked their way through the materials. Participants access the materials through a secure password-protected platform (www.ecentreclinic.org) with a unique username and password.

Data analysis

Differences between treatment completers ($n = 130$) and non-completers ($N = 86$) were examined using independent samples t-tests for continuous variables and chi-square tests for categorical measures. Groups were compared on key clinical (i.e. baseline scores on the YBOCS, DOCS, CGI-S and PHQ-9) and demographic (i.e. age, gender, medication use, geographical location (urban vs rural), educational attainment or marital status) variables.

The effectiveness of the intervention was evaluated in two ways. First, an analysis of symptom change over time was conducted, estimating and testing the overall rate of symptom change from pre-treatment to post-treatment and pre-treatment to 3-month follow-up. The longitudinal estimate of symptom change was considered the primary metric of treatment efficacy. Change over time was estimated and tested using a series of generalized estimated equation models (GEE) (Liang & Zeger, 1986). These models utilized a gamma scale and a log link function to test the rate of change from baseline (exp(β); 95% confidence intervals). Estimated marginal means and percentage change metrics from these models were used to represent the sample average rate of change within each of the symptom outcomes (Karin, Dear, Heller, Crane, et al., 2018; Karin, Dear, Heller, Gandy, et al., 2018). Hedges *g* effect sizes were also reported for convention, along with their 95% confidence intervals, where a *g* value of .20 indicates a small effect, .50 a medium effect, and >.80 a large effect. Clinically significant improvement was calculated according to the definitions of "reliable change" of both Farris et al. (2013) (i.e. the proportion of individuals meeting treatment response based on a ≥35% reduction) and Mataix-Cols et al. (2016) (i.e. 35% or more reduction on the YBOCS and a CGI-I of 2 or less). Consistent with other published studies (e.g. Launes et al., 2019), clinical deterioration was defined as ≥35% increase in symptoms at post-treatment and 3-month follow-up. The proportion of participants also meeting the Mataix-Cols et al. (2016) criteria for remission (i.e. YBOCS ≤ 12 and CGI-S of 1 or 2) was also calculated. Logistic regression models were used to estimate the proportion of individuals meeting criteria for reliable change and remission at post-treatment and through to 3-month follow-up. Treatment satisfaction was examined using descriptive statistics.

All the analyses were conducted according to the intention-to-treat (ITT) principles, wherein missing data at post-treatment were replaced using a multiple imputation procedure. This conservative approach predicted outcomes for individuals based on their rate of treatment adherence and baseline symptoms (Karin, Dear, Heller, Crane, et al., 2018; Karin et al., 2021). The analysis with the multiple imputation procedure was conducted using SPSS version 29.

Results

Missing cases analysis

A total of 168 out of 216 (78%) completed outcome measures at post-treatment and 140/216 (65%) completed outcome measures at 3-month follow up. Missing data patterns were explored for evidence of systematic dropout and non-ignorable mechanisms of missing data, consistent with clinical missing data guidelines (Little et al., 2012) and dedicated psychotherapy missing data research (Karin, Dear, Heller, Crane, et al., 2018;

Karin, Dear, Heller, Gandy, et al., 2018). An exploration of the range of available variables identified lesson completion as a single large predictor of missing data at post-treatment (Wald's $\chi 2 = 114.9$, $p < 0.001$, Nagelkerke R Square = 53.0%). These outcomes imply that a MAR assumption would be suitable pending replacement of missing cases adjusted (stratified) by an individual's lesson completion. The impact of missing cases replacement was explored with sensitivity analyses that contrast the analyses with the imputation of missing cases outcomes (main analyses) against analyses that overlook missing cases (sensitivity analyses).

Adherence and attrition

On average, participants completed 3.61 lessons ($SD = 1.64$); 216/216 (100%) commenced (i.e. accessed any Lesson materials) Lesson 1, 177/216 (81.9%) commenced Lesson 2, 143/216 (66.2%) commenced Lesson 3, 130/216 (60.2%) commenced Lesson 4 and 113/216 (52.3%) commenced all five lessons. 130/216 (60.2%) of participants were classified as treatment completers (i.e. commenced at least four lessons). We compared differences on key demographic and clinical data for those who did ($n = 130$) and did not ($n = 86$) complete the treatment. These analyses indicated that there were no significant differences between the groups on age, gender, geographical location (urban vs rural), educational attainment or marital status. However, there was a significant difference between the groups on medication use, with those who completed treatment being more likely to be unmedicated compared with those who did not complete treatment (66.4% vs 33.6%) ($\chi^2_{(1)} = 3.93$, $p = .047$). There were no significant differences between completers and non-completers on the YBOCS-SR, DOCS, or CGI-S. However, there was a significant difference between the completers and non-completers on the PHQ-9 at baseline, where those who did not complete treatment had higher PHQ-9 scores at baseline ($M = 12.57$) compared with those who did complete treatment ($M = 10.83$) ($t_{(214)} = 2.037$, $p = .043$; $d = .283$).

Efficacy

Estimated marginal means and 95% confidence intervals for the total sample are outlined in Table 3, while percentage change in symptoms and test statistics are outlined in Table 4. Within-group effect sizes (Hedges *g*) are outlined in Table 5.

Primary outcomes

Analyses of pre-treatment to post-treatment change indicated statistically significant symptom reductions for the primary outcome measure, the YBOCS-SR, a measure of OCD symptom severity, (18%; $p_{pooled} < 0.001$). Pre-treatment to 3-month follow-up change was also statistically significant for the primary outcome measure (25%; $p_{pooled} < 0.001$).

Secondary outcomes

Statistically significant reductions were also seen on the secondary measures DOCS total, a measure of OCD symptom severity, (21%; $p_{pooled} < 0.001$), DOCS main, the score on the participant's main DOCS subscale, (27%; $p_{pooled} < 0.001$), and DOCS subscales (10–26%;

Table 3. Estimated marginal means for total sample ($N = 216$).

	Estimated marginal means (95% CI)		
	Pre-treatment	Post-treatment	3-month follow up
Total sample ($N = 216$)			
Primary measures			
OCD severity (YBOCS Total)	23.4 (22.7 to 24.0)	19.1 (18.1 to 20.1)	17.6 (16.6 to 18.7)
Secondary measures			
OCD severity (DOCS Total)	31.3 (29.6 to 33.1)	24.8 (22.8 to 27.0)	21.4 (19.5 to 23.6)
OCD severity (DOCS Main)[#]	13.5 (13.1 to 14.0)	9.9 (9.3 to 10.6)	8.6 (8.0 to 9.3)
Contamination symptoms severity	7.0 (6.3 to 7.9)	6.3 (5.6 to 7.2)	5.6 (4.9 to 6.4)
Harming symptom severity	9.3 (8.6 to 10.0)	6.9 (6.2 to 7.7)	5.8 (5.1 to 6.5)
Unacceptable thoughts severity	8.9 (8.2 to 9.7)	6.7 (6.0 to 7.5)	5.6 (4.9 to 6.3)
Symmetry symptom severity	6.1 (5.4 to 6.8)	4.7 (4.1 to 5.5)	4.2 (3.6 to 4.9)
Tertiary measures			
Global symptom severity (CGI)	4.4 (4.2 to 4.5)	3.7 (3.5 to 3.9)	3.4 (3.2 to 3.6)
Depression (PHQ-9 total)	11.5 (10.7 to 12.4)	9.0 (8.2 to 10.0)	8.1 (7.2 to 9.1)

[#]= 215 participants at pre-treatment; as one participant scores 0 on the DOCS at pre-treatment, a DOCS (main) score could not be calculated.

Table 4. Percentage reduction in symptoms and test statistics for total sample ($N = 216$).

	Change over time			
	Pre-treatment to post-treatment		Pre-treatment to 3-month follow-up	
	Δ%	*p*-Value	Δ%	*p*-Value
Primary measures				
OCD severity (YBOCS Total)	18.3% (14.6 to 21.9)	<0.001	24.5% (19.8 to 29)	<0.001
Secondary measures				
OCD severity (DOCS Total)	20.6% (15.3 to 26)	<0.001	31.5% (24.6 to 37.7)	<0.001
OCD severity (DOCS (Main)[#]	26.7% (22.6 to 30.8)	<0.001	36.6% (31.5 to 41.3)	<0.001
Contamination symptoms severity	9.6% (2.1 to 17)	<0.001	20.9% (9.4 to 30.9)	0.001
Harming symptom severity	26.2% (19.8 to 32.7)	<0.001	38% (30.4 to 44.9)	<0.001
Unacceptable thoughts severity	24.5% (17.2 to 31.8)	<0.001	37.1% (28.6 to 44.6)	<0.001
Symmetry symptom severity	22.2% (11.8 to 32.6)	<0.001	30.3% (18.9 to 40.1)	<0.001
Tertiary measures				
Global symptom severity (CGI)	16.2% (12 to 20.4)	<0.001	22.4% (17.6 to 27)	<0.001
Depression (PHQ-9 total)	21.8% (14.9 to 28.7)	<0.001	29.8% (21.2 to 37.5)	<0.001

[#]= 215 participants at pre-treatment; as one participant scores 0 on the DOCS at pre-treatment, a DOCS (main) score could not be calculated.

Table 5. Effect sizes (Hedges g with 95% CI) for total sample ($N = 216$).

Measure	Pre-treatment to post-treatment	Pre-treatment to 3-month follow-up	Post-treatment to 3-month follow-up
Primary measures			
OCD severity (YBOCS Total)	0.63 (0.43 to 0.83)	0.98 (0.77 to 1.18)	0.26 (0.07 to 0.46)
Secondary measures			
OCD severity (DOCS Total)	0.47 (0.28 to 0.67)	0.66 (0.46 to 0.86)	0.17 (−0.02 to 0.36)
OCD severity (DOCS (Main)[#]	0.05 (−0.14 to 0.24)	0.14 (−0.05 to 0.33)	0.09 (−0.1 to 0.28)
Contamination symptoms severity	0.50 (0.3 to 0.69)	0.63 (0.44 to 0.83)	0.12 (−0.07 to 0.31)
Harming symptom severity	0.43 (0.24 to 0.63)	0.64 (0.44 to 0.84)	0.21 (0.02 to 0.41)
Unacceptable thoughts severity	0.28 (0.08 to 0.47)	0.30 (0.11 to 0.49)	0.01 (−0.18 to 0.21)
Symmetry symptom severity	0.94 (0.74 to 1.15)	1.20 (0.99 to 1.41)	0.22 (0.03 to 0.41)
Tertiary measures			
Global symptom severity (CGI)	0.48 (0.29 to 0.68)	0.77 (0.57 to 0.97)	0.24 (0.05 to 0.43)
Depression (PHQ-9 total)	0.40 (0.2 to 0.59)	0.53 (0.34 to 0.73)	0.13 (−0.07 to 0.32)

[#]= 215 participants at pre-treatment as one participant scores 0 on the DOCS at pre-treatment so a DOCS (main) score could not be calculated

all $p_{pooled} < 0.001$). Statistically significant reductions were also seen on the secondary measures from pre-treatment to 3-month follow up: DOCS total (32%; $p_{pooled} < 0.001$), DOCS main (37%; $p_{pooled} < 0.001$), DOCS subscales (21–38%; all $p_{pooled} < 0.001$).

Tertiary outcomes

Statistically significant reductions were also seen on the tertiary outcome measure, the CGI-S, a measure of global symptom severity from pre-treatment to post-treatment (16%; $p_{pooled} < 0.001$), as well as the PHQ-9, a measure of depressive symptoms (22%; $p_{pooled} < 0.001$). From pre-treatment to 3-month follow-up, statistically significant reductions were also seen on the tertiary outcome measures CGI-S (22%; $p_{pooled} < 0.001$) and PHQ-9 (30%; $p_{pooled} < 0.001$).

Effect sizes

Pre-treatment to post-treatment within-group effect sizes were medium in size on the primary outcome measure (YBOCS-SR; $g = 0.63$) and ranged from no effect ($g = 0.05$ on the DOCS contamination subscale) to large effects ($g = 0.94$ on the DOCS main subscale) on the secondary outcome measures. The effect sizes on the tertiary outcome measures ranged $g = 0.40$–0.48 from pre-treatment to post-treatment. Pre-treatment to 3-month follow up within group effect sizes were large in size on the primary outcome measure (YBOCS-SR; $g = 0.98$) and ranged from no effect ($g = 0.14$ on the DOCS contamination subscale) to large effects ($g = 1.20$ on the DOCS main subscale) on the secondary outcome measures. The effect sizes on the tertiary outcome measures ranged $g = 0.53$–0.77 from pre-treatment to 3-month follow-up.

Clinical significance

The proportion of the sample meeting each of the response criteria at post-treatment and 3-month follow up is outlined in Table 6. In the total sample, approximately one-third of participants met the Farris et al. (2013) response criteria at post-treatment and 3-month follow up and approximately one-quarter met the Mataix-Cols et al. (2016) criteria. At post-treatment, approximately 11% of the sample met the Mataix-Cols et al. (2016) remission criteria, which increased to 17% at 3-month follow up.

Table 6. Proportion of participants meeting response criteria for total sample including 95% confidence intervals ($N = 216$).

	Farris et al. (2013) response criteria	Mataix-Cols et al. (2016) response criteria	Mataix-Cols et al. (2016) remission criteria
Total sample ($N = 216$)			
Post-treatment	31.6% (29 to 34.2)	23.4% (21.1 to 25.8)	10.5% (5.1 to 16.0)
3-month follow up	32.0% (29.4 to 34.7)	27.0% (24.6 to 29.5)	17% (10.0 to 26.9)

Clinical deterioration

At post-treatment, 0.6% (95%CI: 0.0–1.8%) of participants met criteria for clinical deterioration. At 3-month follow-up, this number increased to 1.4% (95% CI: 0.0–3.3%).

Treatment satisfaction

One hundred and twenty six out of the 159 participants who completed the treatment satisfaction questionnaire (79.2%) indicated that they were "satisfied" or "very satisfied" with the treatment. Twenty-six of the 159 participants (16.4%) indicated that they were "neutral" and 7/159 (4.4%) indicated that they were "dissatisfied" or "very dissatisfied". One hundred and thirty five participants indicated that the OCD Course was "worth their time" (135/159; 84.9%) and 153 participants indicated that they would recommend the OCD Course to a friend (153/159; 96.2%).

Discussion

The aim of the current study was to add to the literature examining the efficacy of self-guided ICBT for OCD using a large international sample. The results demonstrate that a self-guided ICBT intervention, where patients learn about their symptoms and learn basic self-management techniques for dealing with their symptoms, can be an efficacious and acceptable treatment. Medium within-group effect sizes were found from pre-treatment to post-treatment ($g = 0.63–0.71$) and large effect sizes were found from pre-treatment to 3-month follow-up ($g = 0.98–1.09$) in OCD symptoms. While these outcomes are encouraging, they are smaller than effect sizes seen in clinical trials examining the efficacy of self-guided ICBT, including studies that have used the same intervention and those that have also used an international sample (Wootton et al., 2014, 2019). For instance, Wootton et al. (2019) examined the efficacy of self-guided ICBT in an international sample of 190 individuals assigned to either immediate treatment or waitlist control. This study found large between-group effect sizes at post-treatment ($d = 1.05$) and large within-group effect sizes from pre-treatment to post-treatment ($d = 1.25$) and pre-treatment to 3-month follow-up ($d = 1.23$). It is possible that the lower effect size seen in this study is due to the higher levels of distress seen in individuals with OCD (Liao et al., 2021) and other patient groups (Egan et al., 2022) during the COVID-19 pandemic, as recruitment for this study took place entirely during the COVID-19 pandemic (February 2020 to December 2021). Consistent with this, outcomes on the DOCS Contamination subscale, which would arguably be the subscale most likely to be impacted by the pandemic, were significantly lower in the current study ($g = 0.05$ from pre-treatment to post-treatment and 0.14 from pre-treatment to 3-month follow up) compared with effect sizes on the other DOCS subscales (which ranged 0.27–0.45 from pre-treatment to post-treatment and 0.44–0.74 from pre-treatment to 3-month follow up).

In terms of participants meeting criteria for "response", approximately one-third met the Farris et al. (2013) criteria and approximately one-quarter met the Mataix-Cols et al. (2016) criteria at post-treatment and follow up. These results are largely consistent with previous research, which has found similar response rates in self-guided ICBT for OCD

(Wootton et al., 2014, 2019). For example, response rates in these studies have ranged 19–36% at post-treatment and 31–38% at follow up when response was defined as meeting the Jacobson and Traux (1991) reliable change index and a YBOCS-SR score of ≤14 (Wootton et al., 2014, 2019). Similarly, response rates of 27% at post-treatment and 32% at follow up when using the Farris et al. (2013) criteria of a 35% or greater decreased in YBOCS scores (Wootton et al., 2019). This was the first study to evaluate "remission" status in self-guided ICBT and found remission rates of 11% at post-treatment and 17% at 3-month follow-up. Importantly, there were low levels of clinical deterioration at post-treatment and follow-up.

This finding has implications for stepped-care treatment for OCD. For instance, if we can expect one-quarter to one-third of participants to improve significantly with a cost-effective and widely disseminated ICBT program, we can provide treatments in a more cost-effective way whereby all participants are assessed and immediately commence an ICBT program, and those who do not improve can be stepped up to more intensive treatments. However, future research may wish to examine who is more likely to do well using an ICBT approach and who is unlikely to do well so that patients are placed in the appropriate level of care. For instance, consistent with previous research (e.g. McDonald et al., 2023), those who completed treatment in this study were less likely to be medicated and to have lower levels of depression. Thus, examining predictors of outcome is an important area for research to inform any future stepped-care models. While existing research indicates that self-guided ICBT is inferior to face-to-face CBT (Lundström et al., 2022), and some research has demonstrated the efficacy of stepped care treatments for OCD (Aspvall et al., 2021; Gilliam et al., 2010; Tolin et al., 2005, 2011), to date, no studies have examined an entirely remote stepped care approach where participants are stepped up to a remotely delivered high-intensity option such as telephone or internet videoconferencing delivered CBT and deserves attention in future research.

Participants found the self-guided intervention to be acceptable, with 79% of participants indicating that they were "satisfied" or "very satisfied" with the content of the intervention. These acceptability ratings are consistent with other studies that have examined the efficacy of self-guided ICBT using the same metric (Wootton et al., 2014, 2019). However, these participants opted to take part in an ICBT study; thus, they are likely to rate the acceptability of such interventions more favourably. It is important for future research to examine the acceptability of ICBT for OCD amongst a range of possible alternative options (e.g. individual face-to-face treatment, videoconferencing delivered treatment, group-based treatment) in a sample of individuals seeking treatment for the first time. This will help to ascertain the true acceptability of ICBT for OCD compared with other evidence-based treatment options.

Self-guided ICBT interventions are a low cost way of widely disseminating basic education and interventions for individuals with OCD, who rarely receive an evidence-based intervention when accessing treatment in the community (Marques et al., 2010). While it has been found that the individuals in this study who accessed ICBT had a similar demographic and clinical profile to those who choose face-to-face treatment (Melkonian et al., 2023), and that self-guided and guided ICBT interventions results in similar outcomes for anxiety-related conditions (Dear et al., 2015; Oey et al., 2023; Titov et al., 2015), to date, only one study has directly compared the efficacy of self-guided and guided ICBT for OCD. Lundström et al. (2022) compared in-person CBT to guided ICBT

and self-guided ICBT in a three-group randomised trial. This study found that the between-group effect size between self-guided ICBT and guided ICBT was small and non-significant at post-treatment ($d = 0.16$; 95% CI: −0.47-0.80) (Lundström et al., 2022). Currently, no studies have examined who would choose guided over self-guided treatment; thus, examining treatment preferences for individuals with OCD is an important avenue for future research.

While the results of the current study add to the emerging literature supporting the acceptability and efficacy of self-guided ICBT interventions for OCD, it is important to acknowledge some limitations of the study. First, participant recruitment was conducted entirely during the COVID-19 pandemic, and this may have had an unknown effect on outcomes. Anxiety levels within the general community were much higher during this time (Staples et al., 2020) and this may explain the reduced effects found in this study compared with previous clinical trials.

Second, this was an open trial with no control group. While it is possible that the effects found in the current study are purely the result of spontaneous remission, research has indicated that OCD symptoms rarely spontaneously remit among people seeking treatment (Melkonian et al., 2022). Relatedly, it is possible that the effects seen in the current study are due to some other intervention outside of the treatment; however, it is also possible that the improvements made from post-treatment to 3-month follow-up are the results of continued practice of the skills taught in the intervention.

Third, while recruitment was international, the majority of participants came from Western countries, such as Australia, Canada, United States of America, and United Kingdom, and caution is needed in generalising the treatment approach or findings to other nations. Future research may wish to conduct clinical trials specifically in non-Western Nations to ascertain if results are similar.

Finally, given this was a self-guided intervention, all outcome measures were self-report in nature, including the diagnostic assessment. Future studies may benefit from supplementing self-report measures with clinician-administered measures. Importantly, the assessment of Mataix-Cols et al. (2016) criteria for reliable change and remission relied on the use of the self-report version of the CGI-I, which is typically administered by a clinician. While there is some preliminary research to demonstrate the concordance between the clinician-administered and self-report version of this measure (Hannan & Tolin, 2007), these results may be interpreted cautiously. Similarly, the DIAMOND (Tolin et al., 2018) was administered in a self-report format, and there is currently no data on the reliability and validity of this format of administration. However, given this assessment was supplemented with two well-researched measures of OCD symptom severity (i.e. the YBOCS (Goodman et al., 1989) and DOCS (Abramowitz et al., 2010)), we believe that it is unlikely that participants who did not meet criteria for OCD were included in the study. This measure was also not used as an outcome measure.

Overall, the results of the current study add to the growing literature demonstrating the efficacy and acceptability of self-guided ICBT for OCD. These programs offer patients an opportunity to learn about their symptoms and learn basic evidence-based interventions to work on their symptoms without the need to disclose symptoms to a mental health professional. Given the scalability of self-guided interventions, these may be an appropriate first step in a stepped care approach to the treatment of OCD and other mental health disorders.

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Data availability statement

Data will be made available on request to the corresponding author pending ethical approval.

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