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ARTICLE

Predictors of dropout in self-guided internet-delivered cognitive behaviour therapy for obsessive-compulsive disorder: An exploratory study

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Abstract

Objectives: Self-guided internet-delivered cognitive behaviour therapy (ICBT) is an effective treatment for obsessive-compulsive disorder (OCD); however, there is little research investigating who dropouts of treatment. Therefore, the aim of this study was to conduct an exploratory study of predictors of dropout in self-guided ICBT for OCD. Given that definitions of dropout vary across ICBT studies, we conceptualized dropout in multiple ways: (1) early dropout (proportion of participants who did not complete the pre-treatment questionnaires); (2) proportion of participants who did not commence the intervention; (3) proportion of participants who did not complete the treatment; and (4) proportion of participants who did not complete the post-treatment questionnaires.

Method: This was a secondary data analysis of 323 participants with OCD symptoms who provided a successful screening assessment to commence an ICBT intervention. Binary logistic regression was used to predict dropout based on a number of exploratory variables.

Results: Early dropout was predicted by the country of the participant (participants in the United Kingdom and India being more likely to dropout), as well as shorter symptom duration (explaining 7% of the variance). Medication use predicted non-completion of the intervention with those taking medication for OCD being less likely to complete the treatment (explaining 3% of the variance). Completion of the post-treatment questionnaires was predicted by higher contamination symptoms, lower depressive symptoms and

higher pre-treatment conscientiousness (explaining 13% of the variance). There were no significant predictors of treatment commencement.
Conclusions: The study provides important preliminary information concerning which patients with OCD may be more likely to drop out of a self-guided ICBT intervention.

KEYWORDS
cognitive behavioural therapy, obsessive-compulsive disorder, treatment dropout

Practitioner points

- Internet-delivered cognitive behavioural therapy can be an effective treatment for obsessive-compulsive disorder.
- This study aims to examine the variables that may predict dropout in internet-delivered cognitive behavioural therapy for obsessive-compulsive disorder.
- Despite examining a large number of predictors few were found to predict treatment dropout and those that did explained little variance.
- These results indicate that self-guided ICBT may be suitable for most patients as a first step in treatment.

BACKGROUND

Obsessive-compulsive disorder (OCD) is characterized by the presence of anxiety eliciting intrusive thoughts, images and urges, as well as time-consuming and repetitive compulsions (American Psychiatric Association, 2022). The disorder has a lifetime morbid risk of 2.7% (Kessler et al., 2012) and results in considerable impairment (Olatunji et al., 2007). OCD rarely remits without treatment (Melkonian et al., 2022); however, cognitive behaviour therapy (CBT) delivered in person (Olatunji et al., 2013), as well as CBT delivered via the internet (ICBT) (Wootton, 2016), have been shown to be efficacious in the treatment of OCD.

ICBT for OCD can be delivered in either a self-guided or clinician-guided format. Self-guided treatments do not involve any therapist support as the patient works through the online materials, whereas clinician-guided treatments involve brief (i.e. 10 min a week) therapist support, typically via telephone, email or secure messaging system. Self-guided ICBT (Lundström et al., 2022; Wootton et al., 2019), as well as clinician-guided ICBT (Lundström et al., 2022; Mahoney et al., 2014; Wootton et al., 2013) have been shown to be efficacious in clinical trials. Studies directly comparing the two delivery formats demonstrate that the outcomes for self-guided ICBT and clinician-guided ICBT are generally equivalent (Lundström et al., 2022). A recent meta-analysis of the acceptability of ICBT for OCD found some evidence to suggest that while ICBT for OCD generally appears to be acceptable, self-guided ICBT may have higher levels of dropout than clinician-guided interventions (Waks et al., 2024), which may indicate lower levels of acceptability.

Given there is some evidence to suggest potential differences in acceptability (Waks et al., 2024) between self-guided and clinician-guided ICBT interventions for OCD, there may also be different predictors of outcome and predictors of dropout. Currently, three studies have examined predictors of outcome in clinician-guided ICBT for OCD (Andersson et al., 2015; Diefenbach et al., 2015; Wheaton

et al., 2021) and two studies have examined outcomes in self-guided ICBT for OCD (Wootton, Karin, Melkonian, et al., 2024; Wootton, McDonald, Karin, et al., 2024). Taken together, the results of these studies indicate that better clinical outcomes in the clinician-guided studies were associated with lower baseline OCD severity, lower baseline levels of disgust, lower baseline levels of avoidance, not previously having received treatment, having higher levels of treatment adherence and higher perceived working alliance with the clinician (Andersson et al., 2015; Diefenbach et al., 2015; Wheaton et al., 2021). In the self-guided interventions those with lower baseline OCD severity, depression severity, contamination, symmetry or neuroticism symptoms, higher baseline treatment expectancy, higher motivation to change, older age and no history of past treatment had lower symptoms at post-treatment (Wootton, Karin, Melkonian, et al., 2024; Wootton, McDonald, Karin, et al., 2024). Additionally, those who were older and had no history of previous treatment predicted participants who were more likely to obtain a clinical response (Wootton, McDonald, Karin, et al., 2024).

Treatment dropout in ICBT interventions for OCD and other disorders is commonly conceptualized in multiple ways including the proportion of patients who do not (1) complete the pre-treatment questionnaires after meeting entry criteria, (2) commence the intervention, (3) complete the intervention and (4) complete the post-treatment (or other timepoint) outcome measures (Al-Asadi et al., 2014; Andersson et al., 2011; Lundström et al., 2022; Wootton et al., 2019). A recent meta-analysis examining different types of dropout in ICBT interventions for OCD found that the pooled proportion of participants who did not commence the intervention was 16%, while the proportion who did not complete the intervention was 28% and the proportion who did not complete the post-treatment outcome measure was 27% (Waks et al., 2024). These rates are similar to the overall rates observed in ICBT for anxiety disorders in general (Bisby et al., 2022). To date, however, no studies have examined the predictors of dropout in ICBT for OCD in either clinician-guided or self-guided ICBT interventions. Consequently, it is unclear whether certain participants are more or less likely to dropout from ICBT for OCD.

Examining the predictors of dropout in ICBT interventions has important implications for treatment planning for individuals with OCD. For example, understanding the individuals who are likely to prematurely dropout of ICBT interventions may assist clinicians in being able to best match treatments to clients or develop appropriate stepped care interventions. Patients who are likely to drop out of an ICBT intervention may be best treated in a face-to-face setting, or by using a remote high-intensity alternative, such as internet-videoconferencing treatment. Therefore, the aim of the current study is to examine the predictors of dropout in self-guided ICBT for OCD. Given the lack of existing research, the study was designed as exploratory with no *apriori* hypotheses.

METHOD

Design

This study is a secondary data analysis of a large international open trial examining the efficacy of self-guided ICBT for individuals with OCD (Wootton, Karin, Melkonian, et al., 2024). The study was ethically approved by the Human Research Ethics Committee at Macquarie University (REF No: 5201701075) and the study was pre-registered with the Australian and New Zealand Clinical Trials Registry (ACTRN12620000146998).

Participants

Participants included 323 participants who provided a successful application for the ICBT intervention. The participants were on average aged in their early 30's ($M = 33.27$; $SD = 12.22$), were primarily female (73%) and predominantly lived in North America (66%). The participant flow is outlined in Figure 1, and the demographic characteristics of the sample are provided in Table 1.

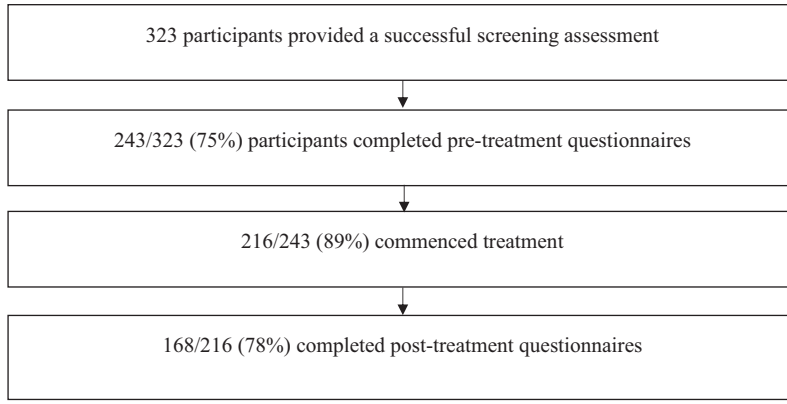

FIGURE 1 Participant flow.

The inclusion and exclusion criteria for the study are outlined in full in the original manuscript (Wootton, McDonald, Melkonian, et al., 2024). Briefly, to be included in the study, participants were required to speak English fluently, be aged over 18 years, have regular access to the internet, be at low risk of suicide, and demonstrate clinically significant OCD symptoms [a score of at least 7 on a Dimensional Obsessive-Compulsive Scale subscale (DOCS; Abramowitz et al., 2010), as well as at least 14 on the self-report version of the Yale-Brown Obsessive-Compulsive Scale (YBOCS; Goodman et al., 1989), and meeting criteria on the Diagnostic Interview for Anxiety, Mood, Obsessive-Compulsive and other Neuropsychiatric Disorders (DIAMOND; Tolin et al., 2018) OCD module, which was administered in a self-report format]. Participants were primarily recruited via paid advertisements on social media, as well as via advertisements and unpaid social media posts from the International OCD Foundation.

Treatment

The intervention delivered in the study is outlined in full in other manuscripts (Wootton et al., 2019; Wootton, McDonald, Melkonian, et al., 2024). Briefly, the intervention is a 5-module programme that is delivered over 8 weeks. In this study, the intervention was delivered using a self-guided approach, which means participants did not have any contact with a therapist as they worked their way through the modules. Each of the five modules covered: (1) psychoeducation (1 week); (2) behavioural experiments (2 weeks); (3); behavioural activation/arousal reduction (1 week); (4) exposure and response prevention (2 weeks); and (5) relapse prevention (2 weeks). Participants were encouraged to complete homework tasks related to the content, but this was not monitored or checked in this study. Participants were reimbursed USD$25 for the completion of post-treatment questionnaires. Participants were required to complete the pre-treatment questionnaires to be able to access the intervention.

Measures

Demographic variables

The following demographic variables were analysed in this secondary data analysis: (1) age; (2) gender; (3) location (country); (4) geographical location (urban, rural or remote); (5) educational status; and (6) medication status at baseline.

TABLE 1 Characteristics of the sample ($N = 323$).

Variable		*M* (*SD*)	*N* (%)
Age		33.27 (12.22)	–
Gender[a]	Female	–	235 (72.8)
	Male	–	82 (25.4)
	Other	–	6 (1.9)
Country	North America	–	128 (65.6)
	Australia and New Zealand	–	84 (26.0)
	United Kingdom	–	45 (13.9)
	India	–	23 (7.1)
	European Union	–	20 (6.2)
	Other	–	23 (7.1)
Geographical location	Capital city/surrounds	–	191 (63.2)
	Other urban	–	53 (17.5)
	Rural or remote	–	58 (19.2)
Education	Year 10	–	15 (4.6)
	Year 12	–	74 (22.9)
	Trade qualification/certificate	–	66 (20.4)
	Bachelor's degree	–	109 (33.7)
	Masters/doctoral degree	–	59 (18.3)
Medication (% yes)		–	145 (44.9)
Symptom severity	YBOCS total score	23.74 (5.20)	–
	DOCS contamination total	6.96 (6.18)	–
	DOCS harming total	9.52 (5.21)	–
	DOCS thoughts total	9.78 (5.64)	–
	DOCS symmetry total	6.36 (5.72)	–
	CGI (severity)[b]	4.38 (1.22)	–
	PHQ-9 total	12.60 (6.39)	–
Clinical variables	Readiness to stop rituals/compulsions[b]	7.35 (2.62)	–
	Readiness to stop avoidance[b]	6.93 (2.66)	–
	Length of symptoms (years)	15.82 (11.45)	–
	Autogenous obsessions[c]	5.98 (2.90)	–
	Reactive obsessions[c]	7.19 (2.54)	–
	Harm reduction[c]	7.70 (2.83)	–
	Incompleteness[c]	6.17 (3.35)	–
Other variables	Pre-treatment DPSS-R total[b]	30.09 (10.34)	–
	Pre-treatment CPQ total[b]	30.74 (6.70)	–
	Pre-treatment ATSPPH total[d]	22.62 (4.63)	–
	Pre-treatment extroversion[d]	5.53 (2.36)	–
	Pre-treatment agreeableness[d]	6.27 (2.03)	–
	Pre-treatment neuroticism[d]	8.64 (1.64)	–
	Pre-treatment openness[d]	7.74 (1.85)	–
	Pre-treatment conscientiousness[d]	7.16 (2.01)	–
	Pre-treatment CEQ[e]	35.10 (9.74)	–

Abbreviations: ATSPPH, Attitudes towards Seeking Professional Psychological Help—Short Form; CEQ, Credibility and Expectancy Questionnaire; CGI-S, Clinician Global Impression Scale (Severity); CPQ, Clinical Perfectionism Questionnaire; DOCS, Dimensional Obsessive-Compulsive Scale; DPSS-R, Disgust Propensity and Sensitivity Scale; PHQ-9, Patient Health Questionnaire (9-item); YBOCS, Yale-Brown Obsessive Compulsive Scale.

[a]Participants were asked 'What gender do you identify as?' with options of 'female', 'male' or 'other' being available to respondents.

[b]$N = 243$ (administered at pre-treatment).

[c]$N = 322$.

[d]$N = 242$.

[e]$N = 240$.

Baseline severity of symptoms

Multiple measures were used to ascertain the baseline severity of OCD symptoms. First, the total score was calculated on the self-report version of the *Yale-Brown Obsessive Compulsive Scale* (*YBOCS*) (Goodman et al., 1989). This is a commonly used 10-item measure of obsessive-compulsive symptoms. The internal consistency in this sample was .812. Second, the subscale scores on the *Dimensional Obsessive Compulsive Scale* (*DOCS*) (Abramowitz et al., 2010) were also used as a measure of baseline OCD severity for each of the OCD subtypes including obsessions and compulsions related to (1) contamination; (2) responsibility for harm; (3) unacceptable thoughts; and (4) symmetry, incompleteness and exactness (Abramowitz et al., 2010). The internal consistency in this sample was .872. Finally, the single item score on the *Clinician Global Impression Scale* (*CGI; Guy, 1976*) was used as a measure of symptom severity, where participants rate the severity of their OCD symptoms on a 7-point scale ranging from 1 (normal) to 7 (extreme problem). The *Patient Health Questionnaire* (*PHQ-9*) (Kroenke et al., 2001) was used as a measure of baseline depression severity. The PHQ-9 is a commonly used 9-item measure of depressive symptoms. The internal consistency in the current sample was .860. The YBOCS, DOCS and PHQ-9 scores were obtained at application, and the CGI was obtained at pre-treatment.

Type of obsession and compulsion

The *Type of Obsession Questionnaire* is a two-item scale that aims to assess whether the participant experiences reactive or autogenous obsessions based on the conceptualization by Lee and Kwon (2003). Participants are asked to respond on a 0 (strongly disagree) to 10 (strongly agree) point scale to the following two questions: (1) 'My obsessions are generally triggered by something happening in my day/surroundings' (reactive obsessions) and (2) 'My obsessions generally pop up out of nowhere rather than being triggered' (autogenous obsessions). Similarly, the *Reason for Compulsion Questionnaire* is a two-item scale that aims to assess whether the participant engages in compulsions in order to avoid harm or reduce a sense of incompleteness based on the conceptualization of compulsions by Summerfeldt et al. (2014). Participants are asked to respond on a 0 (strongly disagree) to 10 (strongly agree) point scale to the following two questions: (1) 'I mostly complete my compulsions in order to prevent or reduce feelings that something bad might happen to myself or others' (harm avoidance) or (2) *I mostly complete my compulsions in order to prevent or reduce feelings of* 'incompleteness' *or things* 'not being quite right' (incompleteness).

Other variables

Readiness to stop rituals and compulsions and readiness to stop avoidance behaviourwere assessed with the 2-item self-report *Readiness Ruler* (*RR*) (Simpson et al., 2010). *Length of OCD symptoms* was self-reported by each participant. Disgust severity was measured with the 12-item self-report *Disgust Propensity and Sensitivity Scale—Revised* (*DPSS-R*) (Fergus & Valentiner, 2009). The internal consistency of the DPSS-R in the current sample was .907. Levels of perfectionism were measured with the 12-item self-report *Clinical Perfectionism Questionnaire* (*CPQ*) (Fairburn et al., 2003). The internal consistency of the CPQ in the current sample was .818. Attitudes towards professional help seeking were measured with the 10-item self-report *Attitudes Towards Seeking Professional Psychological Help—Short Form* (*ATSPPH-SF*) (Fischer & Farina, 1995). The internal consistency of the ATSPPH-SF in the current sample was .759. The 10-item self-report *Big Five Inventory 10-item* (BFI-10) (Rammstedt & John, 2007) was used to measure the personality traits of extraversion, agreeableness, conscientiousness, emotional stability and openness. Finally, the self-report 6-item *Credibility and Expectancy Questionnaire* (*CEQ*) (Devilly & Borkovec, 2000) was used to measure treatment expectancy.

Mean scores on each of the variables of interest are outlined in Table 1.

Data analysis

Due to the exploratory nature of the study, the large number of predictors to be examined, and consistent with previous predictor studies (Fournier et al. 2009, Wheaton et al., 2021), a stepwise process was used to evaluate potential predictors of dropout to balance the risks of Type I and Type II errors rather than using Bonferroni correction. Using this method, individual predictors are examined in relation to the dependent variable(s) in smaller domains, and only those significant are included in the final model. The domains used in this study were (1) demographic variables; (2) baseline symptom severity; (3) clinical variables; and (4) other variables (as outlined in Table 1). Given this was an exploratory study, these predictors were selected for pragmatic reasons as they were originally collected to examine variables that may predict outcome in ICBT for OCD (Wootton, Karin, Melkonian, et al., 2024). Four binary logistic regressions were conducted examining: (1) early dropout (i.e. participants who provided a successful application but did not complete the pre-treatment questionnaires); (2) participants who did not commence lessons; (3) participants who did not complete the intervention (i.e. the participant did not commence at least four of the five lessons); and (4) participants who did not complete the post-treatment questionnaires. These categorizations have been used as a metric of dropout in previous ICBT studies (Al-Asadi et al., 2014; Andersson et al., 2011; Lundström et al., 2022; Wootton et al., 2019). All analyses were performed using SPSS Version 28 (IBM Inc., USA).

RESULTS

Sample characteristics

The characteristics of the sample are outlined in Table 1. Participants were on average aged in their early 30s ($M = 33.27$; $SD = 12.22$; range 18–78) and scores on the Yale-Brown Obsessive-Compulsive Scale (Goodman et al., 1989) ranged from 14 to 40 ($M = 23.74$; $SD = 5.20$). Scores on the Patient Health Questionnaire (9-item) (Kroenke et al., 2001) ranged from 0 to 27 ($M = 12.60$; $SD = 6.39$). Approximately 45% of the sample were taking medication for their OCD symptoms, and most participants had a university degree (52%).

Early dropout

Early dropout was defined as the participants who were accepted into the intervention but did not complete the pre-treatment questionnaires, which allow the participant to access the intervention, or who withdrew prior to the commencement of the treatment. 243/323 participants (75.2%) commenced the treatment while 80/323 (24.8%) participants were classified as early dropouts. The unstandardized regression coefficient (B), unstandardized standard error (SE), p-values, odds ratio (and 95% CI of odds ratio) for the preliminary and final analyses are reported in Table 2. In the preliminary analyses, participants living in the United Kingdom ($B = 1.368$; $p = .045$) and India ($B = 1.558$; $p = .031$) were more likely to be classified as a dropout and those who had OCD for a shorter duration were also more likely to be classified as a dropout ($B = -.026$; $p = .046$). The final model was significant, $\chi^2(3, N = 323) = 15.937$, $p = .001$ and the overall variance accounted for by the model was approximately 7% using the Nagelkerke R^2.

Commencing treatment

Of the 243 individuals who completed the pre-treatment questionnaires and were eligible to commence the treatment, 216/243 (89%) participants commenced the treatment and 27/243 (11%) did not

TABLE 2 Predictors of early dropout from each domain in preliminary analyses and final model ($N = 323$).

	B	*SE*	Odds ratio [95% CI]	*p*-Value
Preliminary analyses				
Demographics				
Age	−.01	.01	.99 [.97, 1.02]	.588
Gender	–	–	–	.525
Education	–	–	–	.231
Country	–	–	–	.013*
Australia/New Zealand	.07	.66	1.07 [.29, 3.92]	.918
North America	.47	.63	1.61 [.47, 5.47]	.449
United Kingdom	1.37	.68	3.93 [1.03, 14.99]	.045*
India	1.56	.72	4.75 [1.16, 19.50]	.031*
European Union	.30	.87	1.34 [.24, 7.41]	.735
Other	.07	.66	1.07 [.29, 3.92]	.918
Geographical location	–	–	–	.321
Medication	.21	.29	1.24 [.70, 2.19]	.463
Symptom severity				
YBOCS total score	−.11	.07	.90 [.72, 1.02]	.101
DOCS contamination total	−.02	.04	.98 [.91, 1.06]	.594
DOCS harming total	−.01	.04	.99 [.92, 1.06]	.752
DOCS thoughts total	.03	.02	1.03 [.99, 1.08]	.193
DOCS symmetry total	−.11	.07	.90 [.79, 1.02]	.101
PHQ-9 total	.18	.12	1.20 [.94, 1.53]	.152
Clinical variables				
Length of symptoms (years)	−.03	.01	.98 [.95, 1.00]	.046*
Autogenous obsessions	.00	.05	1.00 [.91, 1.11]	.937
Reactive obsessions	−.04	.06	.96 [.86, 1.08]	.520
Harm reduction	.02	.05	1.02 [.93, 1.12]	.700
Incompleteness	.08	.04	1.08 [.99, 1.17]	.068
Final model				
Country (United Kingdom)	1.00	.34	2.73 [1.39, 5.36]	.004*
Country (India)	1.16	.46	3.18 [1.30, 7.79]	.011*
Symptom length	−.02	.01	.98 [.96, 1.01]	.173

Note: For categorical variables with multiple levels the overall *p*-value for that category is reported. When categorical variables with more than one level were significant (i.e. gender, education, country, geographical location) the variables were entered as dummy variables into the model.

Abbreviations: DOCS, Dimensional Obsessive-Compulsive Scale; PHQ-9, Patient Health Questionnaire (9-item); YBOCS, Yale-Brown Obsessive Compulsive Scale.

*$p < .05$.

commence the intervention. The unstandardized regression coefficient (*B*), unstandardized standard error (*SE*), *p*-values, odds ratio (and 95% CI of odds ratio) for the preliminary analyses are reported in Table 3. As outlined in Table 3, there were no significant predictors in the preliminary analyses.

Treatment completion

Of the 216 individuals who commenced the treatment, 130/216 (60.2%) were classified as treatment completers and 86/216 (39.8%) did not complete the treatment. For these analyses, treatment completion

TABLE 3 Predictors of commencement of lessons in preliminary analyses from each domain ($N = 243$).

	B	*SE*	Odds ratio [95% CI]	*p*-Value
Preliminary analyses				
Demographics				
Age	−.04	.02	.96 [.92, 1.01]	.086
Gender	–	–	–	.851
Country	–	–	–	.548
Geographical location	–	–	–	.872
Education	–	–	–	.497
Medication	.06	.44	1.07 [.45, 2.51]	.884
Symptom severity				
YBOCS total score	.00	.05	1.00 [.91, 1.11]	.940
DOCS contamination total	.07	.04	1.08 [1.00, 1.16]	.052
DOCS harming total	−.02	.04	.98 [.90, 1.06]	.589
DOCS thoughts total	−.03	.04	.98 [.90, 1.06]	.561
DOCS symmetry total	.04	.04	1.04 [.96, 1.12]	.319
PHQ-9 total	.04	.04	1.04 [.97, 1.12]	.274
CGI-S	−.02	.21	.98 [.65, 1.49]	.934
Clinical variables				
Length of symptoms (years)	−.02	.02	.98 [.94, 1.02]	.282
Autogenous obsessions	.08	.10	1.08 [.88, 1.32]	.467
Reactive obsessions	−.05	.08	.96 [.82, 1.12]	.579
Harm reduction	.06	.09	1.06 [.90, 1.25]	.495
Incompleteness	−.03	.07	.97 [.85, 1.10]	.604
Readiness to stop compulsions	−.016	.11	.85 [.69, 1.05]	.131
Readiness to stop avoidance	.05	.11	1.05 [.85, 1.31]	.645
DPSS-R total	−.02	.02	.98 [.94, 1.02]	.344
CPQ total	.04	.04	1.04 [.97, 1.11]	.280
Other variables				
ATSPPH total	−.02	.05	.98 [.90, 1.08]	.739
Extroversion	.07	.09	1.07 [.89, 1.29]	.459
Agreeableness	.18	.12	1.20 [.95, 1.51]	.133
Neuroticism	.14	.15	1.15 [.86, 1.54]	.342
Openness	.00	.12	1.00 [.79, 1.27]	.999
Conscientiousness	−.16	.11	.85 [.69, 1.05]	.128
CEQ	−.01	.02	.99 [.95, 1.03]	.601

Note: For categorical variables with multiple levels the overall *p*-value for that category is reported.

Abbreviations: ATSPPH, Attitudes towards Seeking Professional Psychological Help—Short Form; CEQ, Credibility and Expectancy Questionnaire; CGI-S, Clinician Global Impression Scale (Severity); CPQ, Clinical Perfectionism Questionnaire; DOCS, Dimensional Obsessive-Compulsive Scale; DPSS-R, Disgust Propensity and Sensitivity Scale; PHQ-9, Patient Health Questionnaire (9-item); YBOCS, Yale-Brown Obsessive Compulsive Scale.

was defined as a participant who commenced at least 4 of the 5 modules. The unstandardized regression coefficient (*B*), unstandardized standard error (*SE*), *p*-values, odds ratio (and 95% CI of odds ratio) for the preliminary analyses and final model are reported in Table 4. In the preliminary analyses, participants who were on medication ($B = -.648$; $p = .032$) was the only significant predictor. Those who

TABLE 4 Predictors of treatment completion from each domain in preliminary analyses and final model ($N = 216$).

	B	*SE*	Odds ratio [95% CI]	*p*-Value
Preliminary analyses				
Demographics				
Age	.01	.01	1.01 [.99, 1.04]	.338
Gender	–	–	–	.115
Location	–	–	–	.088
Geographical location	–	–	–	.308
Education	–	–	–	.326
Medication	−.65	.30	.52 [.29, .95]	.032*
Symptom severity				
YBOCS total score	−.02	.04	.98 [.91, 1.06]	.625
DOCS contamination total	.05	.03	1.05 [.99, 1.10]	.088
DOCS harming total	.01	.03	1.01 [.95, 1.06]	.874
DOCS thoughts total	−.02	.03	.98 [.93, 1.04]	.545
DOCS symmetry total	−.01	.03	.99 [.94, 1.04]	.680
PHQ-9 total	−.03	.03	.98 [.93, 1.03]	.316
CGI-S	−.17	.15	.84 [.63, 1.12]	.235
Clinical variables				
Length of symptoms (years)	.00	.01	1.00 [.98, 1.03]	.849
Autogenous obsessions	−.04	.06	.96 [.85, 1.09]	.535
Reactive obsessions	−.02	.06	.98 [.88, 1.10]	.723
Harm reduction	.08	.05	1.08 [.98, 1.19]	.132
Incompleteness	.04	.04	1.04 [.96, 1.14]	.329
Readiness to stop compulsions	.00	.02	1.00 [.97, 1.03]	.921
Readiness to stop avoidance	−.00	.02	1.00 [.95, 1.04]	.872
DPSS-R total	.00	.01	1.00 [.98, 1.03]	.849
CPQ total	−.04	.06	.96 [.85, 1.09]	.535
Other variables				
ATSPPH total	.00	.03	1.00 [.94, 1.07]	.954
Extroversion	−.05	.06	.96 [.84, 1.08]	.477
Agreeableness	.00	.08	1.00 [.86, 1.16]	.995
Neuroticism	−.01	.09	.99 [.83, 1.18]	.921
Openness	.05	.08	1.05 [.90, 1.23]	.534
Conscientiousness	.03	.07	1.03 [.90, 1.18]	.677
CEQ	.00	.01	1.00 [.98, 1.03]	.832
Final model				
Medication	−.60	.28	.55 [.32, .96]	.034*

Note: For categorical variables with multiple levels the overall *p*-value for that category is reported.

Abbreviations: ATSPPH, Attitudes towards Seeking Professional Psychological Help—Short Form; CEQ, Credibility and Expectancy Questionnaire; CGI-S, Clinician Global Impression Scale (Severity); CPQ, Clinical Perfectionism Questionnaire; DOCS, Dimensional Obsessive-Compulsive Scale; DPSS-R, Disgust Propensity and Sensitivity Scale; PHQ-9, Patient Health Questionnaire (9-item); YBOCS, Yale-Brown Obsessive Compulsive Scale.

*$p < .05$.

were on medication were less likely to complete the treatment. The final model was significant, $\chi^2(1, N = 216) = 4.505$, $p = .034$ the overall variance accounted for by the model was approximately 3% using the Nagelkerke R^2.

Non-completion of questionnaires

Of the 216 individuals who commenced the treatment, 162/216 (75.0%) completed the post-treatment questionnaires, and 54/216 (25.0%) did not complete the post-treatment questionnaires. The unstandardized regression coefficient (*B*), unstandardized standard error (*SE*), *p*-values, odds ratio (and 95% CI of odds ratio) for the preliminary and final analyses are reported in Table 5. In the preliminary analyses, DOCS contamination scores ($B = -.648$; $p = .011$), baseline depressive symptoms ($B = .082$; $p = .036$) and baseline conscientiousness were the only significant predictors ($B = .172$; $p = .033$). Those with higher baseline DOCS contamination scores, higher conscientiousness scores, and lower depressive scores were more likely to complete the post-treatment questionnaires. The final model was significant, $\chi^2(3, N = 216) = 18.985$, $p < .001$ and the overall variance accounted for by the model was approximately 13% using the Nagelkerke R^2.

DISCUSSION

The aim of the current study was to examine potential predictors of dropout in self-guided ICBT for OCD. Given that definitions of dropout vary across ICBT studies, we chose to examine predictors of dropout using multiple definitions including (1) early dropout (i.e. participants who provided a successful application but did not complete the pre-treatment questionnaires); (2) participants who did not commence lessons; (3) participants who did not complete the intervention (i.e. the participant did not commence at least four of the five lessons); and (4) participants who did not complete the post-treatment questionnaires. Given the lack of existing research, the study was designed as exploratory with no *apriori* hypotheses.

A significant number of participants were classified as dropouts across the various definitions. For example, 25% were classified as early dropout (did not complete the pre-treatment questionnaires that provided access to the intervention), 11% did not commence the treatment, 40% did not complete the treatment, and 25% did not complete the post-treatment questionnaires. These dropout rates are consistent with those found in other studies. For example, in Wootton et al. (2019), 24% of participants were classified as early dropouts. Similarly, in a study examining self-guided ICBT for panic disorder, Ciuca et al. (2018) found that approximately 10% did not commence the treatment. Dear et al. (2015) found that 40% of participants in a self-guided intervention for generalized anxiety disorder did not complete the intervention. Finally, multiple other studies have found similar rates of questionnaire non-completion at post-treatment in studies examining the efficacy of self-guided ICBT for OCD (Schröder et al., 2020; Wootton et al., 2019).

Despite the large number of predictors examined, only a few appeared related to dropout in self-guided ICBT. For instance, when examining early dropout only country was a significant predictor, with those from India and the United Kingdom being more likely to drop out of the treatment early, that is, did not commence the intervention. This is the first study to examine predictors of dropout in an educational programme that was conducted across multiple countries; thus, the reasons for this finding are unknown. It is possible that participants who enrolled in the study were able to access other interventions that were perceived to be more appropriate for them and thus did not commence the ICBT intervention as other studies have found that people are less likely to drop out of treatment when they are provided with their most preferred treatment option (Watson et al., 2017). However, it may also be that participants in these countries had other psychosocial stressors that took priority over their OCD treatment. Previous research has found that psychosocial stressors can be related to early treatment dropout in CBT for anxiety and related disorders (Keefe et al., 2021). Another reason for this finding may be that participants did not value the ICBT intervention, perhaps because ICBT is relatively novel in those countries.

In terms of predictors of treatment completion, only medication usage emerged as a significant predictor, with those who were taking medication for their symptoms being less likely to complete the treatment.

TABLE 5 Predictors of non-completion of questionnaires from each domain in preliminary analyses and final model ($N = 216$).

	B	*SE*	Odds ratio [95% CI]	*p*-Value
Preliminary analyses				
Demographics				
Age	.02	.02	1.02 [.99, 1.05]	.131
Gender	–	–	–	.413
Location	–	–	–	.804
Geographical location	–	–	–	.732
Education	–	–	–	.246
Medication	−.55	.34	.58 [.30, 1.12]	.103
Symptom severity				
YBOCS total score	.01	.04	1.01 [.92, 1.09]	.908
DOCS contamination total	.08	.03	1.09 [1.02, 1.16]	.011*
DOCS harming total	.03	.03	1.03 [.96, 1.09]	.442
DOCS thoughts total	−.05	.04	.95 [.89, 1.02]	.188
DOCS symmetry total	−.01	.03	.99 [.93, 1.05]	.691
PHQ-9 total	−.06	.03	.94 [.89, 1.00]	.036*
CGI-S	−.15	.17	.86 [.62, 1.19]	.363
Clinical variables				
Length of symptoms (years)	.00	.01	1.00 [.98, 1.03]	.837
Autogenous obsessions	.02	.07	1.02 [.89, 1.18]	.740
Reactive obsessions	−.02	.07	.98 [.87, 1.12]	.787
Harm reduction	.08	.06	1.09 [.97, 1.21]	.139
Incompleteness	.03	.05	1.04 [.94, 1.14]	.455
Readiness to stop compulsions	−.05	.08	.95 [.81, 1.12]	.554
Readiness to stop avoidance	.04	.08	1.05 [.89, 1.22]	.581
DPSS-R total	−.01	.02	1.00 [.96, 1.03]	.782
CPQ total	.02	.03	1.02 [.96, 1.07]	.588
Other variables				
ATSPPH total	.05	.04	1.05 [.98, 1.12]	.193
Extroversion	−.12	.07	.89 [.77, 1.03]	.114
Agreeableness	.02	.09	1.02 [.86, 1.21]	.828
Neuroticism	−.12	.11	.89 [.71, 1.11]	.297
Openness	−.14	.10	.87 [.72, 1.05]	.149
Conscientiousness	.17	.08	1.19 [1.01, 1.39]	.033*
CEQ	.00	.02	1.00 [.97, 1.04]	.851
Final model				
DOCS contamination total	.08	.03	1.09 [1.03, 1.15]	.004*
PHQ-9 total	−.08	.03	.93 [.88, .98]	.006*
Conscientiousness	.14	.08	1.15 [.98, 1.35]	.085

Note: For categorical variables with multiple levels the overall *p* value for that category is reported.

Abbreviations: ATSPPH, Attitudes towards Seeking Professional Psychological Help—Short Form; CEQ, Credibility and Expectancy Questionnaire; CGI-S, Clinician Global Impression Scale (Severity); CPQ, Clinical Perfectionism Questionnaire; DOCS, Dimensional Obsessive-Compulsive Scale; DPSS-R, Disgust Propensity and Sensitivity Scale; PHQ-9, Patient Health Questionnaire (9-item); YBOCS, Yale-Brown Obsessive Compulsive Scale.

*$p < .05$.

This may be because individuals taking medication for their OCD symptoms prefer this treatment approach over psychological treatment approaches, and thus do not wish to invest their time in completing the alternative treatment. Alternatively, participants who were taking medication may have experienced symptom remission during the treatment as a result of the adjunctive treatment, and thus withdrew from the psychological treatment. Previous research has indicated that approximately half of patients with OCD prefer medication over exposure and response prevention and that those who prefer pharmacological treatment are more likely to have a history of OCD treatment, as well as have a higher income and private insurance (Patel et al., 2017). Antidepressant use has also been related to non-commencement of CBT interventions, but not non-completion of treatment, in other disorders (Wu et al., 2022). It is important for future research to examine the relationship between medication use and treatment non-completion in future ICBT studies.

Non-completion of study questionnaires was associated with pre-treatment DOCS contamination, depression severity, and conscientiousness, and these three variables explained approximately 13% in the variance in the odds of questionnaire completion. Specifically, those with higher baseline DOCS contamination scores and baseline conscientiousness were more likely to complete the post-treatment questionnaires. It is unclear why those with higher contamination symptoms are more likely to complete the questionnaires; however, of the four OCD subtypes, those with higher contamination symptoms at baseline are more likely to have higher symptoms at post-treatment and 3-month follow up (Wootton, Karin, Melkonian, et al., 2024). Potentially these participants wanted to ensure they provided feedback on their improvement (or lack thereof) and thus were more inclined to complete the questionnaires over the other OCD subtypes. Those with higher baseline depression severity were also less likely to complete the post-treatment questionnaires. This is potentially due to the high levels of fatigue and lack of energy that is characteristic of individuals with depressive symptoms (Malhi & Mann, 2018). Finally, those with higher levels of conscientiousness were more likely to complete the questionnaires at post-treatment. This is consistent with other research that demonstrates that those with high levels of conscientiousness are more likely to adhere to various interventions/treatments (Carvalho et al., 2020; Molloy et al., 2014; Wall et al., 2020).

There were no significant predictors of treatment commencement in this study. This may be because of the small number of participants who did not commence the treatment in this sample (11%; $n = 27$) and thus there may not have been enough statistical power to identify relevant predictors. Other studies have found that some variables can predict the non-commencement of ICBT/CBT interventions including participants who identify as female, those with financial difficulties, those who identify as a minority, those with lower educational levels, increased number of health and psychological comorbidities at baseline, adjunct antidepressant use, and having to wait longer to commence the intervention (Rotondi et al., 2024; Wu et al., 2022). Thus, it is important for future research to examine this research question in patients who enrol in ICBT for OCD interventions.

The study provides important preliminary information on the factors that may predict dropout in patients commencing a self-guided ICBT intervention for OCD. This is the first study to examine predictors of dropout in this way and adds to the growing body of literature that aims to understand treatment dropout in OCD and related disorders. While this study provides important preliminary data to enhance our understanding of dropout in ICBT for OCD, there are some limitations that should be discussed. First, because this study was the first to examine predictors of dropout in ICBT for OCD, a large number of potential predictors were explored. Due to the preliminary nature of the study, predictors were not determined *apriori* and no adjustments were made to significance levels. As the field grows, it will be important for research to replicate these findings and use appropriate corrections to understand statistical significance of the variables. It is also unclear whether similar or different factors may be important in understanding drop-out in clinician-guided ICBT, where clinicians are often involved in the initial screening of participants and then are available to support patients through treatment. It is possible that different factors are associated with drop-out in these two models of delivery, and this is an important direction for future research.

Second, despite the large number of predictors investigated in this study, there may be other unstudied predictors that may have a more meaningful contribution to dropout. For example, there are other variables

that were not examined in this study, such as comorbid personality disorder, which has shown to predict dropout in other studies (Jones et al., 2024) and may be relevant in understanding dropout in future studies. Similarly, past treatment in this study was only assessed at post-treatment, thus was not able to be used as a predictor for those who dropped out early or who did not commence the intervention. Given this variable appears to be related to treatment outcome in ICBT intervention studies (Wheaton et al., 2021; Wootton, Karin, Melkonian, et al., 2024; Wootton, McDonald, Karin, et al., 2024; Wootton, McDonald, Melkonian, et al., 2024), it is also possible that it is relevant to early study dropout.

In summary, this study examined potential predictors of dropout of participants who enrolled to commence a self-guided ICBT intervention for OCD. Early dropout was predicted by the country of the participant as well as shorter symptom duration. Medication use predicted non-completion of the intervention with those who are taking medication for their symptoms being less likely to complete the treatment. Completion of the post-treatment questionnaires was predicted by higher contamination symptoms, lower depressive symptoms and higher pre-treatment conscientiousness. There were no significant predictors of treatment commencement. Overall, despite the large number of predictors included in the analyses, few emerged as consistent predictors of dropout. Those that did explained little variance in the odds of dropout. This is the first study to examine predictors of dropout in ICBT for OCD and future research should aim to replicate and extend these results by examining other potential predictors of outcome in order to inform best-practice treatment approaches for OCD.

AUTHOR CONTRIBUTIONS

Bethany M. Wootton: Conceptualization; funding acquisition; writing – original draft; methodology; validation; visualization; software; formal analysis; project administration; data curation; supervision; investigation; resources. **Maral Melkonian:** Writing – review and editing; project administration; investigation. **Sarah McDonald:** Investigation; writing – review and editing; project administration. **Eyal Karin:** Writing – review and editing; conceptualization. **Nickolai Titov:** Conceptualization; supervision; writing – review and editing. **Blake F. Dear:** Conceptualization; supervision; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors report there are no competing interests to declare.

DATA AVAILABILITY STATEMENT

The data of the present study are available upon request from the corresponding author.

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