Binge-eating disorder in the Arabic world and the Netherlands, assessment, etiology, efficacy, effectiveness and economic evaluation of psychological interventions

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Chapter 8 Efficacy Web- based Guided Self-help Cognitive Behavioral Therapy- Enhanced for Binge- Eating Disorder: a Randomized Controlled Trial

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Abstract

Background: Owing to the gap between treatment supply and demand, there are long waiting periods for patients with binge eating disorder, and there is an urgent need to increase their access to specialized treatment. Guided self-help cognitive behavioral therapy–enhanced (CBT-E) may have great advantages for patients if its efficacy can be established.

Objective: The aim of this study is to examine the efficacy of guided self-help CBT-E compared with that of a delayed-treatment control condition.

Methods: A single-blind 2-arm randomized controlled trial was designed to evaluate guided self-help CBT-E according to an intention-to-treat analysis. A total of 180 patients were randomly assigned to guided self-help CBT-E (n=90) or the delayed-treatment control condition (n=90) for which guided self-help CBT-E was provided after the initial 12-week delay. The primary outcome was reduction in binges. The secondary outcome was full recovery at the end of treatment, as measured using the Eating Disorder Examination during the last 4 weeks of treatment. A linear mixed model analysis was performed to compare treatment outcomes at the end of treatment. A second linear mixed model analysis was performed to measure between- and within-group effects for up to 24 weeks of follow-up. The Eating Disorder Examination–Questionnaire and clinical impairment assessment were conducted before and after treatment and during follow-up. In addition, dropout rates were assessed in both conditions.

Results: During the last 4 weeks of treatment, objective binges reduced from an average of 19 (16) to 3 (5) binges, and 40% (36/90) showed full recovery in the guided self-help CBT-E group. Between-group effect size (Cohen *d*) was 1.0 for objective binges. At follow-up, after both groups received treatment, there was no longer a difference between groups. Of the 180 participants, 142 (78.9%) completed treatment. Overall treatment dropout appeared to be

associated with gender, level of education, and number of objective binges at baseline but not with treatment condition.

Conclusions: This is the first study to investigate the efficacy of guided self-help CBT-E. Guided self-help CBT-E appeared to be an efficacious treatment. This study's findings underscore the international guidelines recommending this type of treatment for binge eating disorder.

Trial registration: The study protocol is registered with the Netherlands Trial Registry NTR (NTR 7994) since 6 September 2019.

Ethics: Study approval was given in August 2019 by the Medical Research Ethics Committees United (MEC-U) (referencenumber NL 6958.100.19) in Nieuwegein, the Netherlands

Keywords: Randomized Controlled Trial; Binge- eating disorder; Guided self-help; Cognitive Behavioral Therapy-Enhanced

Background

Binge- eating disorder (BED), recently included in the DSM 5, is characterized by recurrent episodes of binge eating. The binges are accompanied by a sense of lack of control and feelings of shame, guilt and disgust. However, the binges are not followed by inadequate compensatory behavior (APA, 2013; Mustelin et al., 2016). BED is the most common eating disorder and has an estimated life-time prevalence of 2% (Keski-Rahkonen & Mustelin, 2016), and up to 30% among people with excess weight (Van der Horst et al., 2019). BED has a significant impact on psychosocial functioning, affecting the personal, social and cognitive domain of affected individuals (Bohn et al., 2008). Recently, the estimated prevalence of BED has increased, and patients seeking help display more severe symptoms, which is possibly related to the Covid-19 pandemic (Termorshuizen et al., 2020). Around 33-48% of the patients reported increased eating disorder symptomatology (Accurso et al., 2015; Fernández-Aranda et al., 2020). Potential reasons for this increase during the pandemic are social isolation, and decreased social support (Niu & Xu, 2020). Other potential reasons include increased stress, restricted access to health care, and food insecurity (Murphy et al., 2020). Finally, increased social media exposure resulted in increased exposure to the thin ideal (Sabik, 2020), and an uptick in phat-phobic messages which leads to dieting behavior (Murphy et al., 2020) and therefore an increase in binges (Fairburn, 2008).

Cognitive behavioral therapy-enhanced (CBT-E) is a recommended treatment for BED (Cooper & Fairburn, 2011; Fairburn, 2008; Fairburn et al., 2003) and has remission rates of 50-68% in efficacy trials (Fairburn et al., 2015; Fairburn et al., 2009). International guidelines recommend guided self-help based on cognitive behavioral principles for BED (ANZAED, 2014; LSMR, 2017; NICE, 2017). Only a few studies have examined the efficacy of guided self-help interventions for patients with BED. Guided self-help studies based on regular CBT report abstinence of binge eating after treatment among 46% of the participants, and a

sizeable reduction in eating disorder pathology of a medium effect size (Carrard et al., 2011; Hilbert et al., 2019). However, the efficacy of web- based guided self-help CBT-E has not yet been investigated.

Owing to the lack of specialized therapists in the Netherlands, as in many parts of the world, there is a gap between treatment supply and demand (Melisse et al., 2020), resulting in long waiting periods for patients with BED. Therefore, there is an urgent need to increase access to treatment (Abrahamsson et al., 2018). This situation worsened during the Covid-19 pandemic, when waiting times for treatment increased further and access to care decreased (Devoe et al., 2022). A remotely offered guided self-help version of CBT-E has the potential to offer treatment with reduced therapist involvement (Crow et al., 2013). This in turn will enhance treatment availability and thus potentially reduce waiting-time before treatment can commence, because long waiting times are unfavorable and associated with a negative treatment outcome (Carter, 2012).

Guided self-help CBT-E has advantages for the patient, such as the removal of geographical barriers, reduced travel costs and time, as communication with the therapist is enabled regardless of location (Abrahamsson et al., 2018; Becker et al., 2010; Evans et al., 2011; Linardon et al., 2021).However, there are, potentially some disadvantages too, such as higher attrition rates, less adherence, and a less credible image in both patients and therapists (Nordgreen et al., 2010; Titov et al., 2008; Waller & Gilbody, 2009).

The aim of this study was to examine the efficacy of guided self-help CBT-E compared with that of a delayed-treatment control condition through a randomized controlled trial (RCT) in patients with BED. The primary outcome is reduction in binge eating episodes, and the secondary outcome is the full recovery rate after treatment, as measured during the last 4 weeks of treatment. Web-based, guided self-help CBT-E is hypothesized to be superior to the control condition in reducing binge eating episodes and achieving full recovery. Follow-up

measures will be conducted to measure the persistence of treatment benefits. It is hypothesized that treatment gains persist during the 12-week and 24-week follow-up and that there will be no differences between the groups after both groups received treatment.

2. Methods

2.1 Trial design

A superiority RCT to examine the efficacy of web- based guided self-help CBT-E at end-of-treatment (EOT) among patients with BED or other specified feeding or eating disorder (OSFED)-BED. Parallel groups were randomly assigned to one of two conditions: (i) guided self-help CBT-E (N = 89) or to (ii) a delayed treatment control condition (N = 91), in which guided self-help CBT-E was offered after a waiting period of 12 weeks. The assessors were blinded to the randomization. In addition, allocation was balanced (1:1), and randomization was stratified for body mass index (BMI) below 29.9 or above 30. The guided self-help CBT-E group was assessed at baseline (T0: week 0), week 5 (T1: intermediate evaluation of treatment), week 12 (T2: post-treatment), week 24 (T3: 12 weeks follow-up), and week 36 (T4: 24 weeks follow-up). The delayed treatment control group was assessed at baseline (T0: week 0), week 5 (T1: during waiting time), week 12 (T2: start of delayed treatment), week 24 (T3: post-treatment), and week 36 (T4: 12 weeks follow-up). The study was performed in line with the updated CONSORT guidelines for reporting parallel group randomized trials (Schulz et al., 2010).

2.2 Participants

Eligible patients were aged 18 or over, with a DSM-5 BED or OSFED-BED diagnosis (APA, 2013) and had a BMI between 19.5 and 40, since CBT-E was explicitly designed for non-underweight patients with a BMI up to 40 (Fairburn, 2008). Sufficient proficiency in Dutch and internet access were required. Exclusion criteria were eating disorders other than BED or OSFED-BED, acute psychosis, clinical depression and/or suicidal ideation, having received eating disorder treatment in the past six months, being pregnant, and use of medication that might influence eating behavior. For example mirtazapine, olanzapine, clozapine, quetiapine, trazodone, and lithium increase appetite, while medications including methylphenidate, dexamphetamine decrease appetite (2022). The Dutch version of the semi-structured interview SCID-5-CV, assessing DSM-5 diagnoses (APA, 2013; First et al., 2016) was employed to establish the presence of diagnostic exclusion criteria. The interview sections for mood disorders and psychotic disorders were administered. The study was conducted at Novarum, the Dutch eating disorders and obesity department of Arkin, a large mental health care provider in Amsterdam. All eligible potential participants received verbal and written study information during an advisory session, including an informed consent description, explaining the research goals and information about participation. After patients provided informed consent, a baseline assessment (T0) was scheduled. Recruitment took place between September 2019 and October 2020. Diagnostic interviews were held in-person until March 15, 2020, after which, due to the Covid 19 social distancing measures, all interviews were held through videoconferencing.

2.3. Intervention

Treatment was offered by therapists with various backgrounds and educational levels (Bachelors degree for dieticians and nurse practitioners; Masters and post-doctoral degree for psychologists). All therapists successfully completed a web-based CBT-E training provided

by the Centre for Research on Eating Disorders at Oxford, United Kingdom. They first familiarized themselves with the detailed CBT-E manual and the guided self-help CBT-E manual (Fairburn, 2008). They also attended a two-day workshop provided by authors BM and MdeJ. To ensure treatment adherence, all therapists attended weekly 45 minutes supervision sessions with BM, and rated their level of adherence after each session on a scale ranging from "not at all" (0) to "excellent" (5). Self-rated therapist adherence was very good, with 94.7% of all sessions obtaining the maximum score of excellent adherence.

2.3.1 Guided self-help CBT-E condition

Guided self-help CBT-E started in the same week as the baseline assessment. Before commencing treatment, patients were required to read the psycho-educational section of the Dutch version of *Overcoming Binge Eating, The Proven Program to Learn Why You Binge and How You Can Stop.* Guided self-help CBT-E is a translated and digitalized version of Part Two of the self-help book *Overcoming Binge Eating* (Fairburn, 2013). The intervention included psychoeducation, daily assignments and two self-evaluations each week. When patients did not complete their daily assignments, they received reminders. Patients uploaded their assignments in the web- based therapy environment. Therapists were able to track when the patients logged in, read the psychoeducational parts and started the assignments. Once patients completed their home work assignments the therapist received a notification. Subsequently, feedback on the assignments was given by the therapists during a weekly telephone session of 20 minutes. In the telephone session, completed assignments were discussed, as well as upcoming assignments and compliance to treatment. The sessions were scripted in accordance with the treatment manual as developed by EvdB and BM, and offered by therapists through the telephone.

Like CBT-E guided self-help CBT-E consisted of four phases; the first stage focused on establishing regular eating and alternatives for binge-eating, using real-time self-monitoring as central intervention, and events, moods and eating. After joint review of progress & designing rest of treatment in the second stage, based on the patients reported symptoms and maintaining mechanisms of their BED, the third stage focused on either dietary restraint or shape concern and finally ending well with a firm focus on minimizing the risk of relapse in the long term.

2.3.2 Delayed treatment control condition

Participants assigned to the delayed treatment control condition started guided self-help CBT-E 12 weeks after baseline. Thus, their treatment started after a waiting period with the same duration as the intervention. Similar to the experimental condition, patients randomized to the control condition were advised to read the psycho-educational section of *Overcoming Binge Eating, The Proven Program to Learn Why You Binge and How You Can Stop* (Fairburn, 2013) prior to commencing treatment. This was recommended to bridge the 12-week waiting period and keep them involved and enrolled with the study. However, these patients did not receive any treatment assignments during this period and did not have access to the web-based treatment environment. Participants were called once after six weeks for a short conversation, 10 minutes at most: checking on the eating disorder symptoms and other important areas of life, and answering questions about the recommended reading assignment.

2.4 Outcomes

The primary outcome indicator was reduction of binge eating at T2. Binge eating was measured during the last 28 days with the Dutch Eating Disorder Examination (EDE), a

validated expert interview. Secondary outcome indicator was full recovery at T2 which was defined as an EDE global score <1.77 as well as abstinence from binge eating during the last 28 days (Turner et al., 2015). The cut-off on the EDE global score of <1.77 was based on the community mean plus one standard deviation (Cooper et al., 1989; Jansen et al., 2000). Other outcome measures were reliable change index (RCI) and clinical significant change (CSC) (Jacobson & Truax, 1991; Moore et al., 2021). RCI was established as RCI= 0.54 on the EDE global score and CSC was defined as EDE global score < 1.77 as well as a pre-to-posttest change > RCI (Cooper et al., 1989; Jacobson & Truax, 1991). Outcome measures on self-report data were reduction of binge eating during the last four weeks measured at T2, T3, and T4 with the Dutch version of the Eating Disorder Examination-Questionnaire (EDE-Q), a validated self-report questionnaire (Aardoom et al., 2012; Fairburn & Beglin, 2008). Full recovery was defined as EDE-Q global score under 2.77 (based on the community mean plus one standard deviation) combined with the absence of binges as described in Turner, 2015 (Calugi et al., 2017; Dalle Grave et al., 2015; Turner et al., 2015). Cutoff on the EDE-Q was 2.77 and RCI was 0.63 on the EDE-Q global score, together they defined CSC (Fairburn & Beglin, 2008; Jacobson & Truax, 1991). Last outcome measure was reduction of secondary impairment due to eating disorder behavior during the last 28 days, as measured by the Clinical Impairment Assessment (CIA) (Bohn et al., 2008). Interview data (EDE) were collected at baseline and after conclusion of guided self-help CBT-E of the experimental group (T0 and T2). Data from self-report measures (EDE-Q, CIA) were collected at T0, T2, and at T3 and T4. In addition, the EDE-Q was also completed at T1, five weeks after treatment commenced, in order to evaluate treatment progression between patient and therapist. Interviews were held by phone, self-report measures were administered on the web All assessments were processed in Castor EDC (CASTOR & EDC) ISO 27001/27002/9001 and NEN 7510 certified.

2.5 Sample size estimation

Based on other self-help interventions, a decrease of 46% in binge eating behavior was expected over time (Hilbert et al., 2019). Expected effect size was Cohen's $d = 0.47$ between the experimental and control condition (Cohen, 1977; Hilbert et al., 2019). For sufficient power ($\beta = 0.8$), the required sample size was $N = 144$ ($n = 72$ per arm). As 20% drop-out was estimated (Hilbert et al., 2019), more participants were included: $N = 180$ ($n = 90$ per arm) resulting in $n = 72$ expected completers, yielding a power of $\beta = 0.8$, with an effect size of $d = 0.47$, at $\alpha = 0.05$ (2-sided). Sample size was calculated using *R* package 'pwr' (Champely, 2020).

2.6 Randomization and blinding

Randomizations were performed by administrative staff members of another department in Castor EDC (CASTOR & EDC) by a 4, 6, 8 block design. Assessors were research assistants with a Master degree in psychology who were blinded to the allocated treatment condition, as were the staff members performing randomizations. In addition, when offering treatment therapists were not aware whether patients previously had been allocated to the experimental or control condition.

2.7 Statistical analysis

Baseline differences: Significance of baseline differences between groups were examined with chi-square tests or ANOVA.

Treatment adherence: Regression analyses were conducted to assess if baseline scores (number of objective binges, eating disorder severity, and BMI) and demographics (age, gender, level of education, profession, country of birth) predicted treatment completion.

2x2 design: Primary outcome was treatment effects based on interview data (EDE) with regard to reduction in binge eating episodes and full recovery at post-test between the experimental and delayed treatment control group, which were compared after 12 weeks, when the experimental group had concluded treatment (T2). Since patients were initially supposed the be nested within their BMI group as described in the protocol (Melisse, Berg, et al., 2021), for the primary outcome measures a 2x2 design was employed using a generalized linear mixed model analysis (Field et al., 2012), with group as between subjects factor and time of assessment as the within factor at the primary endpoint. Since full recovery was a binary variable, a negative binomial model with log link was used.

2x5 design: Self-report data (EDE-Q and CIA) were analyzed with a 2x5 generalized linear mixed model analysis (Field et al., 2012), with group as between subjects factor and time of assessment as the within factor, which also measured persistence of treatment benefits after EOT. For full recovery (binary variable), a negative binomial model with log link was used.

Effect sizes: Effect sizes for both designs were calculated between and within groups using Cohen's *d* (0.2 small, 0.5 medium, 0.8 large) (Cohen, 1977).

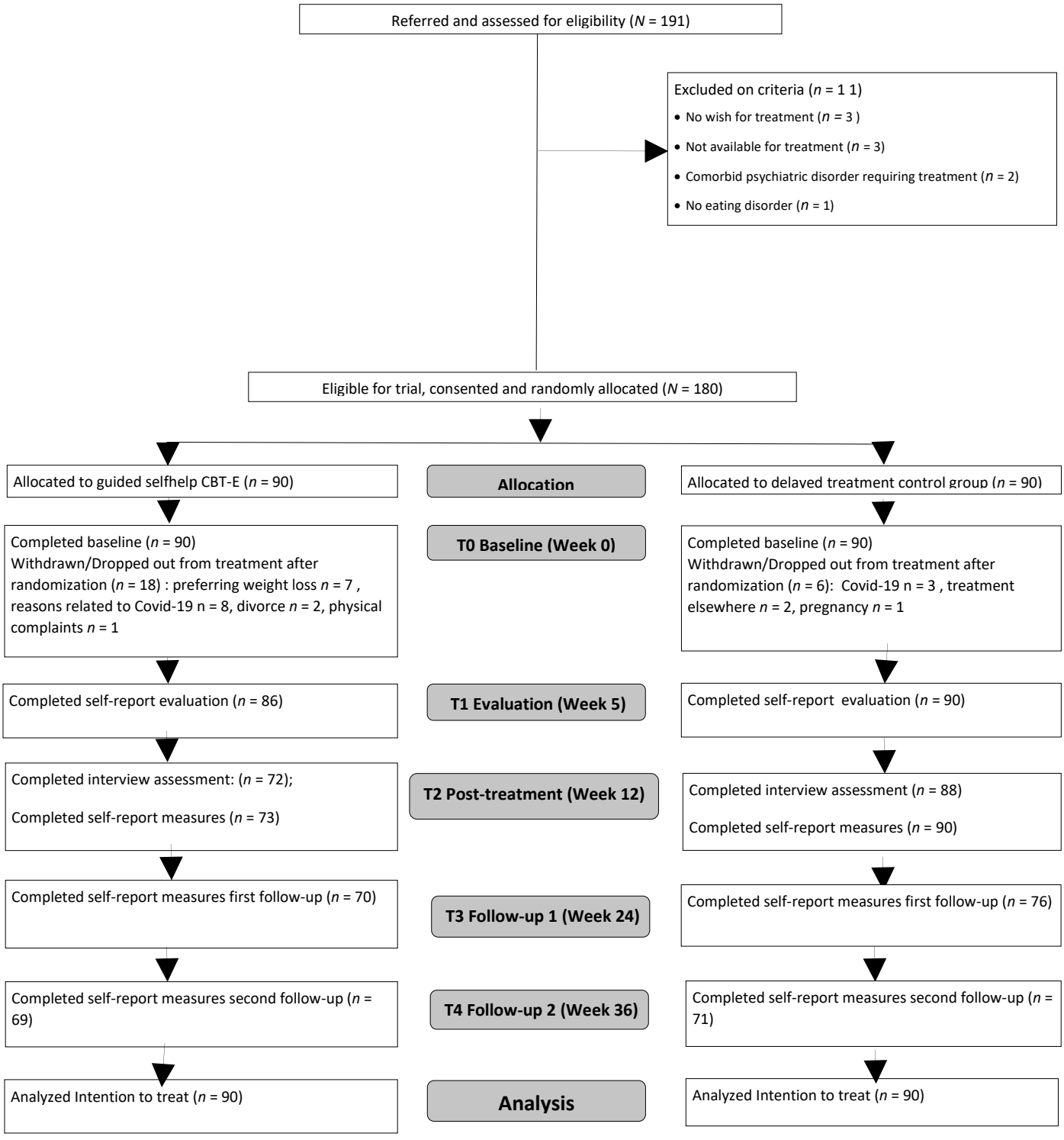
Imputation and software: Analyses were performed according to an intention-to-treat (ITT) approach (imputed dataset with 25 imputations for each missing observation) (Rubin, 2004). Imputations were performed with the multiple imputation by chained equations, using predictive mean matching combining 25 imputations in R package 'mice' (Van Buuren, 2011). All other statistical analyses were performed with SPSS version 25 and 28.

Results

3.1 Patient flow

Potential participants (N=191) were recruited between September 2019 and October 2020. In total, 180 patients were randomized, excluding 11 who did not meet the inclusion criteria or met the exclusion criteria; 176 were diagnosed with BED of which 4 had a history of bariatric surgery, had smaller binges, and were therefore diagnosed with OSFED-BED. The CONSORT flow diagram (Figure 1) shows participant enrollment and flow throughout the study, and Table 1 summarizes participant characteristics at baseline. The treatment conditions were comparable; there were no significant differences between the 2 conditions ($P>.05$). One patient withdrew before the baseline assessment was completed. Last therapy concluded in April 2021, and last follow-up data were completed in August 2021. No serious adverse events occurred during the trial.

Figure 1 Flowchart of patients in study



T0 assessment week 0, *T2* assessment week 12, *T3* assessment week 24, *T4* assessment week 36

Table 1 Patient characteristics at baseline.

	Total sample $N = 180$	Experimental condition $n = 90$	Delayed treatment control group $n = 90$	p
Age, mean (SD)	39.4 (13.1)	39.2 (13.6)	40.6 (13.5)	.762
Baseline BMI, mean (SD)	33.4 (5.3)	34.0 (5.6)	32.9 (5.0)	.514
Gender, *n* (%)				.547
Women	163 (90.6%)	82 (95.1%)	81 (92.6%)	
Men	17 (9.4%)	7 (8.2%)	10 (12.3%)	
Highest level of education, *n* (%)				.605
No education	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Primary school	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Lower vocational eduction	5 (2.8%)	4 (4.9%)	1 (1.2%)	
Lower general secondary education	7 (3.9%)	5 (6.6%)	2 (2.5%)	
Senior general seondary education/ university prepatory education	15 (8.3%)	5 (6.6%)	10 (12.3%)	
Secondary vocational education	51 (28.3%)	23 (26.2%)	27 (29.6%)	
Higher professional education	63 (35.0%)	33 (37.7%)	30 (34.6%)	
University	35 (21.1%)	16 (19.0%)	19 (21.0%)	
Unknown	1 (0.6%)	0 (0.0%)	1 (1.2%)	
Profession, *n* (%)				.051
Student	19 (10.6%)	9 (9.8%)	10 (12.3%)	
Employed	120 (66.7%)	55 (63.9%)	65 (74.1%)	
Volunteer job	6 (3.3%)	4 (4.9%)	2 (2.5%)	
Unemployed	12 (6.7%)	1 (1.6%)	8 (8.6%)	
Other	23 (12.8%)	17 (19.7%)	6 (6.2%)	
Civil status, *n* (%)				.985
Single	101 (56.6%)	45 (50.8%)	48 (53.1%)	
Registered partnership	12 (6.7%)	6 (8.2%)	6 (7.4%)	
Married	56 (31.1%)	31 (34.4%)	29 (32.1%)	
Divorced	11 (6.1%)	5 (6.6%)	6 (7.4%)	
Duration of eating disorder (years), mean (SD)	25.04 (4.15)	23.07 (3.85)	26.23 (4.36)	.373
Eating disorder treatment in the past, *n* (%)				.490
Yes	30 (16.7%)	14 (16.4%)	19 (21.0%)	
No	150 (83.3%)	74 (83.6%)	71 (79.0%)	
Comorbid diagnosis, *n* (%)				.769
No	77 (42.2%)	33 (37.7%)	44 (44.4%)	
I don't know	25 (13.9%)	14 (18.0%)	11 (13.9%)	
Mood disorder	24 (13.3%)	10 (11.5%)	14 (16.0%)	
Anxiety disorder	11 (6.1%)	7 (9.8%)	4 (4.9%)	

Attention deficit (hyperactive) disorder	11 (6.1%)	5 (6.6%)	6 (7.4%)	
Post traumatic stress disorder	6 (3.3%)	5 (6.6%)	1 (1.2%)	
Personality disorder	11 (6.1%)	9 (9.8%)	2 (2.5%)	
Autism	6 (3.3%)	6 (8.2%)	0 (0.0%)	
Other	15 (8.3%)	6 (8.2%)	9 (11.1%)	
Use of medication, *n* (%)				
Yes	45 (25.6%)	23 (27.9%)	22 (25.9%)	.588
No	134 (74.4%)	64 (72.1%)	67 (74.1%)	
Eating disorder pathology (EDE), *M* (SD)				
Total score	3.03 (0.9)	3.4 (1.0)	3.0 (0.9)	.492
Dietary restraint	2.2 (1.2)	2.9 (1.1)	2.0 (1.3)	.088
Eating concern	2.5 (1.3)	3.5 (1.3)	2.3 (1.2)	.596
Weight concern	3.6 (1.1)	3.6 (1.1)	3.6 (1.1)	.849
Shape concern	3.8 (1.2)	3.8 (1.3)	3.8 (1.1)	.672
Eating disorder pathology (EDE-Q total score), *M* (SD)	3.5 (1.0)	3.9 (1.0)	3.5 (1.0)	.476
Binge eating (EDE), *M* (SD)				
Objective episodes	17.9 (14.5)	19.4 (16.3)	16.0 (13.8)	.398
Subjective episodes	14.5 (20.2)	17.8 (25.6)	14.7 (17.9)	.108
Days with objective episodes	14.3 (8.8)	15.46 (8.8)	12.9 (8.1)	.314
Days with subjective episodes	9.4 (10.2)	11.1 (11.3)	9.7 (10.1)	.113
Secondary pathology (CIA), *M* (SD)				
Total score	22.3(8.6)	23.21 (8.4)	22.0 (8.2)	.579
Personal	13.2 (4.2)	13.63 (3.7)	13.3 (4.0)	.498
Social	4.8 (2.7)	5.01 (2.6)	4.6 (2.8)	.719
Cognitive	4.3 (3.4)	4.55 (3.8)	4.7 (3.2)	.362

BMI body mass index, *CIA* clinical impairment assessment, *EDE* eating disorder examination, *EDE-Q* eating disorder examination- questionnaire, *M* mean, *SD* standard deviation

3.2 Treatment adherence

Participants were considered completers once they attended 11 sessions. Of the participants who started treatment (N=180), 142 completed at least 11 sessions (overall completion rate: 142/180, 78.9%; experimental condition: 69/90, 77.5%; control condition: 73/90, 80.2%). As only 10.7% (19/180) of the participants had a BMI <30 kg/m^2, no subgroup analyses based on stratification below and above BMI 30 kg/m^2 were performed. Treatment dropout was higher among men (χ^2_1=7.6, *P*=.011), less-educated patients (χ^2_5=18.8, *P*=.005), and patients who displayed a greater number of objective binges at the start (*t*=49.90, *P*=.023). Treatment completion was not predicted by treatment condition (*P*=.541), age (*P*=.507), profession (*P*=.451), marital status (*P*=.179), eating disorder treatment in the past (*P*=.268), medication use (*P*=.474), BMI (*P*=.638), EDE restraint (*P*=.733), EDE eating (*P*=.375), EDE weight concern (*P*=.282), EDE shape concern (*P*=.189), and EDE global score (*P*=.213). Study dropout among participants who completed treatment was 2.8% (5/180, 3 patients (3/180, 1.7%) did not complete the follow-up measures at T3 weeks and T4 weeks, and for 2 additional patients (2/180, 2.8%), no assessments at T4 were available.

3.3 Outcomes

3.3.1 Binges

Table 2 shows that at EOT, as measured by the EDE, the guided self-help group had 3 objective binges during the last 28 days and the delayed-treatment group had 13 binges during the last 28 days of their wait time. At T2, in total, 48% (42/90) of the participants assigned to the guided self-help CBT-E showed abstinence of binge eating during the last 4 weeks. A 2×2 generalized linear mixed model analysis with fixed effects showed differences between the experimental and control groups at T2. There was an interaction effect between time and treatment condition ($F_{2,178}$=18.55, *P*<.001). Comparable results were found for subjective

binges ($F_{2,178}$=10.08, P<.001). When the same analysis was repeated for objective binges as measured by the EDE-Q, a 2×5 generalized linear mixed model analysis with fixed effects showed an interaction effect between time and treatment condition ($F_{7,173}$=108.82, P<.001). However, the difference disappeared when both groups received treatment at T3 (P=.587) and T4 (P=.690). Results from both analyses indicated that objective binges reduced faster in the guided self-help group than in the delayed-treatment group. Assessments at T3 and T4 showed persistence of treatment benefits for patients of the experimental condition. There were no differences between the ITT and the completers sample.

3.3.2 Full recovery

As measured by the EDE, at EOT, full recovery was achieved in 40% (36/90) during the last 28 days in the guided self-help group and 6.7% (6/90) fully recovered during the last 28 days of their wait time (Table 3). Clinical significant change was achieved by 56% (50/90) and 7% (35/90) in the experimental and control conditions, respectively. An interaction effect between time and treatment condition at T2 ($F_{2,178}$=7.90, P=.006) was found in a 2×2 generalized linear mixed model analysis with fixed effects. This indicated greater recovery based on the EDE in the guided self-help CBT-E group than in the delayed-treatment group. A 2×5 analysis based on EDE-Q data showed an interaction effect between time and treatment condition ($F_{7,173}$=14.02, P<.001). This difference disappeared when both groups received treatment at T3 (P=.986) and T4 (P=.991). Both results indicate that the guided self-help group recovered faster than the delayed-treatment group.

Table 2 Changes in binge eating behaviors and EDE scores over the course of treatment assessed using intention to treat analysis with multiple imputations

	Guided self-help CBT-E (*n* = 90)					Delayed treatment control condition (*n* = 90)					Between groups at T2	
	T0 *M*(SD)	T2 *M*(SD)	*F*	Within groups T0-T2 EMD [95% CI]	Within groups T0-T2 Effect size, Cohens *d* [95% CI]	T0 *M*(SD)	T2 *M*(SD)	*F*	Within groups T0-T2 EMD [95% CI]	Within groups T0-T2 Effect size, Cohens *d* [95% CI]	EMD [95% CI]	Effect size, Cohens *d*
Number of objective binges	19.4 (16.3)	2.6 (5.2)	78.9*	-16.8 [-20.4--13.2]	1.4 [1.1-1.7]	16.0 (13.8)	13.1 (13.8)	4.3	-3.0 [-1.0-7.0]	0.2 [-0.1-0.5]	-10.4 [-13.6--7.3]	1.0
Days objective binges	15.5 (8.8)	2.2 (3.5)	121.7*	-13.3 [-15.2--11.3]	2.0 [1.6-2.3]	12.9 (8.1)	10.3 (8.1)	7.6	-2.6 [-5.0--0.3]	0.3 [0.0-0.6]	-8.1 [-9.9--6.2]	1.3
Number of subjective binges	17.8 (25.6)	4.7 (8.8)	13.7*	-13.1 [-18.8--7.4]	0.7 [0.4-1.0]	14.7 (17.9)	14.9 (24.1)	0.1	-0.8 [6.4-6.0]	0.0 [-0.3-0.3]	-10.3 [-15.6--4.9]	0.6
Days subjective binges	11.1 (11.3)	4.0 (5.9)	19.5*	-7.1 [-9.8--4.4]	0.8 [0.5-1.1]	9.7 (10.1)	9.9 (10.5)	0.0	0.0 [-3.1-3.0]	0.0 [-0.3-0.3]	-5.9 [-8.4--3.4]	0.7
EDE global score	3.4 (1.0)	1.7 (0.9)	125.8*	-1.7 [-2.0--1.4]	1.8 [1.4-2.1]	3.0 (0.9)	2.8 (0.9)	3.6	-0.2 [-0.1-0.4]	0.2 [-0.1-0.5]	-1.1 [-1.4--0.8]	1.2
EDE dietary restraint	2.9 (1.1)	0.7 (0.9)	106.0*	-2.2 [-2.5--1.9]	2.1 [1.7-2.5]	2.0 (1.3)	1.6 (1.2)	5.4	-0.4 [-0.8--0.0]	0.3 [0.0-0.6]	-0.9 [-1.2--0.5]	0.8

	Guided self-help CBT-E (*n* = 90)					Delayed treatment control condition (*n* = 90)					Between groups at T2		
	T0 *M*(SD)	T2 *M*(SD)	*F*	Within groups T0-T2 EMD [95% CI]	Within groups T0-T2 Effect size, Cohens *d* [95% CI]	T0 *M*(SD)	T2 *M*(SD)	*F*	Within groups T0-T2 EMD [95% CI]	Within groups T0-T2 Effect size, Cohens *d* [95% CI]	EMD	[95% CI]	Effect size, Cohens *d*
EDE eating concern	3.5 (1.3)	1.1 (1.0)	84.2*	-2.4 [-2.8--2.1]	2.1 [1.7-2.5]	2.3 (1.2)	2.3 (1.3)	0.1	0.1 [-0.4-0.4]	0.0 [-0.3-0.3]	- 1.2 [-1.6--0.9]		1.1
EDE shape concern	3.8 (1.3)	2.5 (1.2)	69.0*	-1.3 [-1.7--0.9]	1.0 [0.7-1.3]	3.8 (1.1)	3.8 (1.1)	0.5	-0.1 [-0.2-0.4]	0.0 [-0.2-0.6]	-1.3 [-1.6--0.9]		1.1
EDE weight concern	3.6 (1.1)	2.5 (1.2)	56.0*	-1.2 [-1.5--0.8]	1.0 [0.7-1.3]	3.6 (1.1)	3.5 (1.1)	0.6	-0.1 [-0.2-0.4]	0.1 [-0.2-0.6]	- 1.03 [-1.4--0.7]		0.9

* $p < .001$

** $p < .05$

CBT-E cognitive behavior therapy- enhanced, *EDE* eating disorder examination, *EMD* estimated mean difference, *CI* confidence interval, *M* mean, *SD* standard deviation, *T0* assessment week 0, *T2* assessment week 12

Table 3 Remission rates for the intention to treat sample

Guided self-help CBT-E (*n* = 90)		**T0**	**T2**	**T3**	**T4**
	Absence of objective binges (*n*, %)	5 (5.5%)	43 (47.8%)	*NA*	*NA*
	EDE global< 1.77 (*n*, %)	5 (5.5%)	56 (62.2%)	*NA*	*NA*
	Full recovery [1] (*n*, %)	0 (0.0%)	36 (40.0%)	*NA*	*NA*
	RCI (*n*, %)	*NA*	71 (78.9%)	*NA*	*NA*
	CSC [2] (*n*, %)	*NA*	51 (56.7%)	*NA*	*NA*
	Unchanged (*n*, %)	*NA*	5 (5.5%)	*NA*	*NA*
	Deteriorated (*n*, %)	*NA*	13 (14.8%)	*NA*	*NA*
	EDE restraint< 1.75 (*n*, %)	27 (30.0%)	74 (82.2%)	*NA*	*NA*
	EDE eating concern< 0.86 (*n*, %)	7 (7.8%)	49 (54.4%)	*NA*	*NA*
	EDE shape concern< 2.43 (*n*, %)	16 (17.7%)	48 (53.3%)	*NA*	*NA*
	EDE weight concern< 2.11 (*n*, %)	4 (4.4%)	36 (40.0%)	*NA*	*NA*
EDE-Q	Absence of objective binges (*n*, %)	0 (0.0%)	20 (22.2%)	42 (46.7%)	38 (42.2%)
	EDE-Q< 2.77 (*n*, %)	2 (2.2%)	71 (78.9%)	64 (71.1%)	58 (64.4%)
	Full recovery [3] (*n*, %)	0 (0.0%)	19 (21.1%)	35 (38.9%)	32 (35.6%)
	RCI (*n*, %)	*NA*	71 (78.9%)	70 (77.8%)	65 (72.2%)
	CSC [4] (*n*, %)	*NA*	59 (65.6%)	58 (64.4%)	51 (56.7%)
	Unchanged (*n*, %)	*NA*	6 (6.6%)	4 (4.9%)	13 (14.8%)
	Deteriorated (*n*, %)	*NA*	3 (3.3%)	6 (6.6%)	6 (6.6%)
CIA	CIA<16 (*n*, %)	22 (24.4%)	68 (75.6%)	65 (72.2%)	64 (71.1%)
Delayed treatment control group (*n* = 90)					
EDE	Absence of objective binges (*n*, %)	3 (3.3%)	9 (10.0%)	*NA*	*NA*
	EDE global< 1.77 (*n*, %)	10 (11.1%)	11 (12.2%)	*NA*	*NA*
	Full recovery [1] (*n*, %)	1 (1.1%)	6 (6.7%)	*NA*	*NA*
	RCI (*n*, %)	*NA*	21 (23.5%)	*NA*	*NA*
	CSC [2] (*n*, %)	*NA*	6 (6.7%)	*NA*	*NA*
	Unchanged (*n*, %)	*NA*	36 (40.0%)	*NA*	*NA*
	Deteriorated (*n*, %)	*NA*	11 (12.2%)	*NA*	*NA*
	EDE restraint< 1.75 (*n*, %)	37 (41.1%)	53 (58.0%)	*NA*	*NA*
	EDE eating concern< 0.86 (*n*, %)	7 (7.8%)	9 (10.0%)	*NA*	*NA*
	EDE shape concern< 2.43 (*n*, %)	9 (10.0%)	12 (13.3%)	*NA*	*NA*
	EDE weight concern< 2.11 (*n*, %)	8 (8.9%)	11 (12.2%)	*NA*	*NA*
EDE-Q	Absence of objective binges (*n*, %)	1 (1.1%)	7 (7.8%)	28 (31.1%)	28 (31.1%)
	EDE-Q< 2.77 (*n*, %)	20 (22.2%)	29 (32.2%)	69 (75.5%)	58 (64.2%)
	Full recovery [3] (*n*, %)	1 (1.1%)	3 (3.3%)	26 (28.9%)	25 (27.8%)
	RCI (*n*, %)	*NA*	28 (31.1%)	76 (84.4%)	61 (67.8%)
	CSC [4] (*n*, %)	*NA*	19 (21.1%)	65 (72.2%)	52 (57.8%)
	Unchanged (*n*, %)	*NA*	40 (44.4%)	10 (11.1%)	11 (12.2%)
	Deteriorated (*n*, %)	*NA*	6 (6.6%)	1 (1.1%)	6 (6.6%)
CIA	CIA<16 (*n*, %)	26 (28.9%)	27 (30.0%)	62 (68.9%)	63 (70.0%)

[1] Full recovery: EDE< 1.77, BMI> 18.5 and no binge eating,

[2] Clinical significant change combination of EDE< 1.77 and reliable change: reduction of 0.54 on the EDE global score

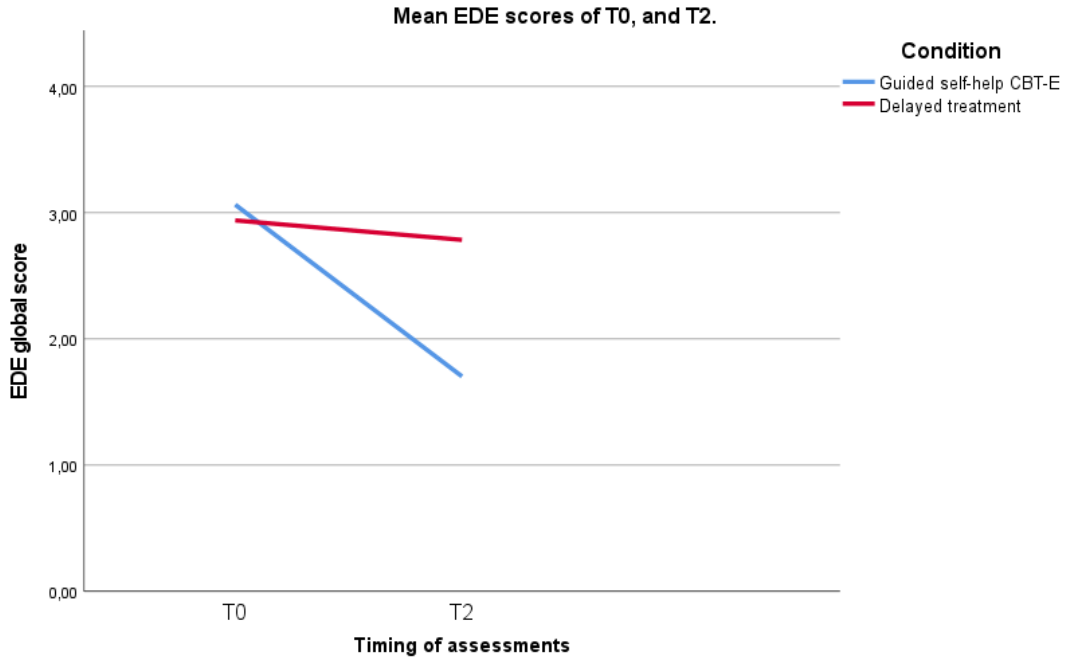
[3] Full recovery: EDE-Q< 2.77, BMI> 18.5 and no binge eating

[4] Clinical significant change: combination of EDE-Q< 2.77 and reliable change: reduction of 0.63 on the EDE-Q global score
CIA clinical impairment assessment, *CSC* clinical significant change, *CBT-E* cognitive behavior therapy – enhanced, *EDE* eating disorder examination , *EDE-Q* eating disorder examination-questionnaire, *NA* not applicable, *RCI* reliable change index, *T0* assessment week 0, *T2* assessment week 12, *T3* assessment week 24, *T4* assessment week 36

3.3.4 Global scores on eating disorder measures

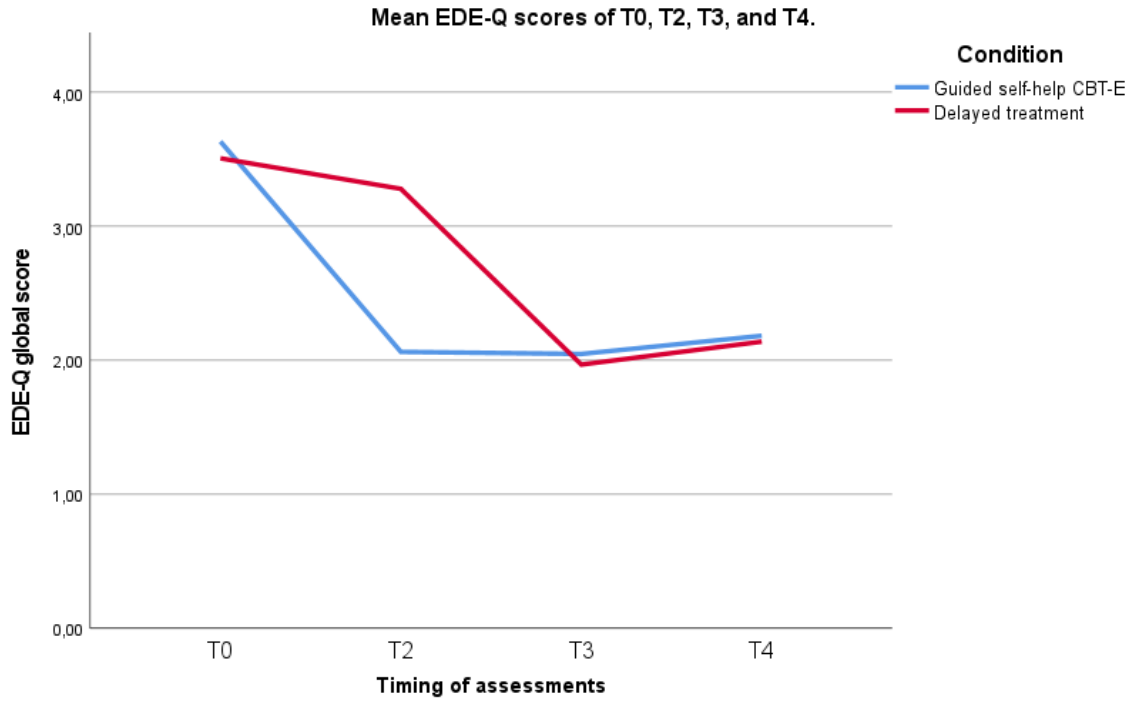
Figure 2 shows that a 2×2 generalized linear mixed model analysis with fixed effects showed differences in the EDE global score between the experimental and control group at T2. An interaction effect between time and treatment condition at T2 ($F_{2,178}$=73.50, P<.001) was found. This indicated that over time, patients in the guided self-help CBT-E condition had a greater reduction in their EDE scores than those in the control condition (Table 3). In addition, a 2×5 generalized linear mixed model analysis with fixed effects based on the EDE-Q global score showed an interaction effect between time and treatment condition ($F_{7,173}$=42.65, P<.001). This difference disappeared when both groups received treatment at T3 (P=.521) and T4 (P=.312). Assessments at T3 and T4 showed the persistence of treatment benefits for patients in the experimental condition. Figure 3 and Table 4 show that patients randomized to the delayed-treatment control condition remained stable in the experimental phase of the trial (for them, the waiting period) but showed a delayed treatment effect very similar to the guided self-help group, consistent with the delayed design: eating disorder pathology decreased at T3 in the control condition and benefits persisted until T4.

Figure 2 Mean EDE global scores of the intention to treat sample at T0, and T2



CBT-E cognitive behavior therapy – enhanced, *EDE* eating disorder examination, *T0* assessment week 0, *T2* assessment week 12

Figure 3 Mean EDE-Q scores of the intention to treat sample at T0, T1, T2, T3, and during T4



CBT-E cognitive behavior therapy – enhanced, *EDE-Q* eating disorder examination-questionnaire, assessment week 0, *T1* assessment week 5, *T2* assessment week 12, *T3* assessment week 24, *T4* assessment week 36

Table 4 Changes in binge eating behaviors, EDE-Q scores, BMI and secondary eating disorder pathology over the course of treatment and follow up assessed using intention to treat analysis with multiple imputations

							Within groups				Between groups			
	T0 *M*(SD)	**T1 *M* (SD)**	**T2 *M*(SD)**	**T3 *M*(SD)**	**T4 *M*(SD)**	***F***	**T0-T1 Effect size, Cohens *d***	**T0-T2 Effect size, Cohens *d***	**T0-T3 Effect size, Cohens *d***	**T0-T4 Effect size, Cohens *d***	**Effect size T1, Cohens *d***	**Effect size T2, Cohens *d***	**Effect size T3, Cohens *d***	**Effect size T4, Cohens *d***
Guided self-help CBT-E (*n* = 90)														
EDE-Q Objective binges	15.8 (11.8)	7.7 (7.3)	3.4 (3.7)	3.4 (4.9)	3.2 (4.7)	21.6*	0.8	1.4	1.4	1.4	0.4	1.2	0.0	0.2
EDE-Q global score	3.9 (1.0)	2.9 (0.9)	2.0 (1.0)	2.1 (1.2)	2.2 (1.3)	46.9*	1.0	1.9	1.7	1.5	0.5	1.3	0.1	0.1
BMI	34. (5.6)	34.4 (6.1)	35.4 (7.2)	33.9 (6.1)	33.9 (6.1)	0.8	0.1	-0.2	0.0	0.0	0.2	0.2	0.1	0.1
CIA total score	23.2 (8.4)	*NA*	12.0 (8.8)	11.3 (9.2)	12.1 (9.8)	45.0*	*NA*	1.3	1.4	1.2	*NA*	1.1	0.2	0.0
CIA personal	13.6 (3.7)	*NA*	7.7 (4.3)	7.1 (4.6)	7.9 (5.3)	37.4*	*NA*	1.5	1.5	1.3	*NA*	1.1	0.3	0.1
CIA social	5.0 (2.6)	*NA*	2.1 (2.3)	2.0 (2.5)	2.2 (2.7)	31.5*	*NA*	1.2	1.2	1.1	*NA*	0.9	0.1	0.0
CIA cognitive	4.6 (3.8)	*NA*	2.2 (3.0)	2.2 (1.3)	2.1 (2.8)	19.2*	*NA*	0.7	0.8	0.7	*NA*	0.8	0.1	0.1

Waitinglist (*n* = 90)	**T0 *M*(SD)**	**T1 M(SD)**	**T2 *M*(SD)**	**T3 *M*(SD)**	**T4 *M*(SD)**	***F***	**Within groups T0-T1 Effect size, Cohens *d***	**Within groups T0-T2 Effect size, Cohens *d***	**Within groups T0-T3 Effect size, Cohens *d***	**Within groups T0-T4 Effect size, Cohens *d***
EDE-Q Objective binges	14.6 (10.1)	11.6 (7.7)	10.6 (8.1)	3.3 (4.4)	4.6 (7.0)	38.2*	0.3	0.4	1.5	1.2
EDE-Q global score	3.5 (1.0)	3.4 (0.9)	3.3 (1.0)	2.0 (1.1)	2.1 (1.3)	87.6*	0.1	0.3	1.5	1.2
BMI	32.9 (5.0)	33.1 (7.2)	33.9 (8.8)	33.3 (4.9)	33.1 (4.9)	0.9	0.1	-0.2	-0.1	-0.1
CIA total score	22.0 (8.2)	*NA*	21.5 (8.6)	13.0 (8.1)	12.2 (9.9)	40.9*	*NA*	0.1	1.1	1.1
CIA personal	13.3 (4.0)	*NA*	12.6 (4.4)	8.2 (4.1)	7.6 (5.2)	45.4*	*NA*	0.2	1.3	1.2
CIA social	4.6 (2.8)	*NA*	4.3 (2.7)	2.3 (2.0)	2.3 (2.7)	23.4*	*NA*	0.1	1.0	0.9
CIA cognitive	4.1 (3.2)	*NA*	4.6 (3.3)	2.5 (2.9)	2.3 (3.1)	17.4*	*NA*	-0.2	0.5	0.6

* $p < .001$

** $p < .05$

BMI body mass index, *CIA* clinical impairment assessment, *EDE-Q* eating disorder examination- questionnaire, *M* mean, *SD* standard deviation

T0 assessment week 0, *T2* assessment week 12, *T3* assessment week 24, *T4* assessment week 36

3.3.5 Clinical impairment

On the basis of CIA scores, there was an interaction effect between time and treatment ($F_{7,173}$=90.36, P<.001). This indicated that over time, patients' CIA scores reduced faster in the guided self-help CBT-E condition than in the control condition. The difference disappeared at T3 (P=.976) and T4 (P=.909), when both groups received treatment.

3.3.6 Effect sizes

Table 2 shows large effect sizes between both conditions at T2 regarding objective binges (Cohen d=1.0-1.3) and EDE global score (Cohen d=1.2). Effect size was medium regarding subjective binges (Cohen d=0.6-0.7). Table 4 shows the effect sizes of the self-report measures.

Discussion

Principal Findings

The aim of this study was to examine the efficacy of guided self-help CBT-E compared with a delayed-treatment control group regarding reduction in objective binges. The efficacy of guided self-help CBT-E was demonstrated by its superiority in outcome over the delayed-treatment control condition at T2. On the basis of reduction in binge eating, a large effect size (Cohen d=1.0) was observed. Binge eating reduced from an average of 19 objective binges 28 days before assessment to 3 binges after completion of guided self-help CBT-E, compared with 16 to 13 binges in the control group. In the guided self-help condition, abstinence from binge eating at T2 was reported by 47.5% (43/90) of the participants according to the EDE interview.

Recovery rates for all other outcome measures were superior at T2 in the guided self-help condition than in the delayed-treatment control condition. In the guided self-help condition, 40% (36/90) of the participants showed full recovery according to the EDE interview, and eating disorder pathology score was below the clinical cutoff of 62.5% (56/90). Of them, 78.7% (71/90) reported an eating disorder pathology score below the clinical cutoff on self-report data. Follow-up data revealed no differences between the groups after both groups had received treatment. Treatment benefits persisted at T3 and T4 for the experimental condition and at T4 for the control condition. BMI did not change over the course of treatment, which can be interpreted as the prevention of weight gain.

Reduction of binges (Fairburn et al., 2015; Wade et al., 2017) and abstinence from binges rates (Dalle Grave et al., 2015; Fairburn et al., 2015; Poulsen et al., 2014; Wade et al., 2017) were comparable to in-person CBT-E at EOT and follow-up (Hilbert et al., 2019; Poulsen et al., 2014). However, current study had larger effect sizes with regard to reduction in binges compared to in-person CBT-E (Knott et al., 2015; Melisse, Dekker, et al., 2022). It should be noted that owing to a lack of studies focusing on the BED populations specifically, comparisons of this study results with in-person CBT-E could mostly be made with samples of transdiagnostic patients or bulimic patients. Moreover, the abstinence from binges rates in this study was comparable with other guided self-help interventions of regular CBT for BED at EOT and follow-up (Hilbert et al., 2019). Furthermore, within-group effect sizes were large in this study but medium in studies examining the efficacy of regular CBT for BED (Carter & Fairburn, 1998; Grilo et al., 2005; Hilbert et al., 2019). Therefore, with regard to reduction in binges, it can be concluded that guided self-help CBT-E could be as effective as in-person CBT-E and other guided self-help interventions based on regular CBT.

The proportion of patients with eating disorder pathology scoring below the cut-off on the eating disorder measures indicated that guided self-help CBT-E is at least as effective as

guided self-help interventions based on regular CBT (Hilbert et al., 2019; ter Huurne et al., 2015). Superiority based on the EDE in comparison with in-person CBT-E was inconclusive: Fairburn et al., (2015) showed greater remission, while efficacy in the studies by Poulsen et al, (2014) and Thompson-Brenner (2016) was equal, but efficacy was lower in Wonderlich et al., (2014). In contrast, our study showed that guided self-help CBT-E appeared to be at least as effective at EOT, based on EDE-Q data (Byrne et al., 2011; Dalle Grave et al., 2015; Knott et al., 2015; Signorini et al., 2018; Wade et al., 2017). Reliable change index and clinical significant change were larger in this study than in in-person CBT-E effectiveness studies (Berg et al., 2021; Melisse, Dekker, et al., 2022).

We found that the severity of binge eating, eating disorder pathology, and secondary impairment in our study were comparable with those of previous studies that included patients with BED and transdiagnostic samples (Dalle Grave et al., 2015; de Zwaan et al., 2017; Fairburn et al., 2015; Melisse, Dekker, et al., 2022; ter Huurne et al., 2020). Therefore, the results of this study were not due to lower severity at baseline. However, it should be noted that guided self-help CBT-E was offered in a specialized eating disorder center. Enrolled patients had more severe BED compared with those from non-specialist centers (Melisse, Blankers, et al., 2022). Furthermore, patients received guided self-help CBT-E from highly trained therapists, which might have affected the results. Therefore, these results may not be generalizable to non-specialized settings. Eventually, further study is needed to investigate the efficacy of the present treatment when delivered by less specialized therapist to less severely ill patients.

Treatment drop-out was 21.1% (38/180), the majority dropped-out during the Covid-19 pandemic (34/180, 89.5%), with one-third owing to reasons related to the Covid-19 pandemic. Treatment drop-out rate was comparable with other studies including a waiting-list

control condition (Hilbert et al., 2019). Patients with a lower education had a higher chance of dropping out from the treatment. A negative attitude towards psychological treatments may have played a role, which might be reduced by offering psycho-education (Thompson-Brenner et al., 2013). Furthermore, these patients may have perceived some of the interventions as challenging and extra assistance in overcoming such barriers may help to keep them involved (Puls et al., 2020).

Strengths and limitations

This study has several strengths. It was conducted in a specialized mental health care setting acknowledged for its highly structured treatment and evidence-based approach. Guided self-help CBT-E was a manualized treatment, offered by trained specialists and treatment adherence was assessed. Standardized interview data (Cooper & Fairburn, 1987) were collected by independent assessors, including the EDE at T2. Internationally used valid self-report instruments (Bohn et al., 2008; Fairburn & Beglin, 2008) were used, and the study was adequately powered. As patients came from all over the Netherlands, the sample can be deemed representative of patients seeking specialized eating disorder treatment. The Covid-19 pandemic deserves a special mention. The study barely started when the Covid-19 pandemic spread in the Netherlands in mid-March 2020. Fortunately, however, because of the treatment delivery mode (eMental Health) that was evaluated in this study, the social distancing measures of the pandemic had a limited impact on the study's execution. Nevertheless, the COVID-19 pandemic might have negatively affected the outcomes of the treatments, as many patients reported that it was a challenge to combine therapy, work, and homeschooling children at the same time. This suggests that guided self-help CBT-E might demonstrate even better outcomes under less adverse circumstances.

A limitation of this study might be that the follow-up data were measured by self-report, and interview data are generally viewed as more reliable, especially when measuring binge eating

behavior (Berg et al., 2012; Melisse, van Furth, et al., 2021). In addition, our study showed differences in reports on interviews and self-report data. Objective binges between the interview and self-report data in this study showed a moderate correlation (r=0.6, P<.01) at T2. The study's design with a delayed-treatment control group implies that expected treatment benefits may have played a role in bringing about the difference in outcomes at the second assessment (Constantino, 2018). However, the extent of this effect could not be established, as treatment expectancy was not assessed. Next, between-group comparisons were impacted since the control group started treatment after the 12-week delay. Therefore, the long-term impact of withholding treatment could not be assessed. The control group showed a delayed treatment effect very similar to that of the guided self-help group, consistent with the delayed design. Furthermore, only within-group comparisons were meaningful during follow-up, although this was taken into consideration when choosing statistical analyses. As most of the participants who dropped out from treatment could not be assessed and also became study dropouts, no EOT and no follow-up data were available from them. In addition, before the Covid-19 pandemic, patients had in-person intake sessions, including measurements of their weight and height. During the pandemic, the study relied on the patients' self-reported weight and height. Although BED is more equally prevalent across genders than other eating disorders (Kessler et al., 2013), with only 10% men, the sample was biased by gender. However, no effect of gender was found on eating disorder pathology and the frequency of binges. The underrepresentation of men is common to most eating disorder studies and limits the generalizability of the findings (Shingleton et al., 2015). Finally, therapists' protocol adherence was measured by self-report of the therapist, whereas the use of an adherence checklist, which recently became available for CBT-E (Bailey-Straebler et al., 2022), or adherence assessment by an independent rater would have yielded more valid information regarding treatment integrity (Lopez-Alcalde et al., 2022).

Clinical implications

Guided self-help CBT-E appears to be an efficacious treatment for patients with BED seeking help from specialized treatment centers. Results of this study underscore the international guidelines following the stepped care model (NICE, 2017) and suggest that web-based guided self-help is a viable first step. If guided self-help CBT-E would appear non-inferior to CBT-E, Dutch national guidelines recommending CBT for BED (Zorgstandaard, 2021) should be revised. In addition, guided self-help CBT-E offers several benefits in delivering psychotherapy to patients with BED, such as reduced barriers to treatment, and if it is non-inferior to in-person CBT-E, it will diminish specialist's time needed for a single treatment. In addition, guided self-help CBT-E has the potential for treatment delivery in a stepped care model to reduce waiting times for in-person treatment (Abrahamsson et al., 2018; Becker et al., 2010; Evans et al., 2011; Linardon et al., 2021). Furthermore, patients who experience stigma appreciate the greater anonymity of remote treatment (Bird, 2019). As such, guided self-help CBT-E potentially increases help-seeking behavior among men (Thapliyal & Hay, 2014) and patients with excess weight (Talumaa et al., 2022). These benefits of guided self-help CBT-E facilitate treatment delivery, preventing the severity of BED from increasing if left untreated. It is recommended to offer guided self-help CBT-E in specialized settings and experiment with its application in nonspecialist settings. When the findings of this study could be replicated in nonspecialist settings, delivery can be extended to nonspecialist settings. However, supervision of an eating disorder specialist is recommended to address protocol adherence and prevent therapist drift

Implications for research

Guided self-help treatment holds the promise of being a cost-effective alternative to traditional treatment. As an extension of this study we are currently performing an economic evaluation alongside the RCT (Melisse et al., 2023). In addition, several studies showed that

guided self-help was inferior to in-person CBT at end of treatment, but was non-inferior (de Zwaan et al., 2017; Zerwas et al., 2017) or superior (Bailer et al., 2004) at long-term follow-up. Subsequently, a logical next step for future research is to compare the effectiveness of guided self-help CBT-E with in-person CBT-E in an RCT. We recommend that future studies to assess recovery beyond 24 weeks after EOT and collect interview data as this is deemed more reliable (Berg et al., 2012). As guided self-help CBT-E has several additional advantages over traditional treatment provision, such as reduced therapist time required and removal of geographical barriers to treatment, it is strongly recommended to compare its efficacy with in-person CBT-E. Knowledge of guided self-help predictors or moderators, enhances decision making by offering in-person or guided self-help CBT-E or a different type of treatment (Kraemer, 2016). Examining whether guided self-help CBT-E reduces general psychopathology is of interest. Once guided self-help CBT-E shows long-term effectiveness including general psychopathology, investigating its effect among other eating disorder populations, such as patients with non-purging bulimia nervosa is recommended.

Conclusions

In conclusion, guided self-help CBT-E appeared to be an efficacious treatment alternative to waiting lists regarding to reduction in binge eating and eating disorder pathology among patients with BED, and benefits remained over a 12 and 24 weeks follow-up period. These findings reflect international guidelines, recommending guided self-help for BED. If future research would demonstrate equal effectiveness of guided self-help CBT-E to in person treatment, it would be a viable alternative and can reduce waiting-time to commence treatment and therefore potentially enhances faster recovery for patients with BED.

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