

RESEARCH ARTICLE

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Outcomes of brief and enhanced cognitive-behavioural therapy for adults with non-underweight eating disorders: A non-randomized comparison

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Abstract

Objective: Cognitive-behavioural therapy (CBT) is an efficacious and effective treatment for eating disorders, and is particularly valuable in the treatment of non-underweight cases (e.g., bulimia nervosa; binge eating-disorders). However, its recommended length for such cases (up to 20 sessions) makes it a relatively costly therapy. It has been suggested that a 10-session version (CBT-T) can also be effective, but there has been no direct comparison between the two forms (10 vs. 20 sessions).

Method: This study reports the outcomes of brief and standard-length CBT for non-underweight eating disorders, comparing two cohorts of patients from the same clinic ($N = 55$ and 138 , respectively).

Results: The two therapies had very similar results in terms of eating pathology, remission rate, and improved quality of life. Each showed substantial change by the mid-point of therapy and up to 6-month follow-up.

Conclusion: It appears that brief CBT (CBT-T) is as effective as existing 20-session CBT, and is less demanding of time and resource. The findings need to be replicated in a randomized control trial before this conclusion can be made definitive.

KEYWORDS

cognitive-behavioural therapy, eating disorders, outcomes, quality of life

1 | INTRODUCTION

Cognitive-behavioural therapy for eating disorders (CBT-ED) is the most effective psychotherapeutic approach for patients with non-underweight conditions, such as bulimia nervosa and binge-eating disorder (National Institute for Health and Care Excellence [NICE] 2017). However, when delivered individually (at a recommended 16–20 sessions; NICE 2017), it is relatively expensive and

demanding of resources. Reducing the length of CBT-ED has the potential to reduce waiting lists and ensure faster access to treatment for other patients. However, that is only a viable approach if the briefer version has comparable outcomes and acceptability to patients. It has been shown that anxiety disorders respond to brief versions of CBT as well as longer versions (Öst & Ollendick, 2017), so the question here is whether that same pattern can be found with non-underweight eating disorders.

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A recent innovation has been the development of a briefer, more focused form of CBT-ED for non-underweight eating disorders (Waller, Turner, Tatham, Mountford, & Wade, 2019). This 10-session approach (CBT-T) is based around core, evidence-based elements of CBT-ED (e.g., focus on early change) and relatively novel methods from the field of CBT (e.g., an inhibitory learning approach to exposure; Craske, Treanor, Conway, Zbozinek, & Vervliet, 2014; Reilly, Anderson, Gorrell, Schaumberg, & Anderson, 2017). Initial case series have demonstrated that CBT-T is an effective approach (Pellizzer, Waller, & Wade, 2019a, 2019b; Waller et al., 2018). Outcomes from the first case series (Waller et al., 2018) indicated levels of effectiveness in routine clinical settings that were comparable to those of existing, longer forms of CBT-ED, such as enhanced CBT (CBT-E; Byrne, Fursland, Allen, & Watson, 2011; Fairburn et al., 2009). However, that comparison was across studies and settings, so could not provide firm conclusions. Consequently, it is important to directly compare outcomes of a current NICE-recommended version of CBT-ED with briefer CBT-ED, delivered in the same clinical setting. If the outcomes of CBT-T can be shown to be similar to those of longer forms of CBT-ED (in this instance, CBT-E), then briefer therapies should be considered as a viable option, with the potential additional benefits of reducing waiting times and lowering the costs of treatment.

The aim of this study was to compare the outcomes of CBT-E and CBT-T for non-underweight eating disorders, to determine whether the additional therapy input (20 vs. 10 sessions) results in stronger outcomes for CBT-E. This cohort comparison was conducted in a routine clinical setting, where attrition rates are usually somewhat higher than in research settings but where outcomes are generally comparable when delivering the therapy in concordance with the protocol (Byrne et al., 2011; Turner, Marshall, Stopa, & Waller, 2015).

2 | METHOD

2.1 | Design

This study compared outcomes of non-underweight eating disorder patients who were offered and commenced either CBT-E ($N = 138$) or CBT-T ($N = 55$). Intention to treat analyses were used. Ethical approval was not required under National Health Service guidelines as this was an audit of routine clinical practice.

2.2 | Participants

The 193 patients who commenced treatment were all adults (aged ≥ 18 years) diagnosed with an eating disorder at assessment, using DSM-5 criteria (American Psychological Association, 2013). All had a measured body mass index (BMI) of ≥ 18.5 at the start of treatment. Initially (February 2011–May 2013), all patients were allocated to CBT-E ($N = 54$), until CBT-T was introduced as an additional treatment option by the service. Thereafter (May 2013–June 2019), allocation was decided by clinical team decision, with 84 being allocated to CBT-E and 55 to CBT-T. Those decisions were made on the basis of psychiatric and medical risk. Those patients with higher psychiatric or medical risk were allocated to the longer 20-session treatment, which was delivered by staff holding responsibility for case management. Lower-weight patients were also more likely to be allocated to CBT-E, as potentially needing longer to ensure weight regain.

Among the 138 who received CBT-E (122 women, 14 men), 42 were diagnosed with atypical anorexia nervosa, 54 with bulimia nervosa, 26 with atypical bulimia nervosa, 16 with binge-eating disorder, and two with purging disorder. Among the 55 CBT-T patients (52 women, three men), three were diagnosed with atypical anorexia nervosa, 32 with bulimia nervosa, 12 with atypical bulimia nervosa, eight with binge-eating disorder, and none with purging disorder. A Chi-squared test ($X^2 = 15.9$, $p < .02$) showed that a significantly greater proportion of atypical anorexia nervosa patients were allocated to CBT-E. However, there was no association of patient gender and therapy allocation ($X^2 = 1.13$, NS).

2.3 | Measures and procedure

Patients were weighed (openly) weekly and their height was measured in order to calculate their BMI. The number of sessions delivered was recorded for those patients who completed therapy. Each patient completed the following measures at the specified points.

Eating Disorders Examination-Questionnaire (EDE-Q version 6; Fairburn, 2008). The EDE-Q Global score was used to measure levels of eating pathology at the start of therapy, at the middle of therapy (Session 4 for CBT-T; Session 10 for CBT-E), at the end of therapy and at 6-month follow-up. The EDE-Q has acceptable psychometric and clinical properties (Berg, Peterson, Frazier, & Crow, 2012). Based on a score of the non-clinical mean + 1 *SD*, a reduction to below a cut-off score of < 2.77 was

used to indicate a non-clinical level of eating pathology by the end of therapy and at follow-up.

Clinical Impairment Assessment (CIA; Fairburn, 2008). The CIA was used as an index of quality of life. It was administered at the beginning and end of therapy and at 6-month follow-up. The CIA has strong psychometric properties and clinical validity (Fairburn 2008).

2.4 | Interventions

All patients were seen weekly, for 50–60 min sessions. The CBT-T intervention was introduced to the service more recently than CBT-E (see above), explaining the unbalanced numbers across groups.

CBT-E (Fairburn, 2008) is a manualised, evidence-based treatment for eating disorders. In keeping with recommendations for non-underweight cases, 20 sessions were offered. However, they were delivered weekly throughout, rather than at an increased dose for the first weeks as recommended in the manual. The therapists delivering the treatment were either qualified clinical psychologists, counselling psychologists or accredited cognitive behaviour therapists, and all had attended the relevant training in CBT-E. Each therapist was supervised weekly, though there were no adherence checks throughout the therapy.

CBT-T (Waller et al., 2019) is also a manualised, evidence-based treatment, designed specifically for non-underweight eating disorders. Ten weekly sessions were offered. The therapists delivering the treatment were assistant psychologists, who had not completed clinical training. They were trained and supervised (weekly) by the team who developed the therapy. Again, there were no adherence checks during the therapy.

2.5 | Data analysis

Data were collected at start of therapy, mid-therapy, end of therapy and at 6-month follow-up. SPSS (v.25) was used for all analyses. The CBT-E and CBT-T groups were compared at the outset of therapy, using independent *t*-tests, and pre-treatment predictors of attrition from each group were tested using binomial logistic regression. Outcomes were compared using both completer analyses and intention to treat analyses. The completer analyses used repeated measures ANOVAs with post hoc Least Significant Difference [LSD] tests, and with partial η^2 effect sizes). The intention to treat analyses used multiple imputation (10 imputations) to replace missing data, and paired *t*-tests were used to compare scores within groups at different time points (with Cohen's *d* used to determine effect sizes). Multiple regression analyses were used to

determine whether length of treatment was associated with outcome levels for each therapy separately.

3 | RESULTS

3.1 | Pre-treatment group characteristics

Table 1 shows the characteristics of each group at the outset of treatment. The groups' scores were comparable to those of other clinical groups (Turner et al., 2015). The group who received CBT-T had a significantly higher BMI score at the outset of therapy, potentially due to the greater likelihood of atypical anorexia nervosa cases being allocated to CBT-E. However, there were no significant differences in age, EDE-Q Global score, CIA score, or personality disorder features.

3.2 | Attrition rates and treatment dose

Of the 138 patients who undertook CBT-E, 86 (62.3%) were lost to therapy (higher than the 50% reported by Byrne et al., 2011). Of those 86, 37 terminated by mutual agreement, 40 dropped out without warning or agreement, and nine moved out of area during therapy and were unable to continue. Mutual agreement to terminate was defined as the patient and therapist agreeing that the treatment was not suitable at present, either because the patient was not progressing, because the patient and therapist did not find the therapy suitable, or because other priorities had emerged in life that meant that the patient did not have the time to dedicate to the therapy. Some cases were offered alternative treatment approaches (e.g., an integrative approach, or treatment that was more geared to risk management), but most were offered the chance to return when they felt more able to commit to change. Any cases where the patient and therapist considered that the therapy had been effective early on were considered to have completed therapy, and were offered the regular follow-up.

Of the 55 patients who started CBT-T, 24 (47.3%) were lost to therapy (9 terminated by mutual agreement [as defined above], 14 dropped out, and 3 moved area). A chi-squared test showed that the pattern of reasons for attrition did not differ between therapies ($X^2 = 4.17$, $df = 3$, *NS*). The mean number of sessions for the patients who remained in therapy was 17.4 ($SD = 9.46$) for those who completed CBT-E and 9.76 ($SD = 1.46$) for those who completed CBT-T, in keeping with the planned duration of each therapy.

Binomial logistic regressions were used to determine whether there were any initial characteristics

TABLE 1 Group characteristics at the outset of each version of CBT for patient with non-underweight eating disorders

	Form of CBT-ED				t-test	
	CBT-E (N = 138)		CBT-T (N = 55)		t	P
	M	(SD)	M	(SD)		
Age (years)	31.5	(12.4)	29.4	(10.2)	1.08	NS
Body mass index ^a	25.7	(8.62)	29.3	(11.9)	1.99	.05
Eating disorders examination-questionnaire global score	4.36	(1.11)	4.39	(1.06)	0.18	NS
Clinical impairment assessment	33.7	(10.2)	29.8	(5.32)	0.78	NS

^aUnequal variances assumed.

TABLE 2 Levels of eating pathology at each measurement point for non-underweight patients undertaking 20-session CBT for eating disorders (CBT-E) or 10-session CBT for eating disorders (CBT-T)

EDE-Q Global		Measurement point				ANOVA			
		Start of therapy	Mid therapy	End of therapy	Follow-up	F	P	Partial eta ²	Multiple comparisons (LSD tests)
CBT-E	M	4.22	3.38	2.13	2.42	6.62	.007	0.623	Start > end = FU
	(SD)	(0.82)	(1.78)	(1.29)	(1.52)				
CBT-T	M	4.10	3.11	2.08	2.02	31.6	.001	0.637	Start > mid > end = FU
	(SD)	(1.29)	(1.51)	(1.42)	(1.57)				
<i>BMI</i>									
CBT-E	M	27.7	28.0	29.6	29.7	4.85	.005	0.222	Start = mid < end = FU
	(SD)	(11.1)	(11.7)	(13.1)	(12.9)				
CBT-T	M	32.4	32.6	33.0	33.0	3.44	.038	0.352	Start = mid < end = FU
	(SD)	(13.1)	(13.5)	(13.3)	(13.3)				
<i>CIA</i>									
CBT-E	M	28.0	-	12.8	18.4	12.8	.002	0.741	Start > FU > end
	(SE)	(12.6)		(10.3)	(12.9)				
CBT-T	M	27.3	-	17.0	20.1	9.43	.008	0.566	Start > end > FU
	(SE)	(6.92)		(20.0)	(15.7)				

Note: Comparisons are made using repeated measures ANOVAs, using completer analysis. Partial eta² is used to determine effect sizes. Abbreviations: BMI, body mass index; CIA, Clinical Impairment Assessment; EDE-Q, Eating Disorders Examination-Questionnaire.

(age, BMI, EDE-Q score, CIA score) that predicted treatment completion in either form of CBT. For CBT-E, there was an overall effect (chi-squared = 10.4, $p = .035$), which was related only to BMI ($B = 0.081$, $p = .06$), showing that those with a higher BMI were more likely to complete treatment. For CBT-T, there was no significant overall effect, and none of the individual predictors approached significance. Therefore, it appears that the lower mean BMI in the CBT-E group (see Tables 2 and 3) was associated with their greater level of attrition.

3.3 | Clinical outcomes of CBT-E and CBT-T

Table 2 shows the results of completer analyses for each of the two groups, comparing scores on the EDE-Q Global scale and BMI at the start of therapy, the midpoint (Session 4 for CBT-T; Session 10 for CBT-E), the end of therapy, and the 6-month follow-up. It also shows the groups' CIA scores across therapy (start, end and follow-up). The changes over time are tested using repeated measure ANOVAs, with

TABLE 3 Levels of eating pathology at each measurement point for non-underweight patients undertaking 20-session CBT for eating disorders (CBT-E; $N = 138$) or 10-session CBT for eating disorders (CBT-T; $N = 55$)

EDE-Q Global	Measurement point																					
	Start of therapy			Mid therapy			End of therapy			Follow-up			Start to mid			Start to end			End to FU			
	<i>M</i>	(<i>SE</i>)		<i>M</i>	(<i>SE</i>)		<i>M</i>	(<i>SE</i>)		<i>M</i>	(<i>SE</i>)		<i>t</i>	<i>d</i> (95% CI)		<i>t</i>	<i>d</i> (95% CI)		<i>t</i>	<i>d</i> (95% CI)		
CBT-E	4.42	(0.11)		3.50	(0.28)		2.40	(0.14)		2.49	(0.15)		2.62*	0.39	(0.23–0.54)	12.1***	1.44	(1.17–1.72)	0.44	0.06	(–0.19–0.30)	
CBT-T	4.44	(0.21)		3.61	(0.27)		2.40	(0.22)		2.45	(0.24)		2.46*	0.44	(0.16–0.74)	9.72***	1.26	(0.91–1.64)	0.15	–0.03	(–0.46–0.40)	
<i>BMI</i>																						
CBT-E	25.7	(0.73)		25.9	(0.77)		25.1	(0.85)		25.8	(0.60)		0.78	0.02	(–0.06–0.01)	0.08	0.09	(–0.12–0.29)	0.54	0.10	(–0.14–0.33)	
CBT-T	31.9	(2.25)		32.2	(2.31)		32.7	(2.29)		32.4	(2.29)		1.19	0.02	(–0.04–0.01)	0.12	0.05	(–0.31–0.21)	0.31	0.02	(–0.31–0.35)	
<i>CIA</i>																						
CBT-E	33.8	(1.57)		-			15.9	(0.56)		19.3	(0.56)		-	-		10.5***	1.36	(1.10–1.64)	4.97***	0.54	(0.36–0.74)	
CBT-T	33.5	(3.30)		-			16.1	(0.96)		19.4	(1.17)		-	-		9.72***	0.92	(0.56–1.29)	0.15	0.41	(0.14–0.69)	

Note: Comparisons are paired *t*-tests, using intention to treat analyses. Cohen's *d* is used to determine effect sizes for significant differences. Abbreviations: BMI, body mass index; CIA, Clinical Impairment Assessment; EDE-Q, Eating Disorders Examination-Questionnaire.

multiple comparison LSD tests. Table 3 shows the same comparisons for intention to treat analyses (multiple imputation). In this case, paired *t*-tests were used to compare scores across the different time points.

The pattern of changes was very similar across the two forms of analysis. EDE-Q scores reduced across the course of therapy, with large changes, and the improvement was maintained into follow-up. CIA scores reduced substantially across treatment, with some rise during follow-up. While BMI scores rose slightly over the latter part of each form of CBT, this was only significant in the completer analyses.¹

3.4 | Remission

Remission was defined as a reduction in EDE-Q scores from above to below a cut-off of 2.77 (Turner et al., 2015). At the end of therapy, 61.2% of the patients who had undertaken CBT-E had an EDE-Q Global score that had fallen to below the cut off (<2.77), while 58.6% of the CBT-T patients had fallen to below that level. At follow-up, those figures were 58.6 and 59.3%, respectively. These outcomes indicate comparable levels of remission for the two therapies.

3.5 | Impact of number of sessions of CBT-E and CBT-T

As noted above, the two therapies were of the expected duration (number of sessions), but CBT-E had a wider variance in number of sessions. While CBT-T can vary in length, that is recommended only when the full 10 sessions are not needed. Therefore, it is possible that the duration of each of the two therapies was associated with the level of change in eating pathology. In order to test this possibility, stepwise multiple regression analyses (intention to treat) were used to test whether the number of CBT-ED sessions predicted outcome on the end of treatment and follow-up EDE-Q Global scores, once the start of treatment EDE-Q Global score was accounted for in each case.

At the end of CBT-E treatment, there was no overall effect of either the initial EDE-Q Global score ($t = 0.44$, *NS*) or the number of sessions ($t = 0.65$, *NS*). Similarly, there were no effects of either initial variable at the 6-month follow-up point ($t = 1.05$, *NS* and $t = 0.18$, *NS*, respectively). In contrast, for CBT-T at the end of treatment, there was an effect of initial EDE-Q Global score ($t = 2.59$, $p < .001$, $B = .511$) though not for the number of sessions ($t = 0.77$, *NS*). There were no such effects for either therapy by the 6-month follow-up.

4 | DISCUSSION

This study has compared clinical outcomes from two forms of CBT-ED for non-underweight patients with eating disorders, to determine whether or not the longer version (CBT-E; 20 sessions) has stronger outcomes than the shorter version (CBT-T; 10 sessions). The two forms of CBT-ED had very similar outcomes to each other, as well as to those found in the wider literature (Byrne et al., 2011; Fairburn et al., 2009; Pellizzer et al., 2019a; Pellizzer et al., 2019b; Turner et al., 2015; Waller et al., 2018). EDE-Q scores fell significantly between the beginning, middle and end of therapy, and remained low at 6-month follow-up, with mean levels below the suggested clinical cut-off for approximately 60% of the patients. It is also noteworthy that CBT-T achieved the same impact in its first four sessions as CBT-E achieved in the first 10 sessions, stressing the importance of achieving meaningful early change, regardless of the overall length of therapy (Vall & Wade, 2015). There were parallel improvements in quality of life (CIA scores) through to the end of CBT-ED, with a partial loss of gains at the 6-month follow-up. There was no impact of treatment dose in either form of therapy. Patients in the CBT-T group tended to be less likely to drop out of therapy, but it is likely that any such difference was due to CBT-E being a longer therapy, therefore providing more opportunities to leave therapy.

To summarise, in a routine clinical group of non-underweight patients, CBT-ED was as effective in 10 sessions (CBT-T) as in 20 (CBT-E). Therefore, it appears to be feasible to offer the majority of adult patients with eating disorders (i.e., non-underweight cases - Fairburn & Harrison, 2003) a treatment that is more time-limited and efficient than current evidence-based options, without loss of effectiveness. To have such briefer therapies available means that patient turnover can be improved, allowing services to reduce waiting times while continuing to deliver effective, manualised and evidence-based therapy (Fukutomi et al., 2019). Furthermore, the cost savings afforded by a shorter therapy that can be delivered by supervised assistants (rather than more expensive qualified therapists) allows more patients to be offered effective treatment.

This study has two linked methodological issues that should be addressed in future studies. The first is that the missing data could not be considered to be missing completely at random. Multiple imputation analysis was used to correct for those missing data (Rubin, 1987), to overcome the problems of listwise loss of data or of single imputation methods (e.g., the last number carried forward method). Such an approach to missing data should be used in similar research in the future. The second

linked issue is the limitation due to the use of repeated-measures ANOVAs. This form of analysis corrects for the non-independence of data (due to the same patient contributing multiple data points). However, those methods of making corrections are limited, particularly because they assume that any missing data are missing at random—an assumption that could not be supported (see above). Provided the sample is large enough, future research in this field should consider the use of data analytic methods that are not limited in this way—particularly hierarchical linear models (Verbeke & Molenberghs, 2001).

Furthermore, the non-randomized nature of this study means that further work is needed, in the form of randomised control trials. Such work should also consider whether there are patient or therapist factors that may result in CBT-E being a more effective approach than CBT-T or vice versa, though such factors could not be identified in this study. A further question is whether other evidence-based therapies for eating disorders and for underweight eating disorders (Lock & Le Grange, 2013; Schmidt et al., 2015) are also capable of delivering more rapid outcomes if presented in a shorter, more focused form.

CONFLICT OF INTEREST

M.T. and G.W. receive royalties on the CBT-T manual.

AUTHOR CONTRIBUTIONS

Madeleine Tatham conceptualised the paper and oversaw data collection. Chloe Hewitt collected the data and contributed to the data analysis and the writing of drafts. Glenn Waller led on the data analysis and oversaw the writing of drafts. All three authors contributed to the writing of the final report.

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ENDNOTE

¹ These analyses were re-run for the CBT-E group, removing the atypical anorexia nervosa cases, in order to determine whether those cases influenced the outcomes for this form of CBT. However, the outcomes were unchanged, indicating that the impact of CBT-E overall was not affected by the unequal allocation of the atypical anorexia nervosa cases. As there were so few atypical anorexia nervosa cases in the CBT-T group, this check could not be conducted for that group.

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