Title

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Journal

European Eating Disorders Review, 26(3)

ISSN

1072-4133

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Publication Date

2018-05-01

DOI

10.1002/erv.2582

Peer reviewed

HHS Public Access

Author manuscript

Eur Eat Disord Rev. Author manuscript; available in PMC 2018 November 01.

Published in final edited form as:

Eur Eat Disord Rev. 2018 May ; 26(3): 253–258. doi:10.1002/erv.2582.

Comorbid Depressive Symptoms and Self-Esteem Improve After Either Cognitive-Behavioral Therapy or Family-Based Treatment for Adolescent Bulimia Nervosa

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Abstract

This study examined the effect of Family-Based Treatment for bulimia nervosa (FBT-BN) and Cognitive Behavioral Therapy for Adolescents (CBT-A) on depressive symptoms and self-esteem in adolescents with BN. Data were collected from 110 adolescents, ages 12–18, who met DSM-IV-TR criteria for BN or partial BN. Participants were randomly assigned to FBT-BN or CBT-A and completed measures of depressive symptoms and self-esteem before and after treatment and at 6-month and 12-month follow-up assessments. Depressive symptoms and self-esteem significantly improved in both treatments, and neither treatment appeared superior on these clinical outcomes. Parents often worry whether FBT-BN addresses comorbid depressive symptoms and low self-esteem. Our findings address this concern, as they demonstrate that FBT-BN does not differ from CBT-A in improving depressive symptoms and self-esteem, and both treatments result in symptom improvement. These findings can help clinicians guide families to choose a treatment that addresses BN and depressive symptoms and low self-esteem.

Keywords

family-based treatment; cognitive behavioral therapy; bulimia nervosa; depression; self-esteem

Introduction

Bulimia nervosa (BN) is an eating disorder characterized by recurrent binge eating episodes and compensatory behaviors, such as purging, misuse of diuretics or laxatives, excessive exercise, or fasting, (APA, 2013). An estimated 88.0% of adolescents with BN also meet criteria for one or more comorbid psychiatric disorders, particularly mood and anxiety disorders, with major depressive disorder being one of the most common comorbid

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Clinical Trial Registration Information is Study of Treatment for Adolescents with Bulimia Nervosa; http://clinicaltrials.gov/;NCT00879151

diagnoses (Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011). In two recent randomized clinical trials, family-based treatment for adolescent BN (FBT-BN) resulted in higher abstinence rates than cognitive behavioral therapy for adolescents (CBT-A) (Le Grange, Lock, Agras, Bryson, & Jo, 2015), or supportive psychotherapy (Le Grange, Crosby, Rathouz, & Leventhal, 2007), although no group differences remained at follow-up in this second trial. A third trial found no difference between family therapy and CBT in rates of abstinence from purging, although some family therapy seemed slower to result in reductions in binge eating (Schmidt et al., 2007). Clinical experience reveals concern from parents that FBT-BN will not successfully resolve comorbid symptoms of depression or related secondary clinical measures, such as self-esteem. In line with this experience, one trial found greater acceptability in the CBT arm compared to the FBT arm (Schmidt et al., 2007). This concern can subsequently steer families away from an evidence-supported approach in favor of therapies that may not be as successful in reducing binge eating and purging. Since depressive symptoms and low self-esteem are prevalent in adolescents with BN (Le Grange, Loeb, Orman, & Jellar, 2007), it is important to study how these clinical symptoms change over the course of treatment, and whether FBT-BN or an individual therapy like CBT-A is superior in addressing them.

Comorbid symptoms such as depression have not been shown to moderate the effects of FBT-BN; those with high or low depressive symptoms showed similar changes in BN symptoms in FBT-BN and supportive psychotherapy (Le Grange, Crosby, & Lock, 2008). On the other hand, comorbidity was a predictor of outcome across these treatments; regardless of treatment received, lower depression scores pre-treatment were related to better prognosis post-treatment (Le Grange, Crosby, & Lock, 2008). This is in line with evidence in adults that a subtype of BN characterized by high levels of negative affect is associated with poorer prognosis (Stice, Bohon, Marti, & Fischer, 2008). Thus, it appears that the presence of depressive symptoms would not direct one to use a specific treatment approach over another if the goal is reducing BN symptoms. However, the question still remains whether any treatment would better target comorbid depression in this patient population. Further, understanding change in depression and self-esteem in the context of treatment for adolescent BN will allow clinicians to confidently address concerns that families may have in selecting a treatment approach for BN in the presence of comorbid depression.

Although clinical experience has shown that many parents believe individual treatment will provide greater improvement of depression and self-esteem than family-based approaches, the relation between BN symptoms and depressive symptoms could suggest that FBT-BN would result in a greater reduction of depressive symptoms and increase in self-esteem due to its increased rates of abstinence of BN symptoms compared to CBT-A. Indeed, the report of primary outcomes from a recent trial of FBT-BN and CBT-A in adolescent BN revealed a significant difference in depression symptoms between treatments at end of treatment showing greater improvements from FBT-BN, but this effect was not present at follow-up assessments (Le Grange, Lock, Agras, Bryson, & Jo, 2015). However, a trial comparing two family therapies for anorexia nervosa in adolescents found no significant improvements in self-esteem scores with family therapy (Agras et al., 2014). Depression symptoms were not severe at baseline in that sample, though, so making extensions to a sample of patients with BN may be inappropriate. Numerous studies of CBT and other individual psychotherapies

for adults with BN have shown significant improvements in both depression symptoms and self-esteem with individual therapy (Fairburn et al., 1991; Fairburn, Jones, Peveler, Hope, & O'Connor, 1993; Wonderlich et al., 2014). Change in self-esteem has not yet been evaluated in FBT-BN. Consequently, this paper examines the hypothesis that, in contrast to concerns about family approaches not adequately addressing comorbid depression, FBT-BN will result in greater reduction of depression symptoms and greater increase of self-esteem than CBT-A in adolescents with BN in a randomized controlled trial. Further, this focused analysis and report allows for enhanced discussion of clinical implications compared to the primary outcome report.

Method

Participants and Procedure

Participants included 110 adolescents from two sites who were randomly assigned to either CBT-A (n=52) or FBT-BN (n=58). Ten percent (n=11) of the sample was taking antidepressant medication during the study, but all participants were stable on dose for at least eight weeks prior to the start of the treatment study and remained stable throughout. There were no group differences in medication use. FBT-BN is derived from the manualized approach to treat adolescent AN (Le Grange & Lock, 2007). FBT-BN focuses on promoting behavioral change through a collaborative engagement with the parent. CBT for adolescents is a manualized treatment adapted for adolescents with BN (Lock, 2005). Participants were between the ages of 12–18, and met Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition, text revision (DSM-IV-TR) criteria for BN or BN-type ED Not Otherwise Specified (EDNOS-BN) (APA, 2000). Diagnoses were determined using the Eating Disorder Examination (EDE) (Cooper & Fairburn, 1987). Adolescents were randomly assigned to either treatment at two-sites. The institutional review boards at both sites approved this study protocol. All participants signed informed consent and assent forms prior to participation. Participants completed the Beck Depressive Inventory (BDI) (Beck, Steer, Ball, & Ranieri, 1996) at baseline (BL), session 9 (during treatment), end of treatment (EOT), at 6-month follow-up, and at 12-month follow-up. Participants completed the Rosenberg Self-Esteem Scale (RSE) (Rosenberg, 1965) at BL, 6-months, and 12-months. The RSE was not included at EOT because it was initially included as a predictor of treatment outcome, rather than an outcome itself. For further details on the study design see the report of the primary outcome analyses (Le Grange, Lock, Agras, Bryson, & Jo, 2015).

Data Analysis

Data were analyzed using linear mixed models in SPSS software (Version 23). Each participant was treated as a random variable with random intercept. Fixed effects included treatment type, time, and site and their interactions. We utilized a variance component model covariance structure for random effects. Missing data was treated as missing at random.

Results

Descriptive Results

A detailed description of the sample is available in Le Grange et al., 2015. We focus on depressive symptoms and self-esteem for this report. Across treatments, the sample consisted of a broad range of depressive symptom severity at pre-treatment, and 40% of the sample reported severe depressive symptoms upon entry into the study (BDI scores > 28). Of the remaining sample, 25% reported minimal depressive symptoms (BDI<14), 13% mild depressive symptoms (BDI = 14–19), and 22% reported moderate depressive symptoms (BDI = 20–28). There was no difference between treatment groups on number of patients with severe depressive symptoms ($X^2(3, N = 110) = 2.46$, $p = 0.48$), and no significant difference between treatment groups of pre-treatment BDI score ($t(108) = 0.48$, $p = 0.63$), suggesting that randomization was successful with regard to depressive symptoms. Mean BDI score for the CBT group at pre-treatment was 24.40 (SD=11.50), end of treatment was 17.86 (SD=16.13), 6-month follow-up was 15.35 (SD=14.12), and 12-month follow-up was 11.20 (SD=12.22). Mean BDI score for the FBT group at pre-treatment was 23.33 (SD=11.77), end of treatment was 13.40 (SD=10.56), 6-month follow-up was 14.34 (SD=11.85), and 12-month follow-up was 11.00 (SD=9.29).

Interactions of treatment and time are presented below, but descriptive results of clinical change revealed a 24.5% reduction in mean BDI score in the CBT group and 36.9% reduction in the FBT group from baseline to end of treatment. This difference was even greater at 12-month follow-up for both treatments (46.4% in CBT and 46.9% in FBT). This represents a clinically meaningful reduction in depressive symptoms, as Button and colleagues (2015) found that the minimum clinically important difference on the BDI was a 17.5% reduction. Additionally, the mean BDI score for patients moved them from moderate levels of depressive symptoms on average to minimum levels in both treatment groups.

Across treatments, 10% of the sample reported low self-esteem at baseline (RSES scores < 15). There was no difference between treatment groups on number of patients with low self-esteem ($X^2(1, N = 110) = 0.58$, $p = 0.53$) and no significant difference between treatment groups of pre-treatment RSES score ($t(108) = -1.18$, $p = 0.24$), suggesting that randomization was also successful with regard to self-esteem. Mean RSES score for the CBT group at pre-treatment was 21.85 (SD=6.17), 6-month follow-up was 26.35 (SD=6.55), and 12-month follow-up was 27.53 (SD=7.30). Mean RSES score for the FBT group at pre-treatment was 23.39 (SD=6.83), 6-month follow-up was 28.38 (SD=7.53), and 12-month follow-up was 29.475 (SD=6.17).

Effects of Time and Treatment

Figure 1 shows the pattern of change in BDI and RSES scores for the two treatment groups. Results from the linear mixed models for BDI appear in Table 1. For BDI, there was no main effect of treatment group, but there was a main effect of time, $t(311) = -10.30$, $p < 0.001$. There was no significant treatment by time interaction. Site was also included in the model, but was not significantly related to BDI scores either as a main effect or in interactions. Results revealed a similar pattern for RSES and are also presented in Table 1. There was no

main effect of treatment group, but there was a main effect of time, $t(156) = 6.87$, $p < 0.001$. There was no significant treatment by time interaction. Again, we included site in the model, but it was not significantly related to RSES scores either as a main effect or in interactions.

Discussion

This study sought to look at secondary clinical symptoms, i.e., depression and self-esteem, in adolescents with BN in a randomized clinical trial comparing CBT-A and FBT-BN. The study aimed to understand whether FBT-BN would have a greater improvement in depression and self-esteem symptoms than CBT-A. Contrary to our hypothesis, although depression symptoms and self-esteem significantly improved with treatment by 6- and 12-month follow-ups, neither treatment appeared superior to the other in this regard, despite a greater reduction of depression scores at EOT in FBT-BN. Moreover, results reveal that depressive symptoms in both treatments are reduced at a clinically significant level: 24.5% reduction in BDI score for CBT-A and 36.9% for FBT-BN by EOT (with even greater reductions at longer term follow-up) and self-esteem returned to a mean level found in healthy adolescents by 12-month follow-up (28–30 across studies of healthy adolescents; (Bagley, Bolitho, & Bertrand, 1997; Erol & Ulrich, 2011)).

Due to the high rate of comorbid symptoms in BN, particularly depressive symptoms, whether a specific intervention treats depressive symptoms is of high concern to families. Although some evidence suggests that FBT-BN results in better abstinence rates of BN symptoms than CBT-A, families may still prefer individual therapies that may not be as successful in treating BN due to a common belief that they would better address depression. Our findings can aid clinicians in providing parents with evidence-based knowledge when choosing treatment in cases of comorbid depression and low self-esteem in adolescents with BN.

Moreover, these findings suggest mechanisms involved in the treatment of depression in the context of BN that do not involve directly targeting depression. Binge eating is often associated with negative affect and feelings of shame and guilt (Haedt-Matt & Keel, 2011). As a result, it is possible that binge eating and purging are maintenance factors for depressive symptoms and poor self-esteem. Future research is necessary to fully explore the possible mechanisms of change in depression and self-esteem in the context of BN in order to further enhance outcome. Additionally, the current findings do not include any distinction between depressive symptoms that preceded the bulimic symptoms (i.e., are primary to the BN) or vice versa. This distinction could be important for future research to better understand how different treatment approaches impact comorbid symptoms. Another limitation of the current study is the reliance on the BDI as the measure of depressive symptoms. Although widely used, it includes items that may be influenced directly by eating disorder symptoms, such as energy, appetite, or sleep symptoms. Future research utilizing multiple measures of depression would be worthwhile to ensure that reduction of BN symptoms is not driving the reduction in BDI score. It is also important to note that this study did not use enhanced CBT (CBT-E; Fairburn, 2008), which includes a stage of treatment focusing more directly on mood as it relates to eating behaviors. Future research

will be important to explore the impact of this explicit focus on comorbid depressive symptoms and self-esteem.

Acknowledgments

Sponsor: National Institute of Mental Health grant R01-MH-079979 (Dr. Le Grange), and R01-MH-079978 (Dr. Lock)

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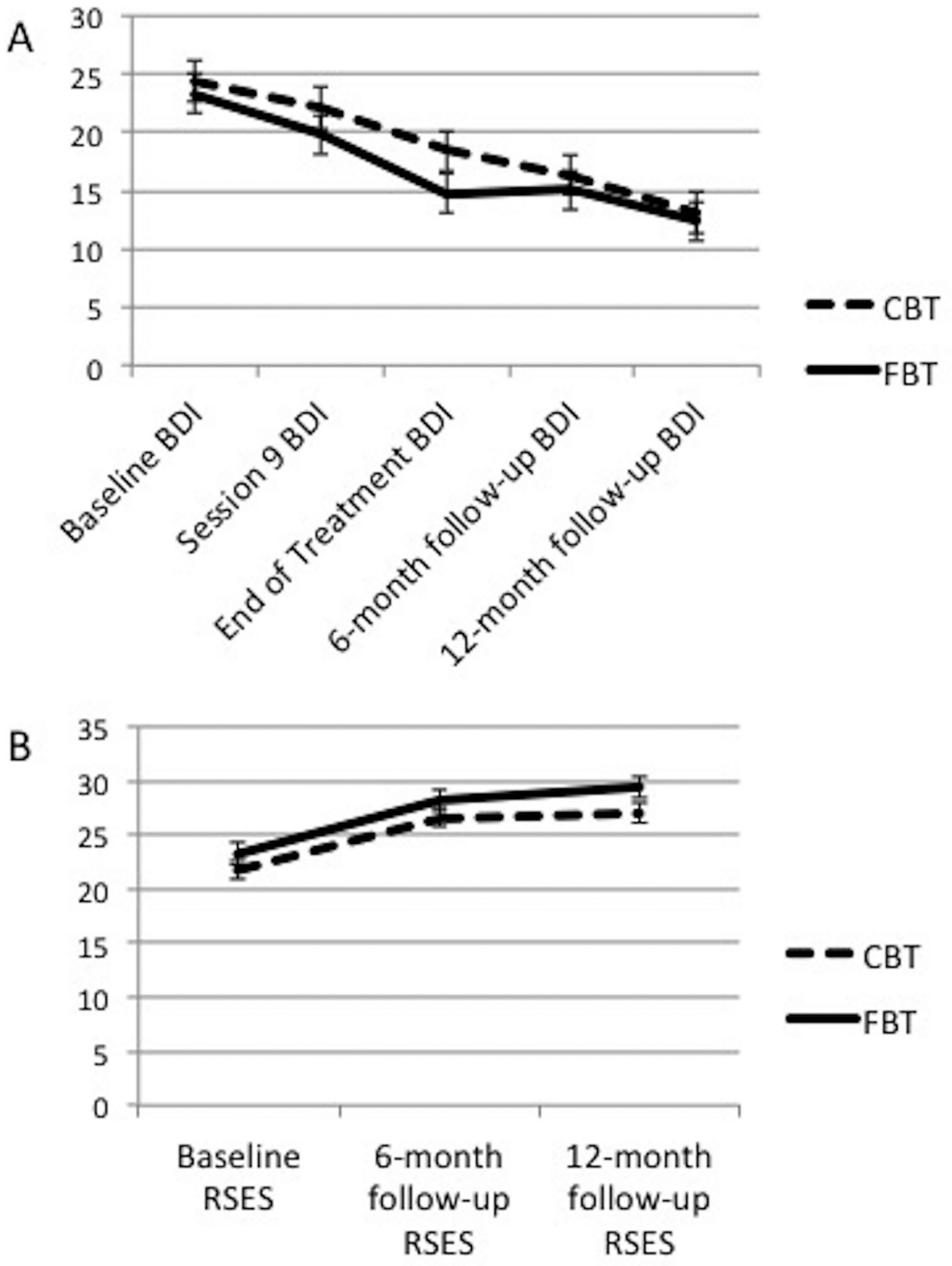

Figure 1.

Change over time on mean scores for each treatment arm for the BDI (Panel A) and RSES (Panel B). Error bars reflect standard error.

Table 1

Fixed effects for models predicting BDI and RSES

BDI				
Parameter	**Estimate**	**SE**	**95% Confidence Interval**	
Intercept	26.68*	1.25	24.21	29.15
Time	−3.18*	0.31	−3.78	−2.57
Treatment Group	−0.99	1.25	−3.46	1.48
Site	−0.28	1.25	−2.75	2.19
Time × Treatment	−0.11	0.31	−0.72	0.49
Time × Site	0.44	0.31	−0.17	1.04
Time × Treatment × Site	0.16	0.24	−0.31	0.63
RSES				
Parameter	Estimate	SE	95% Confidence Interval	
Intercept	19.72*	1.00	17.76	21.69
Time	3.30*	0.48	2.35	4.25
Treatment Group	0.58	1.00	−1.38	2.54
Site	0.58	0.99	−1.38	2.54
Time × Treatment	0.25	0.48	−0.70	1.20
Time × Site	−0.43	0.50	−1.38	0.52
Time × Treatment × Site	−0.26	0.26	−0.76	0.25

* $p < .001$