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Permalink

<https://escholarship.org/uc/item/72n9z4b4>

Journal

Child and Adolescent Psychiatric Clinics of North America, 28(4)

ISSN

1056-4993

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Publication Date

2019-10-01

DOI

10.1016/j.chc.2019.05.002

Peer reviewed



HHS Public Access

Author manuscript

Child Adolesc Psychiatr Clin N Am. Author manuscript; available in PMC 2020 October 01.

Published in final edited form as:

Child Adolesc Psychiatr Clin N Am. 2019 October ; 28(4): 537–547. doi:10.1016/j.chc.2019.05.002.

Update on Treatments for Adolescent Bulimia Nervosa

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Keywords

Eating Disorders; Bulimia Nervosa; Family-based treatment

Introduction

First described by Gerald Russell nearly 40 years ago,¹ bulimia nervosa (BN) is an eating disorder (ED) broadly characterized by recurrent episodes of binge eating (i.e., eating an objectively large quantity of food with an associated loss of control), followed by engagement in compensatory behaviors (e.g., self-induced vomiting, misuse of laxatives, diuretics or other medication, fasting, excessive exercise). These maladaptive compensatory behaviors are engaged to prevent or offset anticipated weight gain, and are concurrent with overvaluation of weight and shape.² The fifth edition of the *Diagnostic and Statistical Manual for Mental Disorders* (DSM-5) specifies that these episodes of binge eating and compensatory behavior must occur at a minimum frequency of once per week over the course of three months.²

To address these symptoms among adults with BN, a large number of randomized controlled trials (RCTs) testing psychotherapy, pharmacotherapy, or their combination, have demonstrated consistent support for the efficacy of cognitive-behavioral therapy (CBT) as compared with other active treatments.³⁻⁴ In addition, one study found that interpersonal psychotherapy demonstrated parity with CBT in treating BN among adult samples, though with a slower course in reaching effectiveness.⁵⁻⁶

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DISCLOSURE STATEMENT

Dr. Gorrell has no commercial relationships to disclose. **Dr. Le Grange** receives royalties from Guilford Press and Routledge, and is co-director of the Training Institute for Child and Adolescent Eating Disorders, LLC.

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Turning to the examination of treatment efficacy among adolescents, in contrast with robust evidence from treatment studies among adults, research trials for BN in youth are vastly underrepresented.⁷ To date, there has been one open medication trial, and four published RCTs comparing psychosocial treatments for adolescents, with substantial room for improvement in treatment outcomes (Table 1). The dearth of RCTs in this population is not an indication or reflection of low base rates of the disorder, as approximately 1-2% of adolescents meet full criteria for a diagnosis of BN, and an additional 2-3% may present with clinically meaningful sub-clinical BN.⁸ Further, community studies evaluating disordered eating behavior found far greater prevalence of BN (14-22%) when not adhering strictly to DSM-based criteria.⁹⁻¹⁰ Of those afflicted, up to 40% may experience significant psychiatric comorbidity¹¹ or elevated suicidality.¹² In adolescence, prevalence estimates of BN are more than twice that of anorexia nervosa (AN).¹⁰ Given evidence that medical hazards of BN are comparable with the more widely documented perils of AN,¹³ effective treatment of BN in adolescents is essential.

Treatment

Psychopharmacological Treatment

Evidence-based pharmacological treatment for children and adolescents with EDs generally, and in BN more specifically, is not yet possible due to the limited number of published studies. As a consequence, current clinical guidelines for treating BN in youth and adolescents do not include the use of psychopharmacology, other than to state that medication should not be offered as a sole treatment option.¹⁴ However, the utility (or lack thereof) of pharmacotherapy in BN has been well established in adult populations, and in particular with selective serotonin reuptake inhibitors (SSRIs) such as fluoxetine.¹⁵⁻¹⁶ In addition to several other trials, fluoxetine has been investigated for use among adults who have been categorized as ‘non-responders’ in the context of psychosocial treatments, with encouraging outcomes (Walsh, 2000). In adult studies, potential participants declined to participate in clinical medication trials citing concerns regarding potential side effects (e.g., insomnia) or because of skepticism regarding the use of medication for a behavioral problem.¹⁷ Further, while the use of fluoxetine has regulatory approval for treatment of BN in adults, for adolescents this only one open clinical trial was published investigating the feasibility, tolerability and preliminary efficacy of fluoxetine in conjunction with psychotherapy over the course of eight weeks.¹⁸ In this study, 10 female adolescents (aged 12–18 years) with a DSM-IV diagnosis of BN or ED Not Otherwise Specified (EDNOS) received an adult dose of 60 mg. of fluoxetine. Results indicated that the medication was well tolerated, and no participants discontinued the trial due to adverse effects. Findings indicated a significant reduction in binge eating and purging episodes over the course of the trial, at a weekly decrease of 67% and 56%, respectively.

Although it seems as if antidepressants are similarly useful and well tolerated for the treatment of adolescent BN as with adults, these findings have not yet been replicated nor have there been any placebo-controlled trials in adolescents with BN. Given evidence suggesting that the combination of antidepressant medication with psychotherapy leads to optimal treatment effects among some adults with BN,¹⁹⁻²⁰ it is surprising that both study

and implementation of medication among adolescents with BN has been rather limited. Medication use for EDs has lagged behind other psychiatric disorders, and currently, no medication has regulatory approval for use among those with AN, both factors that may contribute to the paucity of its study among adolescents with BN. In addition, given that increased risk of suicidality has been reported for SSRIs in younger populations,²¹ as well as in adolescents with BN,¹² it is imperative that clinicians who do choose to prescribe these medications monitor patients closely and discuss these risks with patients and families. Overall, findings from the single study of pharmacotherapy for adolescent BN remain limited in their generalizability, and additional exploration of psychopharmacological interventions in adolescents with BN is warranted.

Psychological Treatment

Although prevalence estimates for adolescent BN consistently surpass those of adolescent AN,¹⁰ there is a comparatively limited amount of research evaluating psychological treatment outcomes in this population.²² Treatment for EDs in youth and adolescents over the last half-century principally supports family therapy,^{14,23} and current published clinical guidelines recommend an ED-specific family therapy treatment for adolescents with BN.^{14,24} Guidelines further specify, should a family therapy approach be unacceptable, contraindicated, or ineffective, individual ED-focused CBT should be considered.¹⁴

To date, three of four published RCTs have specifically evaluated the efficacy of family therapy or family-based treatment (FBT) for adolescent BN. Notably, these trials represent less than one third of published RCTs examining psychotherapy treatment, and specifically FBT approaches, among adolescents with AN. The first two RCTs for adolescent BN compared a family approach with an individual psychotherapy.²⁵⁻²⁶ In the first of these two studies, 85 adolescents with BN or Eating Disorder Not Otherwise Specified (EDNOS) were randomized to Family Therapy or to CBT-guided-self-care.²⁶ This particular family-based approach was an adaptation of family therapy for AN for use with individuals with BN. In this trial, CBT-guided-self-care was undertaken by the adolescent and supported by a health care professional. Primary outcomes were abstinence from binge eating and vomiting following six months of treatment, and a follow-up at 6-months post treatment; secondary outcomes included attitudinal bulimic symptoms, and treatment cost. Results indicated that adolescents receiving CBT-guided-self-care had significant reductions in binge eating at six months but these differences were not retained at follow-up. Further, there were no differences between groups at end-of-treatment (EOT) in purging behavior or attitudinal symptoms. Direct cost of care was reduced in CBT-guided-self-care; these findings have clinical relevance, as CBT-guided-self-care might be easily conducted in non-specialty clinics. Despite this cost advantage to CBT-guided-self-care, primary findings from this study indicate that CBT-guided-self-care did not evidence statistical superiority in the main outcome criteria, as compared with a family therapy approach at EOT. Certainly, reductions in clinical symptoms are clinically meaningful, but sustained recovery in the context of BN treatment should ultimately include the aim of abstinence.

In the same year, a manualized approach to family treatment for BN (FBT-BN) was used in a study comparing this treatment to an individual Supportive Psychotherapy (SPT).²⁵ In this

first trial of manualized FBT-BN, 80 participants (aged 12-19) with a DSM-IV diagnosis of BN or partial BN (i.e., those who endorsed binge eating and purge episodes averaging once per week over six months), were randomized to one of these two treatments, each for 20 sessions over six months.²⁵ SPT is a nondirective treatment that does not include specific active therapeutic elements. FBT-BN is characterized by an agnostic stance toward the etiology and pathogenesis of the ED, along with the overarching tenet that parents are a key and influential resource in their child's recovery process. In initial stages of treatment, FBT-BN mobilizes parental resources in disrupting the cycle of ED behaviors. As behavioral symptom resolution is facilitated, and weight restoration is achieved (if applicable), less parental authority is typically required and parents may gradually restore autonomy over eating behavior to the adolescent (for the published treatment manual, c.f.,²⁷). Results indicated that those receiving FBT-BN had significantly higher rates of abstinence from binge eating and purging episodes (39% versus 18%, $p = .049$) at EOT; across both groups, the rate of abstinence declined when assessed at 12-month follow-up (29% and 10%, respectively, $p = .05$), although the rate between the two groups remained statistically in favor of FBT-BN. Further, secondary outcome assessment revealed main effects in favor of FBT-BN on all measures of eating pathology, as measured by the Eating Disorder Examination.²⁸ As the first test of a manualized specialty treatment for BN in a sample of adolescents, this trial demonstrated the clinical and statistical superiority of FBT-BN as compared to non-specialty treatment. Abstinence rates for BN behaviors were 40% for FBT-BN, similar to abstinence rates typically achieved in CBT for BN in adults. Nonetheless, this result indicates a need to find avenues to improve abstinence rates, a strong predictor of longer term recovery.

In a more recent trial, FBT-BN was compared with a version of CBT that was adapted for adolescents with BN (CBT-A).²⁹ In this study, 109 adolescents (aged 12-18) with a DSM-IV diagnosis of BN or partial BN (as defined previously) were randomized to CBT-A or FBT-BN, each for 18 sessions over six months. CBT-A is an individual therapy that focuses on reducing dieting and on amending maladaptive behaviors and cognitions specifically related to shape and weight.³⁰ Adaptations to CBT unique to this patient population included exploration of developmental challenges, and collateral sessions with parents with a focus on psychoeducation of BN. FBT-BN was delivered with the approach described in the earlier study (c.f.,²⁵). Results indicate that abstinence from binge eating and purging episodes for the 28 days prior to treatment conclusion was statistically superior for FBT-BN as compared with CBT-A (39.4% versus 19.7%, $p = .04$). At 6-month follow-up, abstinence rates for both groups continued to improve, but remained significantly elevated for FBT-BN (44% and 25.4% respectively, $p = .03$); between-group abstinence rates did not differ statistically at 12-month follow-up. It should be pointed out that although there was not a statistical difference between the groups at 12-month follow-up, the study was not powered for the follow-up analysis.

In recent secondary analyses of this study sample, both CBT-A and FBT-BN showed comparable improvement in self-esteem and depression scores at EOT, and at extended follow up.³¹ Given the elevated frequency of comorbid psychopathology, and in particular depressive symptoms, associated with BN,¹¹ reduction in these symptoms is of considerable importance within the context of any treatment approach. Despite evidence that FBT-BN is

more effective than CBT-A in achieving abstinence from binge eating and purging behaviors, some families may advocate for an individual therapy, with the commonly held assumption that such an approach would better help with depressive symptoms as well as BN symptoms. Findings from this most recent secondary analysis suggest that while not an explicit focus of treatment, mechanisms within FBT may indirectly impact depressive symptoms.³¹ Further investigation of this mechanism is warranted, but current evidence may, in the meantime, help to guide clinicians and caretakers in selecting appropriate treatment options for adolescents with BN who present with lower self-esteem and elevated depressive symptoms.

Divergent from the previous work investigating FBT, the most recent trial of adolescent BN compared CBT with psychodynamic therapy (PDT).³² Participants in this study were females (aged 14-20) with a DSM-IV diagnosis of BN or partial BN (i.e., those who averaged binge eating and purging episodes less than twice per week in the previous three months). In alignment with standard treatment guidelines of clinical practice in Germany, both CBT and PDT took place over one year, and participants could receive up to 60 outpatient treatment sessions. CBT was based on a model of CBT for EDs,³³ and PDT was manualized specifically for young persons with BN. Both treatments share a symptom-focused approach, specific to BN, but with considerably divergent theoretical assumptions about the etiology and maintenance of the disorder. At the conclusion of treatment, there were no differences between groups on the primary outcome measure, i.e., the number of individuals who no longer met diagnostic criteria for an ED (33.3% of those receiving CBT versus 30.2% receiving PDT). At 12-month follow-up, rates of remission improved slightly for CBT, albeit not significantly, while rates for PDT remained unchanged. The primary conclusion from this study suggests that parity in important indicators of recovery may be achieved with CBT and PDT approaches alike in adolescent BN. However, for many individuals within healthcare systems that do not subsidize extended methods of care, such as the United States, the number of sessions afforded to patients in this trial is not achievable. Future trials of abbreviated versions of these two treatment approaches may provide critical information about whether extended courses of intervention are necessary.

Taken together, four RCTs among adolescents are a fraction of the plethora of treatment studies conducted among adults with BN. It is possible that the dearth of trials among youth and adolescents with BN is due to evidence that on average, the age of individuals who present for treatment with full or partial syndrome BN, are older than those presenting for treatment for AN.³⁴ Further, individuals with BN are often fully symptomatic while still within normal weight ranges for their age and height, further increasing the likelihood that adolescents may miss early detection of this disorder in primary care settings, where referrals are often made.³⁵ Despite these factors that have possibly impeded treatment advancement among adolescents with BN, these four completed RCTs provide provisional, yet robust support for the psychological treatment of adolescent BN. In particular, three trials have investigated a family-focused approach, two of which have evaluated a manualized FBT-BN as compared with another distinct and active individual treatment (SPT, and CBT-A, respectively). In each, FBT-BN has demonstrated statistically, as well as clinically superior rates of abstinence from binge eating and purging at treatment conclusion.

Across all four treatment studies, FBT-BN results in expedited behavior change and elevated sustained abstinence rates that may be maintained up to 12 months post-treatment.

In summary, it appears that similarly to adolescents with AN, clinically meaningful outcomes can be achieved with adolescents with BN when an approach that actively involves their families is used in the treatment process. As no treatment tested to date demonstrates statistically superior outcomes after 12 months, families who cannot for one reason or another participate in treatment, or who would prefer individual treatment, or when an adolescent is unwilling to involve caretakers, may find that CBT treatment is a beneficial alternative.

Mediators and Moderators of Treatment Outcome

In an effort to improve manualized ED treatment for BN, some effort to identify potential moderators and/or mediators of outcome that may lead to a better understanding of *how* these treatments work, as well as for *whom* these treatments work, has been undertaken. Mediators identify mechanisms by way of which a particular treatment may achieve its affects, whereas moderators are baseline variables that specify for whom, and under what conditions a treatment works.³⁶ Within the context of RCTs that investigate treatment for adolescent BN, both mediators and moderators are critical to our ability to discern which aspects of treatment may bring about optimal therapeutic change.³⁷ In comparison with comparable treatment methods for adolescent AN, as a field, clinicians and researchers alike know considerably less about how or for whom existing treatments work. While much of the extant research on mediators and moderators across EDs has focused on individuals over the age of 16 years,³⁸ a recent review has been conducted of research among adolescent populations, within which information specifically regarding BN remains limited (c.f.,³⁹).

The first explicit examination of moderators of treatment outcome in adolescent BN comes from the initial study of 80 adolescents randomized to either FBT-BN or SPT.²⁵ First examining early predictors of outcome, a 85% reduction in binge eating and purging by session six, whether FBT-BN or SPT, predicted remission at EOT and at 6-month follow-up.⁴⁰ However, based on these initial findings, it is not tenable to assume that an early reduction in either behavioral or attitudinal symptoms is critical in the success of treatment in adolescent BN. Turning to moderators, participants with less severe ED psychopathology (lower EDE Global scores), who received FBT-BN, were more likely to meet criteria for partial remission (i.e., no longer meeting diagnosis or study entry criteria) at 6-month follow-up than those who received SPT.⁴¹ In terms of mediators, early symptom remission was impactful on outcomes.⁴² FBT-BN was particularly efficacious in bringing about remission at EOT (i.e., absence of binge eating and purging in the prior four weeks) by way of early (mid-treatment/session 10) reductions in ED pathology (i.e., change in Eating Disorder Examination -Questionnaire (EDE-Q) subscales).⁴³ All EDE-Q subscales were significant mediators of treatment outcome, suggesting that FBT-BN exerts its effects by changing disordered thinking relatively early on in treatment. The mechanism of change, or how FBT-BN brings about this change, has not been the subject of systematic inquiry.

In only the second, and to date largest, study to explore moderators of treatment outcome, Le Grange and colleagues²⁹ examined 29 baseline variables within an RCT of 109 adolescents randomized to either CBT-A or FBT-AN.²⁹ Among the many variables considered, only the Family Environment Scale (FES)⁴⁴ assessment of conflict was identified as a treatment effect moderator. Participants with a lower FES conflict score responded better to FBT-BN as compared to CBT-A.

Considered together, these preliminary studies of potential moderators and mediators of treatment outcome for adolescent BN suggest that individuals with more severe symptom presentation at the start of treatment may fair better with FBT-BN, rather than SPT.⁴¹ Further, while family structure itself may not impact treatment outcome, adolescents exposed to less parental conflict may also fair better in FBT-BN treatment, as compared with CBT-A.²⁹ In general, for those who demonstrate early indication of non-response to treatment, identification of the potential moderators or mediators that may be driving non-response is critical. While these preliminary findings of potential moderators and mediators provide useful information along with suggested clinical guidelines, future studies with sufficient power to examine either mediators or moderators as *a priori* hypotheses would aid in improved understanding of how FBT-BN exerts its influence. Continued examination of factors that increase adaptive treatment response may ultimately help to guide future treatment refinement and development.

Future directions

A paucity of RCTs in adolescent BN has limited treatment advances, despite a widely acknowledged notion that treatments for adolescents with eating disorders must improve.⁴⁵ Notably, the two trials described above that compare the efficacy of a manualized FBT-BN approach with another distinct and active individual psychotherapy (SPT, and CBT-A, respectively) provide support for the use of FBT as a first-line treatment for adolescents with a diagnosis of BN. However, the dearth of current evidence in treatment trials for this patient population falls demonstrably short of that among both adult samples with BN, as well as in other adolescent ED samples (e.g., AN).

Current research in AN, supports early weight gain as an important predictor of improved treatment outcome.⁴⁶ By comparison, we have yet to consistently establish that decreased ED pathology, or even potentially early cessation of binge eating and purging may lead to similar positive treatment outcomes in adolescent BN. Additionally, while decreased family conflict²⁹ and baseline ED pathology⁴¹ are potential moderators of FBT-BN treatment, future work should examine other moderators that have been identified in AN, including parental self-efficacy⁴⁷ and parental criticism.⁴⁸ To improve outcomes it is of critical importance to study how family-based interventions in adolescent BN achieve symptom remission, or lead to other positive treatment outcomes. Early indications that decreased ED pathology may mediate differences in abstinence from binge eating and purging behavior following treatment are encouraging.⁴²

In addition to the examination of for *whom* FBT-BN is beneficial, or *how* FBT-BN elicits symptom change, it is critical that future studies improve adolescent BN treatment outcomes

by exploring different formats of this treatment. For example, based upon promising results demonstrated within samples of youth with AN,⁴⁹⁻⁵⁰ FBT may be expanded to a multi-family or intensive family treatment format (IFT). In IFT, families participate in a five-day, eight-hour/day treatment week; this efficient format may be particularly helpful for families who cannot regularly access specialty ED care, and may also serve as an option for particularly severe cases.⁵¹ Integrated within an IFT approach, a multiple-family format is predicated on the supposition that when families are brought together in groups, family resources and support for one another are amplified, which may then lead to improved outcomes.⁵² Another necessary consideration in treatment format derives from the high level of psychiatric comorbidity associated with BN.¹¹ This clinical feature increases the likelihood that adolescents may present for treatment of another disorder (e.g., mood, anxiety or substance use disorder) while also reporting symptoms of binge eating and purging.⁵³ Therefore, it is critical that future studies investigate whether consecutive or concurrent treatment approaches for comorbid diagnoses are most appropriate or effective for this subset of this patient population.

One of the most important challenges in advancing empirically-based treatment for adolescent BN, in addition to improving efficacy, is increasing its availability to more individuals and families who could benefit from the current manualized FBT-BN approach. Access to specialty providers for ED treatment is a particular challenge outside of urban environs, with a limited number of trained providers outside the sites where FBT was developed.⁵⁴ Increasing access to FBT training for clinicians through web-based education and supervision is a key area of future development. While preliminary effectiveness for the delivery of FBT via Telehealth has been established for adolescent AN,⁵⁵⁻⁵⁶ this platform for the delivery of FBT-BN remains unexplored. Therefore, further examination of this dissemination method is warranted both across a larger trial, and specifically among adolescents with BN.

Summary & Conclusions

Currently, there are few systematic studies of treatment of BN in adolescents. While RCTs of FBT-BN for adolescents have demonstrated evidence to support the focused involvement of parents in treatment, there remains a need for improved and sustainable outcomes in reducing binge eating and purging symptoms over time. In instances where parents are unable or perhaps unwilling to participate in treatment, there is evidence that individual ED-specific CBT approaches are helpful for some adolescents. Further investigation of treatment approaches for adolescents with BN, psychosocial as well as pharmacological, will counteract the current paucity of research evidence, and contribute to treatment advancement in this vulnerable, and perhaps over patient population.

References

1. Russell G Bulimia nervosa: an ominous variant of anorexia nervosa. *Psychol Med.* 1979; 9(3): 429–448. [PubMed: 482466]
2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders.* 5th ed. Washington, DC: APA; 2013.

3. Shapiro JR, Berkman ND, Brownley KA, et al. Bulimia nervosa treatment: a systematic review of randomized controlled trials. *Int J Eat Disord*. 2007; 40(4): 321–336. [PubMed: 17370288]
4. Poulsen S, Lunn S, Daniel SI, et al. A randomized controlled trial of psychoanalytic psychotherapy or cognitive behavioral therapy for bulimia nervosa. *FOCUS*. 2014; 12(4): 450–458.
5. Agras WS, Walsh T, Fairburn CG, et al. A multicenter comparison of cognitive-behavioral therapy and interpersonal psychotherapy for bulimia nervosa. *Arch Gen Psychiatr*. 2000; 57(5): 459–466. [PubMed: 10807486]
6. Fairburn CG, Bailey-Straebler S, Basden S, et al. A transdiagnostic comparison of enhanced cognitive behaviour therapy (CBT-E) and interpersonal psychotherapy in the treatment of eating disorders. *Behav Res Ther*. 2015; 70: 64–71. [PubMed: 26000757]
7. Hail L, Le Grange D. Bulimia nervosa in adolescents: prevalence and treatment challenges. *Adol Health Med Ther*. 2018; 9, 11.
8. Smink FRE, van Hoeken D, Hoek HW. Epidemiology of eating disorders: Incidence, prevalence and mortality rates. *Curr Psychiat Rep*. 2012; 14: 406–414.
9. Jones JM, Bennett S, Olmsted MP, Lawson ML, Rodin G. Disordered eating attitudes and behaviours in teenaged girls: a school-based study. *CMAJ*. 2001; 165(5): 547–552. [PubMed: 11563206]
10. Swanson SA, Crow S, Le Grange D, Swendsen J, Merikangas KR. Prevalence and correlates of eating disorders in adolescents: results from the national comorbidity survey replication adolescent supplement. *Arch Gen Psychiatr*. 2011; 68(7): 714–723. [PubMed: 21383252]
11. Thompson-Brenner H, Westen D. A naturalistic study of psychotherapy for bulimia nervosa, Part 1: Comorbidity and therapeutic outcome. *J Nerv & Ment Dis* 2005; 193: 573–584. [PubMed: 16131940]
12. Crow SJ, Swanson SA, Le Grange D, Feig EH, Merikangas KR. Suicidal behavior in adolescents and adults with bulimia nervosa. *Compr Psychiatr*. 2014; 55(7): 1534–1539.
13. Crow S, Peterson C, Swanson S, Raymond N, et al. Increased mortality in bulimia nervosa and other eating disorders. *Am J Psychiatr*. 2009; 166: 1342–1346. [PubMed: 19833789]
14. National Institute for Health and Care Excellence. Eating disorders: Recognition and treatment (NICE guideline NH69). <https://www.nice.org.uk/guidance/ng69>. Published 2017
15. Davis H, Attia E. Pharmacotherapy of eating disorders. *Curr Opin Psychiatr*. 2017; 30(6): 452–457.
16. Walsh BT, Kaplan AS, Attia E, et al. Fluoxetine after weight restoration in anorexia nervosa: a randomized controlled trial. *JAMA*. 2006; 295(22): 2605–2612. [PubMed: 16772623]
17. Walsh BT, Agras WS, Devlin MJ, et al. Fluoxetine for bulimia nervosa following poor response to psychotherapy. *Am J Psychiatr*. 2000; 157(8): 1332–1334. [PubMed: 10910801]
18. Kotler L, Devlin MJ, Davies M, Walsh TB. Anopentrioloffluoxetinefor adolescents with bulimia nervosa. *J Child Adolesc Psychopharmacol*. 2003; 13(3): 329–335. [PubMed: 14642021]
19. Flament MF, Bissada H, Spettigue W. Evidence-based pharmacotherapy of eating disorders. *Int J Neuropsychopharmacol*. 2012; 15(2):189–207. [PubMed: 21414249]
20. Walsh BT, Wilson GT, Loeb KL, et al. Medication and psychotherapy in the treatment of bulimia nervosa. *Am J Psychiatr*. 1997; 154(4): 523–531. [PubMed: 9090340]
21. Morrison J, Schwartz TL. Adolescent angst or true intent? Suicidal behavior, risk, and neurobiological mechanisms in depressed children and teenagers taking antidepressants. *Int J Emerg Ment Health*. 2014; 16(1): 247–50. [PubMed: 25345238]
22. Le Grange D, Loeb KL, Van Orman S, Jellar CC. Bulimia nervosa in adolescents: a disorder in evolution?. *Arch Ped & Adol Med* 2004; 158(5): 478–482.
23. Lock J, Le Grange D. Family-Based Treatment: Where Are We and Where Should We Be Going to Improve Recovery in Child and Adolescent Eating Disorders. *Int J Eat Disord* (in press).
24. Hilbert A, Hoek HW, Schmidt R. Evidence-based clinical guidelines for eating disorders: international comparison. *Curr Opin Psychiatr*. 2017; 30(6): 423.
25. Le Grange D, Crosby RD, Rathouz PJ, Leventhal B. A randomized controlled comparison of family-based treatment and supportive psychotherapy for adolescent bulimia nervosa. *Arch Gen Psychiatr*. 2007; 64(9): 1049–1056. [PubMed: 17768270]

26. Schmidt U, Lee S, Beecham J, et al. (2007). A randomized controlled trial of family therapy and cognitive behavior therapy guided self-care for adolescents with bulimia nervosa and related disorders. *Am J Psychiatr.* 2007; 164(4), 591–598. [PubMed: 17403972]
27. Le Grange D, Lock J. *Treating bulimia in adolescents: A family-based approach.* Guilford Press; 2007.
28. Fairburn CG, Cooper I. The eating disorder examination In Fairburn CG, Wilson GT, editors: *Binge Eating: Nature, Assessment, and Treatment.* 12th ed. New York, NY: Guilford Press; 1993.
29. Le Grange D, Lock J, Agras WS, Bryson SW, Jo B. Randomized clinical trial of family-based treatment and cognitive-behavioral therapy for adolescent bulimia nervosa. *J Am Acad Child Adolesc Psychiatry.* 2015; 54(11): 886–894. [PubMed: 26506579]
30. Lock J Adjusting cognitive behavior therapy for adolescents with bulimia nervosa: results of case series. *Am J Psychother.* 2005; 59(3): 267–281. [PubMed: 16370133]
31. Valenzuela F, Lock J, Le Grange D, Bohn C. Comorbid Depressive Symptoms and Self Esteem Improve After Either Cognitive-Behavioral Therapy or Family-Based Treatment for Adolescent Bulimia Nervosa. *Eur Eat Disord Rev.* 2018; 26: 253–258. [PubMed: 29446174]
32. Stefani A, Salzer S, Reich G, et al. Cognitive-behavioral and psychodynamic therapy in female adolescents with bulimia nervosa: a randomized controlled trial. *J Am Acad Child Adol Psychiatry.* 2017; 56(4):329–335.
33. Fairburn CG, Cooper Z, Shafran R. Enhanced cognitive behavior therapy for eating disorders (CBT-E): an overview In Fairburn CG, editor: *Cognitive Behavior Therapy and Eating Disorders.* New York: Guilford Press; 2008: 23–34.
34. Le Grange D, Loeb KL, Van Orman S, Jellar CC. Bulimia nervosa in adolescents: a disorder in evolution?. *Arch Ped Adol Med.* 2004; 158(5): 478–482.
35. Walsh JM, Wheat ME, Freund K Detection, evaluation, and treatment of eating disorders. *J Gen Inter Med.* 2000; 15(8): 577–590.
36. Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *J Pers Soc Psychol.* 1986; 51:1173–1182 [PubMed: 3806354]
37. Kraemer HC, Wilson GT, Fairburn CG, Agras WS. Mediators and moderators of treatment effects in randomized clinical trials. *Arch Gen Psychiatr.* 2002; 59(10): 877–883. [PubMed: 12365874]
38. Linardon J, de la Piedad Garcia X, Brennan L Predictors, moderators, and mediators of treatment outcome following manualised cognitive-behavioural therapy for eating disorders: A systematic review. *Eur Eat Disord Rev.* 2017; 25(1), 3–12. [PubMed: 27862611]
39. Murray S, Loeb K, Le Grange D. Mediators and Moderators of Treatment Outcomes in Adolescent Eating Disorders In Maric M, Prins P, Ollendick T, editors: *Mediators and Moderators of Youth Treatment Outcome* (pp. 210–229). New York: Oxford University Press, 2015.
40. Le Grange D, Doyle P, Crosby R, Chen E. Early response to treatment in adolescent bulimia nervosa. *Int J Eat Disord.* 2008; 41: 755–757. [PubMed: 18570193]
41. Le Grange D, Crosby RD, & Lock J. Predictors and moderators of outcome in family-based treatment for adolescent bulimia nervosa. *J Am Acad Child & Adol Psychiatry.* 2008; 47(4): 464–470.
42. Lock J, Le Grange D, Crosby R. Exploring possible mechanisms of change in family-based treatment for adolescent bulimia nervosa. *J Fam Ther.* 2008; 30(3): 260–271.
43. Fairburn CG, & Beglin SJ. Assessment of eating disorders: Interview or self-report questionnaire? *Int J Eat Disord.* 1994; 16(4): 363–370. [PubMed: 7866415]
44. Moos R, Moos B. *Family Environment Scale Manual.* 3rd Palo Alto, CA: Consulting Psychologists Press; 1994.
45. Lock J An update on evidence-based psychological treatments for eating disorders in children and adolescents. *J Clin Child & Adol Psych.* 2015; 12, 1–15
46. Le Grange D, Accurso EC, Lock J, Agras S, Bryson SW. Early weight gain predicts outcome in two treatments for adolescent anorexia nervosa. *Int J Eat Disord.* 2014; 47(2): 124–129. [PubMed: 24190844]

47. Byrne CE, Accurso EC, Arnow KD, Lock J, Le Grange D. An exploratory examination of patient and parental self-efficacy as predictors of weight gain in adolescents with anorexia nervosa. *Int J Eat Disord.* 2015; 48(7): 883–888. [PubMed: 25808269]
48. Le Grange D, Hughes EK, Court A, Yeo M, Crosby RD, Sawyer SM. Randomized clinical trial of parent-focused treatment and family-based treatment for adolescent anorexia nervosa. *J Am Acad Child Adolesc Psychiatr.* 2016; 55: 683–692
49. Marzola E, Knatz S, Murray SB, Rockwell R, Boutelle K, Eisler I, & Kaye WH. Short-term intensive family therapy for adolescent eating disorders: 30-month outcome. *Eur Eat Disord Rev.* 2015; 23(3): 210–218. [PubMed: 25783849]
50. Rockwell RE, Boutelle K, Trunko ME, Jacobs MJ, & Kaye WH. An innovative short-term, intensive, family-based treatment for adolescent anorexia nervosa: Case series. *Eur Eat Disord Rev.* 2011; 19(4): 362–367. [PubMed: 21308869]
51. Knatz S, Kaye W, Marzola E, & Boutelle K. A brief, intensive application of family based treatment for eating disorders In Loeb KL, Le Grange D, Lock J, editors: *Family therapy for adolescent eating and weight disorders: new applications.* New York: Routledge/Taylor and Francis Group; 2015: 72–91.
52. Eisler I, Simic M, Hodsoll J, Asen E, Berelowitz M, Connan F, et al. A pragmatic randomised multi-centre trial of multifamily and single family therapy for adolescent anorexia nervosa. *BMC Psychiatr.* 2016; 16(1): 422.
53. Le Grange D, Schmidt U. The treatment of adolescents with bulimia nervosa. *J Ment Health.* 2005; 14(6): 587–597.
54. Murray SB, & Le Grange D. Family therapy for adolescent eating disorders: an update. *Curr Psychiatr Rep.* 2014; 16(5): 447.
55. Anderson KE, Byrne C, Goodyear A, Reichel R, & Le Grange D. Telemedicine of family-based treatment for adolescent anorexia nervosa: A protocol of a treatment development study. *J Eat Disord.* 2015; 3(1): 25. [PubMed: 26167281]
56. Anderson KE, Byrne CE, Crosby RD, & Le Grange D. Utilizing Telehealth to deliver family-treatment for adolescent anorexia nervosa. *Int J Eat Disord.* 2017; 50(10): 1235–1238. [PubMed: 28801943]

KEY POINTS

- A dearth of randomized controlled trials in adolescent bulimia nervosa (BN) has limited treatment advances.
- Family-based treatment is an evidenced based treatment for adolescent BN.
- Future research is needed to determine for whom, and under what conditions, certain types of family involvement might be most effective in the treatment of adolescent BN.

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SYNOPSIS

Currently, there are few systematic studies of treatment of bulimia nervosa (BN) in adolescents. While family-based treatment has demonstrated preliminary evidence to support involvement of caregivers in treatment, there is significant opportunity for improvement in mitigating binge-eating and purging symptoms among adolescents afflicted with BN. In instances where caregivers are unable to participate in treatment, there is evidence that BN-specific cognitive behavioral therapy approaches may be helpful for some adolescents. Further research is needed to investigate the precise nature of optimal family involvement, and specifically to determine for whom, and under what conditions certain types of family involvement might be most effective in adolescent treatment of BN.

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Table 1.

Randomized Controlled Trials of Adolescent Treatment of Bulimia Nervosa

Author (year)	Sample	Comparison Groups	Primary Outcomes	Main Findings
Schmidt et al. (2007) ²⁶	Meet criteria for DSM-IV BN or EDNOS; N = 85; aged 13-20	Family Therapy (FT) (n = 41); self-guided Cognitive Behavioral Therapy (CBT-GS) (n = 44) Dose: 6 months, FT: 13 sessions with close others + 2 individual; CBT: 10 weekly sessions, 3 monthly follow-up + 2 optional with a close other	Abstinence from binge eating and vomiting following 6 months of treatment, and at 6-month follow-up	CBT-GS demonstrated significantly greater reductions in binge eating at EOT as compared with FT; differences were not retained at 6-month follow-up. No differences between groups at EOT in purging behavior or attitudinal symptoms. Direct cost of care reduced in CBT-GS, but groups did not differ across other cost categories.
Le Grange et al. (2007) ²⁵	Meet criteria for DSM-IV BN or partial BN; N = 80; aged 12-19	Family-Based Treatment for BN (FBT-BN) (n = 41); Supportive Psychotherapy (SPT) (n = 39) Dose: 20 sessions over 6 months	Abstinence from binge-and-purge episodes for 4 weeks prior to assessment, per EDE; measured at EOT and 6-month follow-up	FBT-BN had significantly higher rates of abstinence from binge eating and purging episodes than SPT at EOT (39% vs. 18%); across both groups, rate of abstinence declined when assessed at 12-months (29% and 10%, respectively).
Le Grange et al. (2015) ²⁹	Meet criteria for DSM-IV BN or partial BN; N = 130; aged 12-18	FBT-BN (n = 51); CBT adapted for adolescents (CBT-A) (n = 58); SPT (not included in analyses) Dose: 18 sessions over 6 months	Abstinence from binge-and-purge episodes for 4 weeks prior to assessment, per EDE; measured at EOT, 6- and 12- month follow-up	FBT-BN had significantly higher rates of abstinence from binge eating and purging episodes than CBT-A at EOT (39% vs. 20%) and at 6-month follow-up (44% vs. 25%). Abstinence rates between groups did not differ at 12- month follow-up (49% vs. 32%).
Stefini et al. (2017) ³²	Meet criteria for DSM-IV BN or partial BN; N = 81; aged 14-20	Psychodynamic Therapy (PDT) (n = 42); CBT (n = 39) Dose: 60 sessions over 12 months	Remission, defined as a lack of DSM-IV diagnosis for BN or partial BN at EOT and 12-month follow-up	No significant differences in remission rates between groups at EOT or at 12-month follow-up. Both groups demonstrated improvement on all secondary outcomes with improved rates of binge eating and purging in favor of CBT and for eating concern, in favor of PDT.

* partial BN = those who endorsed binge and purge episodes averaging once per week over 6 months.

BN = bulimia nervosa; EDNOS = Eating Disorder Not Otherwise Specified; EDE = end-of-treatment; EDE= Eating Disorder Examination.