

A Systematic Review of Evidence for Psychological Treatments in Eating Disorders: 2005–2012

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ABSTRACT

Objective: To update new evidence for psychotherapies in eating disorders (EDs) since 2005–September 2012.

Method: Completed and published in the English language randomized controlled trials (RCTs) were identified by SCOPUS search using terms “bulimia” or “binge eating disorder” (BED) or “anorexia nervosa” (AN) or “eating disorder” and “treatment,” and 36 new RCTs met inclusion criteria.

Results: There has been progress in the evidence for family based treatment in adolescents with AN, for cognitive behavior therapy (CBT) in full and guided forms, and new modes of delivery for bulimia nervosa (BN), BED, and eating disorder not otherwise specified with

binge eating. Risk of bias was low to moderate in 22 (61%) of RCTs.

Discussion: The evidence base for AN has improved and CBT has retained and extended its status as first-line therapy for BN. However, further research is needed, in particular noninferiority trials of active therapies and the best approach to addressing ED features and weight management in co-morbid BED and obesity. © 2013 by Wiley Periodicals, Inc.

Keywords: anorexia nervosa; bulimia nervosa; binge eating disorder; psychotherapy

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Introduction

Bulik et al.^{1–3} conducted a series of scholarly reviews (search date to 2005) of randomized controlled trials (RCTs) in eating disorders. These found inconclusive evidence for effective therapies in anorexia nervosa (AN), evidence for cognitive behavior therapy (CBT) in reducing bulimic features in the short and longer term in bulimia nervosa (BN), and mixed evidence for efficacy of CBT in binge eating disorder (BED). The present article aimed to update the evidence for psychological therapies, including trials of eating disorder not otherwise specified (EDNOS). Specific objectives of this review were to determine if the evidence for AN therapies has improved, if CBT retains its singular status, and if there is evidence for therapy that both reduces binge eating and improves body weight management in BED co-morbid with obesity.

Method

A SCOPUS search was conducted dated from the final year of the Bulik et al.^{1–3} reviews (i.e., 2005 to September 2012). Terms were “bulimia” or “BED” or “AN” or “eating disorder” and “treatment” in article title, abstract and/or keywords. In the search, 4,860 titles and abstracts and relevant review reference lists were screened. Trials were included if they were completed, published in English, reported a randomized comparison of a psychological treatment versus any other treatment, no treatment or treatment as usual group, were of participants with eating disorders meeting diagnostic criteria, and where the primary outcomes were reduction in eating disorder psychopathology or symptoms. Trials of pharmacological treatments, treatment setting, or where the primary outcome was weight reduction or other psychological feature(s) were not included. Secondary analyses of trial data were included where they added additional information of substance on evidence for therapies. Full details of the search results and reasons for exclusions are available from the author on request. Space precluded addressing costs of treatment and readers are referred to a recent comprehensive review on cost-effectiveness.⁴ Trials were assessed for risk of bias and quality according to the Cochrane handbook.⁵ Risk of bias was assessed on adequacy of randomization procedure and allocation concealment (i.e., masking of group assignment), use of blinding in outcome assessments (i.e., masking of assessors to group assignment) and data analysis by intention-to-treat. Data were

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extracted on trial quality, participant features and setting, main outcomes, and attrition (where possible treatment attrition) by the author. The percentage of participants abstinent from binge eating or binge/purging was extracted as the most commonly reported outcome across RCTs of BN and BED.

Results

Results of Search

Two follow-up studies^{6,7} of previously reported RCTs and 36 new trials (six AN,^{8–15} five BN,^{16–20} 13 BED,^{21–34} and 12 EDNOS or mixed diagnostic groups^{35–46}) were identified (In this review where RCTs applied DSM-5 weekly frequency BN or BED criteria for binge eating and/or purging⁴⁷ and this was the only reason they did not meet BN or BED criteria, these are regarded as trials of BN or BED). Risk of bias was low to moderate in five of the six AN, four of the five BN, eight of the 13 BED, and five of the 12 EDNOS or mixed diagnoses RCTs. These trials are presented in detail in **Table 1**.

Summary of Findings from RCTs

In both the follow-up studies^{6,7} a tendency was reported for interpersonal psychotherapy (IPT) to be associated with greater improvements over time, “catching up” with CBT in AN⁶ and BED,⁷ respectively. In the first trial,⁶ the effects of specialist supportive clinical management (SSCM for AN) appeared to decline over time.

All but three of the new AN RCTs were of family based treatment (FBT) and only one was in adults testing a novel therapy, the Maudsley Model of AN Treatment for Adults (MANTRA).¹³ MANTRA addresses putative maintaining factors related to rigid thinking styles (i.e., perfectionism and obsessive-compulsive personality traits) and the avoidance of strong emotion, pro-anorectic beliefs and responses of close others as well as elements of cognitive remediation therapy. The RCT was inconclusive with improvements found in both MANTRA and an “atheoretical” pragmatic therapy (SSCM). The evidence for FBT (with notably low attrition rates) compared to individual therapy has strengthened both in AN and in one trial for BN.¹⁹

Although there were only five RCTs of BN, nine of the mixed diagnostic groups RCTs included a large numbers of participants with BN. Abstinence rates at end of treatment were less than 50% compared to trials in BED where close to or better than 50% was almost always achieved. The evidence for non-specialist therapist-guided self-help (GSH) for BN has increased, and one study of adolescent partici-

pants had outcomes not significantly different from FBT.³⁷ However, abstinence rates were low for GSH and in a trial of CDROM-based care²⁰ engagement was poor. One trial tested an intervention aimed to promote weight management rather than reduce the thin ideal.¹⁸ Although effective, follow-up was only to 3 months. In contrast, a large trial of a new enhanced form of CBT (CBT-E)⁴⁰ supports this mode of treatment and its modules which address maintaining features such as mood intolerance, especially in those participants with greater psychological vulnerabilities.

In BED there is a new trial supporting dialectical behavior therapy^{30,31} but most trials are of CBT in full or GSH form (which continues to receive support). CBT adapted to new technologies such as internet delivery³⁵ has also been found effective in an increasing number of trials in participants with BED and EDNOS. Findings are mixed for behavior weight loss therapy (BWL) as a viable alternative to CBT for those with obesity as well as BED. However, whilst energy restriction in the short term was associated with weight loss, few trials were long term. One RCT²⁹ found either IPT or GSH CBT to be superior to BWL at 2 years for binge abstinence and similar for weight management. Despite the epidemiologic evidence for the increased rates of BED and similar disorders in men, only three RCTs include a substantive proportion of men.^{22,33,34}

Discussion

Overview

This review, like Bulik,^{1–3} found methodological quality of RCTs was better in AN and BN trials and poorer in EDNOS and BED. Since the Bulik reviews there has been substantive progress in the evidence base for FBT in adolescents with AN, for CBT in full and GSH forms, and new modes of delivery for BN, BED, and EDNOS with binge eating. The majority of newly published trials were of BED or mixed diagnostic groups of BN, BED and/or EDNOS of a subthreshold BN or BED type in adults. There were no RCTs identified for purging disorder, for night eating syndrome, or for the newly proposed Avoidant Restrictive Food Intake Disorder.⁴⁷ There were no new trials of pure (unguided) self-help, and only one of therapy for adults with AN. This discussion highlights selected findings and gaps in evidence.

Selected Findings and Gaps in Evidence

SSCM was found effective compared to CBT or another active therapy in the shorter term in both

TABLE 1. Randomised controlled trials of psychological treatments in eating disorders 2005–2012

Study	Trial quality	Participants/context & setting	Intervention(s)	Outcome @ End R_x	Outcome @ Follow-up
Anorexia nervosa Lock [6]	Adequate allocation Concealment, Blind Assessors ITT	86 Adolescents some part weight restoration & menses Specialist R_x , UK	1. Short-term- 10 session over 6 months, 2. Longer-term 12 months mMaudeley Family Based R_x	No between group differences 10% R_x attrition	12 months no difference between groups, Group 2 favored for <BMI and for non – intact families
Rhodes [9]	Unclear allocation Concealment & blinding ITT	20 Adolescents, Specialist re- feeding setting	1. Family based treatment 2. FBT plus an additional parent- parent consultation	Small advantage in rate weight gain for parental consultation	-
Lock [9]	Adequate allocation Concealment Unclear blinding ITT	$n = 121$, mean Age 14.4 yrs Multi-site 91%female	1.m Family-based R_x (FBT) 2. mIndividual Adolescent Focused therapy (AFT) Low attrition: FBT 16% AFT8%	FBT greater weight gain ($p = 0.048$) NS differences in remission those with more ED symptoms benefited more from FBT	6 & 12 months Higher remission:49% FBT vs 23% AFT ($p = 0.024$) Bingeing sub-type responded less well
Le Grange [11] Brownstone [12]					
Schmidt [13]	Allocation by sealed envelopes Assessors blind ITT	$n = 72$ AN or meeting proposed DSM-5AN criteria, Adults Specialist R_x , UK	1. mMaudeley Model of AN R_x for Adult (MANTRA) 2. mSpecialist Supportive Clinical Management (SSCM)	No between group difference at 6 months, 32% had fewer than 10 sessions	At 1 year groups differed only in that MANTRA had > hospital R_x ($p < .05$) Recovery rates <30%
Whitney [14]	Adequate allocation Concealment, blind assessors ITT analyses Allocation by sealed envelopes assessors blind ITT	$n = 48$, Adults Specialist R_x , UK	1. Family workshop, educational and skills- based	No between group difference at 6 months Improved BMI	3- years improvements maintained, reduced carer distress
Godart [15]		$n = 60$, aged 16–19 duration AN <3yrs Specialist France	2. Individual family work 1. Family (dynamic) R_x (FT) 2. R_x as usual. 12% R_x attrition	17% R_x attrition 18 months; FT better global outcomes (AES 23), & more at BMI $\geq 10^{th}$ per% (AES 26)	-
Bulimia nervosa# Banasiak [16]	Adequate allocation Concealment, Blind assessors, ITT	109 Women DSM5 BN, Primary care Australia	1. GSH-CBT 2. WL, delayed R_x (DT) 31% attrition	Binge remission: GSH 46% DT 13%, $p < 0.001$	6-month remission 60%, all had GSH
Newonen [17]	Unclear allocation Concealment & assessor blinding, ITT	86 women Consecutive series Specialist, Sweden	1. Group mCBT/IPT 2. Individual mCBT/IPT (Ind.) 22% R_x attrition	Binge purging abstinence Group R_x 41% Ind. R_x 31% NS	69 (80%) 2.5 year follow-up, abstinence: 27% Group vs. 38% Ind. NS
Burton [18]	Unclear allocation Concealment, blind assessors, ITT	85 adult women met DSM-5 BN criteria University, US	1. Healthy weight loss group with aim not to reduce thin ideal.	Binge purging abstinence: Group 16% vs. WL 2% controls $p < 0.05$	3-month abstinence: Group 35% vs. WL 10% $p < 0.01$
Le Grange [19]	Adequate allocation Concealment, no assessor blinding, ITT	$n = 80$ aged 12–19 years DSM-5BN out-patient specialist R_x , US	2. WL Attrition 19% 1. Family-based treatment (FBT-BN)	Abstinence bingeing FBT 39%, SPT 18% $p = 0.05$ R_x attrition 11%	6-months abstinence FBT 29% SPT 10%
Schmidt [20]	Adequate allocation Concealment, blind assessors, ITT	$n = 97$ DSM-5BN Adults, Specialist Setting, UK	2. Supportive R_x 1. CD-ROM-based GS Care then CBT 3-months 2. Delayed R_x then CBT	Only 66% started R_x NS group differences, R_x abstinence 39%	7-months: Attrition 38.1%, NS group differences
BED# De Zwaan [21]	Allocation unclear Not blinded, ITT	71 obese adult women University research, US	1. VLCD stabilization 2. VLCD with CBT at 14–24 weeks	Abstinence bingeing: VLCD 74.3% vs. CBT 58.3% NS R_x attrition 12.7%	1 year VLCD 32.3% vs. 33.4% CBT binge free

TABLE 1. Randomised controlled trials of psychological treatments in eating disorders 2005–2012 (Continued)

Study	Trial quality	Participants/context & setting	Intervention(s)	Outcome @ End R_x	Outcome @ Follow-up
Grilo [22]	Adequate allocation Concealment, non-blind assessment, ITT	$n = 90$ adults, 19 males BMI ≥ 27 University US, R_x attrition 2%	1. mGSH-CBT 12 weeks 2. mGSH-BWLT 12 weeks 3. Nonm recording	Abstinence 46% CBT $> 18\%$ WLT = 13% no GSH $p = 0.01$, BMI NS	–
Tasca [23]	Unclear allocation concealment, blind assessors, ITT some analyses only	$n = 135$, 12 men mean BMI > 40 , Specialist Canada R_x attrition 26%	1. Group CBT 2. Group psycho dynamic mIPT 3. Wait-list (WL) 16 weeks	Binge abstinence 59.5% IPT = 62.2% CBT, $> 9.1\%$ WL	12 months abstinence 56.8% IPT vs 67.7% CBT NS
Munsch [24]	Unclear allocation Concealment, non-blind assessors, ITT	80 obese adults, 9 males, University setting, Switzerland	1. mCBT 2. mBWLT. Groups over 16 weeks. 28% R_x attrition	Binge abstinence: CBT 41% BWLT 58%, $p = 0.01$	12 months abstinence: CBT 52% BWLT 50% NS, and NS differences in BMI
Dingemans [25]	Allocation concealed Assessors blind, multilevel analysis	52 adults (3 males) specialist care The Netherlands	1. Group mCBT 15 sessions Sessions over 20 weeks 2. Wait-list (WL)	Abstinence 63% CBT vs 18% WL ($p < 0.001$). R_x (trial) attrition 4%	All in WL group offered CBT at end R_x 80% binge abstinence
Schulp [26]	Unclear allocation concealment, assessors not blind, linear mixed models used	36 adult women mean BMI 33.4 University setting Switzerland	1. Group mCBT and five booster sessions 2. WL 8 weeks	8 weeks, abstinence: 39% CBT, 0 WL 13.2% R_x attrition	12-months: no comparative data, 24.7% binge abstinence
Peterson [27]	Adequate allocation concealment, Blind assessors, ITT	259 adults, 32 males BMI ≥ 25 Specialist care, US	20-week groups: 1. CBT 2. Therapist “assisted” CBT 3. GSH-CBT 4. WL	Abstinence 1 (CBT): 51.7% 2: 33.3%, > 3 (GSH): 17.9% and 4 (WL): 10.1% $p < 0.001$	12 months: no between group differences R_x attrition 26%
Ricca [28]	Adequate allocation concealment, Blind assessors, ITT	DSM-5BED, $n = 44$ 12% men Specialist Italy, R_x attrition 4%	1. mIndividual (Ind) CBT 2. mGroup CBT over 22 weeks	More in Individual did not meet diagnostic criteria $p = 0.02$	3-years; no between group differences
Wilson [29]	Unclear allocation concealment, Assessors blind, ITT	205 adults BMI > 27 University clinic 15% men, US	20 sessions of both 1. mBWLT 2. mIPT, 3. 10 sessions of mGSHCBT over 6 months	No between group differences in bingeing, R_x attrition 22% (IPT low)	2-years: 2:70%, 3:62% binge free $> 1:39\%$ $p < 0.05$, BMI NS
Safer [30,31]	Unclear allocation concealment and assessor blinding	101 adults, 15 males Mean BMI 36.4 Specialist, US	1. mDBT 2. mActive comparison group therapy (CG)	Abstinence: DBT 64% CG 36% Attrition: DBT 4% CG 36%	12 months: No between group differences, CG $>$ response @ 4-weeks
Castellnuovo [32]	Unclear allocation concealment, Not blind, ITT	$n = 60$, obese, adult woman in/outpatient Italy, attrition unclear	1. Brief Strategic Therapy 2. CBT—both eight sessions Plus 7-month BWLT	NS differences in BMI or binge eating at 1 month discharge	6-months, 63.3% CBT vs. 20% BST had less than twice weekly bingeing ($p < 0.01$) BMI NS differences
Masheb [33]	Adequate allocation Concealment, Blind assessors, Mixed effect models ITT	50 adults, 12 males, Obese, specialist outpatient R_x US, R_x attrition 14%	1. CBT plus low energy dietary counseling (ED) 2. CBT plus general nutrition dietary guidance (GN)	Binge abstinence NS 52% ED 44% GN Completers: 30% had $\geq 5\%$ weight loss	6-months: No between group differences binge eating (EDE), BMI or other ED outcomes
Grilo [34]	Adequate allocation concealment, unclear assessors blinding, ITT	125 obese adults 33% men, Specialist R_x , US	1. mCBT 2. mBWLT 3. mCBT then mBWLT All outpatient groups	Binge remission: CBT 44.4% BWLT 37.8% Both 48.6% NS. 31% R_x attrition	12-months: CBT 51.1% BWLT 35%, both 40% NS, BMI NS differences
Mixed or EDNOS Mitchel [35]	Adequate allocation concealment Assessors blinding, ITT	$n = 128$ DSM IVBN and EDNOS 45% University setting US	1. mCBT-BN face-to-face 2. mCBT-BN tele-medicine Supervised R_x	No group differences in abstinence rates of 50%, attrition 38%	12-months no between group differences

TABLE 1. Randomised controlled trials of psychological treatments in eating disorders 2005–2012 (Continued)

Study	Trial quality	Participants/context & setting	Intervention(s)	Outcome @ End R_x	Outcome @ Follow-up
Nevoenon [36]	Unclear allocation concealment Assessor blinding unclear, ITT analyses	35 women EDNOS Binge purging Specialist outpatient Sweden	1. Group mCBT/IPT 2. Individual mCBT/IPT (Ind.) 14% R_x attrition	Binge purging abstinence: Group 17% vs. Ind. 6% NS	24 (69%) completed 2.5 year follow-up binge abstinence: 67% group vs. 59% Ind. NS
Schmidt [37]	Adequate allocation concealment, Blind assessors ITT	61 BN 24 EDNOS, 13–20 years, 98% female Specialist, UK, 29% R_x attrition	1. mFamily-based treatment (FBT) 13 + 2 individual 2. mGuided self-care (GSC) CBT 10 sessions	6-month abstinence binge 8/41 FBT vs 13/44 GSC Cohen's d = -0.21	1 year binge abstinence $n = 16/41$ FBT vs. 13/44 GSC NS, no other group differences
Ljotsson [38]	Unclear allocation concealment and assessor blinding, ITT	BN $n = 33$, BED $n = 35$ Community Sweden	1. Internet GSH CBT 2. Wait-list control R_x Attrition 29%	GSH-CBT greater binge abstinence 37% vs. 15% in WL	–
Robinson [39]	Unclear allocation concealment, no blinding, ITT	$n = 97$ students BN, BED or EDNOS by self-report, UK	1. non-mCBT (eTherapist) 2. self-directed writing (SWT) 1 and 2 via email 3. WL	3-months active R_x favored, no differences eTherapist vs SWT, Attrition 37%	–
Fairburn [40]	Adequate allocation concealment Blind assessors ITT	$n = 154$, BMI > 17.5 Transdiagnostic Adults Setting: specialist, UK	1. CBT Enhanced focused(f) 2. CBT Enhanced broad R_x attrition 22.1%	No between group differences, 51.3% ED symptoms < 1 SD > community mean Binge abstinence NS	1-year closed, outcomes maintained and poorer with CBTef and complex psychopathology $p = 0.04$ 2.5 years binge abstinence: 1. 57.2% 2. 38.5% 3. 40% NS
Katzman [41]	Adequate allocation concealment, Blind assessors	$n = 225$, 60 EDNOS 165 BN	1. mCBT four Ind. and eight group (gCBT) 2. mMotivational (M) Ind. and gCBT 3. mMIND & Ind. CBT	1. 40% 2. 24.2% 3. 25%	–
Carrard [42]	Allocation not concealed, not blind, ITT	74 Adult women BED DSM-5, University Switzerland	1. Internet GSH CBT 2. WL then GSH CBT both with email coach	6-months: abstinence bingeing 35.1% GSH > 8.1% WL $p < 0.01$	12-months: NS between group differences R_x attrition 22%
Striegel Moore [43]	Unclear allocation concealment, Blind assessors, ITT	123 adults (92% women), 13 BN, 59 BED, mean BMI 31.3 non-specialist, US	1. MGSB-CBT eight sessions 2. Usual care (UC) Over 3 months	Abstinence binge eating 63.5% GSH, 28.3% UC, $p < 0.001$ R_x Attrition 11%	1-year binge abstinence: 64.2% GSH, 44.6% UC $p < 0.041$
Debar [44]	Unclear allocation concealment, assessors not blind, ITT	$n = 160$ adult women recurrent binge eating mean BMI 31.47 non-specialist US	1. Eight session mGSH-CBT 2. Usual care (UC) Over 3-months	Abstinence bingeing 3-months 33% CBT 5% UC $p < 0.001$	1 year binge abstinence: 35% CBT vs. 14% UC $p = 0.002$, NNT = 5
Traviss [45]	Envelope allocation Assessment not blind ITT analyses	$n = 81$ 68 R_x 32% BN 21% BED 28% NOS Non-specialist, UK	1. mGSH-CBT six sessions 2. Wait-list R_x Attrition 24%	3 months GSH-CBT NS greater cessation ED behaviors	6 months all outcomes maintained, CBT > binge abstinence OR 7.78
Geller [46]	Unclear allocation concealment, not blind assessors Completers only analyses reported but ITT also conducted	$n = 181$ randomized Data reported on 113 12% AN, 38% BN 50% EDNOS Specialist setting, Canada	1. mReadiness and motivation Therapy (RMT) 5 weekly sessions 2. WL and treatment as usual	NS difference in most R_x received, readiness for change or ED symptoms, 49% RMT vs. 68% WL highly ambivalent $p = 0.01$	3-month NS between group differences except 19% RMT vs. 45% WL highly ambivalent ($p < 0.01$)

R_x = treatment, BED = Binge eating disorder, BN = bulimia nervosa, for BED and BN those meeting proposed DSM5 criteria of once weekly binge eating and/or purging are included here, AN = anorexia nervosa, vs. = versus, NS = not significant (between group differences), ITT = intention to treat analyses, NC = nutritional counseling, m = manualized, CBT = cognitive behavior therapy, GSH = guided self-help, NNT = number needed to treat, VLCD = Very low calorie diet, WL = wait-list or delayed treatment control, AES = absolute effect size, EDE = Eating Disorder Examination.

the new AN trial of MANTRA¹³ and where SSCM was compared with CBT and IPT in the follow-up of a previous RCT.⁶ These two studies suggest SSCM should be regarded as an active therapy in future RCTs. However, these were not equivalency RCTs (i.e., where the aim is to test if therapies are noninferior versus one is superior to the other) and in a longer-term trial SSCM effects appeared to wane. In contrast, IPT appeared to have improved effects over time. Nevertheless, the SSCM approach of combining education, nutritional guidance, and supportive psychotherapy attending to other life issues may be a useful initial approach. MANTRA is a novel therapy¹³ that requires further development and evaluation. It should be noted that whilst gaps in the evidence continue for psychotherapy for adults with AN (including the extended trans-diagnostic form of CBT) there are a number of trials in progress.

One trial found that the trans-diagnostic CBT-E for BN⁴⁰ is likely to improve outcomes in people with eating disorders who are not underweight, but particularly so for people with the added problems of mood intolerance, interpersonal deficits, clinical perfectionism, and/or low self-esteem. Overall, therapist led (including via telemedicine) CBT continues to be the best empirically supported therapy. Whilst self-help and similar approaches appear a useful alternate approach, adherence, and outcome may not be as good, particularly in BN treatment. The quality and impact of the “guidance” in GSH also requires further study. Future research should address how to improve abstinence rates in BN and further evaluate CBT-E. The best approach to weight loss management in those with obesity as well as BED also needs more and longer-term trials, and RCTs of BED should start including representative numbers of men.

Limitations of the present review are the use of published data only and extraction and preparation by a single author. In addition, the inclusion of only English language publications in this review likely contributed to the finding that trials largely came from the developed “Western” world. However, this only applied to three RCTs. As eating disorders now are “global” in distribution, dissemination, and trials of therapies across cultures and nations are needed. Issues of implementation are discussed further by Wilson and Fairburn.⁴⁸

Conclusion

The main conclusions of this review are that the evidence base for AN has improved, CBT has retained and extended its status as first-line ther-

apy for BN, and further research in addressing ED features and weight management in BED is essential. In addition, more RCTs of newly developed and/or alternate approaches such as Acceptance and Commitment therapy⁴⁹ appropriately modified for eating disorders are needed. Examples of new ongoing trials are that of psycho-analytic therapy in participants with BN⁵⁰ and the RCT of CBT-E versus psychodynamic versus usual care in participants with AN.⁵¹ Finally, noninferiority trials are required in the future where the comparators are an evidence based therapy such as CBT for BN.

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