HEALTH TECHNOLOGY ASSESSMENT INFORMATION SERVICE

Evidence Report:

Bulimia Nervosa: Comparative Efficacy of Available Psychological and Pharmacological Treatments

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ECRI Institute Evidence Report

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Executive Summary

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Service Description

Bulimia nervosa (BN) is characterized by recurrent episodes of binge eating (the consumption of a large amount of food accompanied by a sense of a loss of control) followed by recurrent use of extreme compensatory behaviors such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; and fasting or excessive exercise to prevent weight gain. In addition, the affected person's perceptions about his/her body shape and weight exert undue influence on self-esteem and self-evaluation.

This report evaluates the comparative efficacy of available treatments for BN. The primary treatments of interest to this report are pharmacotherapy, cognitive behavioral therapy (CBT), other psychotherapies, and combinations of these therapies. This report does not consider other eating disorders, such as anorexia nervosa or binge eating disorder.

Care Setting

Treatment for BN can be provided in an inpatient or outpatient setting. In 2007, ECRI Institute identified 140 centers that provide inpatient and/or outpatient treatment for individuals with BN. These centers, along with information about their treatment philosophies, treatment approaches, staffing, and the clinical and support services they offer, are listed on the Bulimia Nervosa Resource Guide website (www.bulimiaguide.org).

Costs

Costs vary according to the type of care, treatment facility, and availability of insurance reimbursement. Health insurance may pay for some or all of treatment, depending on the patient's coverage. Typical costs of treatment reported from several residential eating disorder centers averaged about $1,000 per day for round-the-clock care. Reported costs for partial inpatient care (3 to 12 hours per day) ranged from $8,000 to $50,000 per month. Reported costs of outpatient psychotherapy ranged from $75 to $150 per one-hour session at private practices. Health insurance may cover a portion of these costs. Support groups may be free or may charge a nominal fee, which is not typically reimbursed through insurance plans.

Reimbursement

ECRI Institute undertook a systematic search to identify publicly available BN or eating disorder coverage policies of insurers. We searched the websites of 19 plans. Eleven plans specifically mention BN or eating disorders in their coverage policies. Coverage generally includes the following levels of care: inpatient hospitalization, partial hospitalization, residential care, and outpatient care. The criteria for the different levels of care vary from plan to plan. Most plans cover medication therapy, psychotherapy, and nutritional therapy. The remaining eight plans do not mention BN or eating disorders specifically but do describe coverage policies for mental health conditions in general.

Key Questions and Outcomes of Interest

In this report, we address the following six key questions:

1. What is the relative efficacy of pharmacotherapy for treating individuals with BN to another pharmacotherapy, CBT, or other forms of psychotherapy?
2. What is the relative efficacy of CBT for treating individuals with BN to other forms of psychotherapy or variations of CBT?
3. What is the relative efficacy of any psychotherapy (other than CBT) for treating individuals with BN to other forms of psychotherapy?
4. Are combination therapies (e.g., pharmacotherapy plus CBT) more effective than single therapies (e.g., CBT alone) for treating individuals with BN?
5. Is inpatient treatment more effective than outpatient treatment for treating individuals with BN?
6. What adverse events/harms are associated with the various treatments for BN?

The primary outcomes of interest to this report include remission and recovery, frequency of binge eating and/or purging, quality of life, mortality, eating disorder pathology, depression and anxiety, psychosocial and interpersonal functioning, and dropout.

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Literature Search Strategy

We searched 17 external and internal databases, including PubMed, PsychINFO, and EMBASE, for clinical trials. Journals and supplements maintained in ECRI Institute's collections were routinely reviewed. Nonjournal publications and conference proceedings from professional organizations, private agencies, and government agencies were also screened. Other mechanisms used to retrieve additional, relevant information included review of bibliographies/reference lists from peer-reviewed and gray literature.

Evidence Base

Synthesis of Results

Key Question 1:

Our searches identified eight studies (one study included more than one comparison) that assessed the relative efficacy of pharmacotherapy and met our inclusion criteria: citalopram (selective serotonin reuptake inhibitor [SSRI]) versus fluoxetine (SSRI, k = 1), fluoxetine versus interpersonal psychotherapy (k = 1), fluoxetine versus self-help (k = 1), imipramine versus group therapy (k = 1), desipramine versus supportive therapy (k = 1), and antidepressants versus CBT (k = 4). The key findings are as follows:

- **CBT reduces binge eating episodes compared to antidepressant medications. Summary effect-size estimate Hedges' g of 0.404 (95% confidence interval [CI]: 0.081 to 0.726). Stability of estimate: Unstable; Strength of the evidence: Low.**

The evidence was of insufficient precision to draw any evidence-based conclusions about the relative efficacy of medication compared to CBT for the following outcomes: frequency of purging, depression, eating disorder pathology, and dropout. The evidence was of insufficient quantity (fewer than two studies) to draw any evidence-based conclusions about the relative efficacy of one medication compared to another medication, or medication compared to interpersonal psychotherapy, self-help CBT, supportive therapy, or intensive group therapy for the treatment of BN.

Key Question 2:

Our searches identified 17 studies that compared the efficacy of CBT to other forms of therapy and met our inclusion criteria: manual-based CBT compared to other forms of psychotherapy (k = 8), variations in how CBT was delivered (e.g., group sessions versus individual sessions, k = 5 studies), and self-help CBT compared to therapist-led CBT (k = 4). The key findings are as follows:

- **Patients who receive CBT are more likely to go into remission from vomiting than patients treated with supportive therapies. The estimated odds ratio is 3.83 (95% CI: 1.229 to 11.923). Stability of the estimate: Unstable; Strength of the evidence: Low.**
- **CBT is more effective than supportive therapies in improving eating disorder pathology. The estimated effect size is Hedges' g of 0.571 (95% CI: 0.142 to 1.000). Stability of the estimate: Unstable; Strength of the evidence: Low.**
- **CBT is more effective than behavioral therapy in reducing vomiting episodes. Estimated effect size is Hedges' g of 0.37 (95% CI: 0.002 to 0.739). Stability of the estimate: Unstable; Strength of the evidence: Low.**
- **Therapist-led CBT is more effective than self-help CBT in reducing symptoms of depression. Estimated effect size is Hedges' g of 0.447 (95% CI: 0.101 to 0.793) Stability of the estimate: Unstable; Strength of the evidence: Low.**

Due to clinical heterogeneity, the evidence was considered insufficient to draw any evidence-based conclusions about the relative efficacy of variations in CBT delivery.

Key Question 3:

Our searches identified 2 studies enrolling a total of 165 patients that compared the efficacy of family-based therapy to individual-based psychotherapy.

Due to clinical heterogeneity, the evidence was insufficient to draw evidence-based conclusions about the relative efficacy of family-based therapy compared to other forms of psychotherapy for patients with BN.

Key Question 4:

Our searches identified nine studies (one study included more than one comparison) that assessed combination therapies for the treatment of BN and met our inclusion criteria for this report. The combination therapies assessed include CBT plus feedback (k = 1), cognitive therapy plus nutritional therapy (k = 1), CBT plus exposure response prevention (ERP) therapy (k = 2), self-help plus antidepressant medication (k = 1), group therapy plus antidepressant medication (k = 1), supportive therapy plus antidepressant medication (k = 1), and CBT plus antidepressant medication (k = 3).

The evidence was of insufficient precision to determine whether CBT plus ERP is better than CBT alone for the outcomes of remission, depression, and frequency of purging. The evidence was also of

insufficient precision to determine whether CBT plus an antidepressant is better than CBT or an antidepressant alone for frequency of binge eating or purging. For all other combination therapies, the evidence was of insufficient quantity (fewer than two studies) to draw any evidence-based conclusion.

Key Question 5:

Our searches identified 1 study enrolling a total of 55 patients that assessed inpatient treatment versus outpatient treatment and met our inclusion criteria for this report.

The evidence was of insufficient quantity (fewer than two studies) to draw any conclusion about the relative efficacy of inpatient treatment and outpatient treatment for BN.

Key Question 6:

Five studies made reference to adverse events in their publications. All five studies involved treatment with an antidepressant. Overall, the authors simply reported the number of patients who dropped out of treatment due to side effects, which was less than 10% across the studies. Only one of the studies described the type of adverse events experienced by the patients. In particular, the authors indicated that patients complained of sedation, constipation, rash, dry mouth, palpitations, and dizziness.

Practice Guidelines

ECRI Institute's searches of the National Guideline Clearinghouse™ identified four treatment guidelines published between 2006 and 2009 that provide recommendations for BN treatments. The following organizations published the guidelines: University of Arkansas for Medical Sciences, 2009; Finnish Medical Society Duodecim, 2007; American Academy of Pediatrics Committee on Sports Medicine and Fitness, 2006; and the American Psychiatric Association, 2006. Our searches also identified position statements from the Academy for Eating Disorders, 2010, and the American Dietetic Association, 2006.

Conclusions

A small body of evidence indicates that CBT is more beneficial than pharmacotherapy, supportive therapies, behavioral therapy, and self-help CBT in improving some symptoms of BN, particularly in eliminating or reducing the frequency of vomiting episodes and associated symptoms of depression in the short-term.

However, the overall stability and strength of the evidence supporting the conclusions in this report were considered low. The low rating was based on the size of the evidence base, internal validity of the studies, and lack of precision and robustness of the meta-analytic findings. For the most part, the evidence base supporting the conclusions consisted of fewer than three small studies.

The overall internal validity of the studies that made up the evidence base for this report was moderate. The primary reasons for this rating were (1) lack of blinding of patients and clinicians, (2) not reporting the methods used to randomly assign patients, (3) the subjective nature of most of the outcomes, and (4) attrition (dropout ranged from 0.0% to 67.0%). Finally, in all of our analyses, the 95% CIs were not narrow enough to rule out the likelihood that the conclusions would easily change with future evidence.

For all other comparisons considered in this report, the evidence was insufficient to draw any evidence-based conclusions. The evidence was insufficient for one of the following reasons: (1) the results of our meta-analyses indicated that 95% CI surrounding the summary estimate was too wide to clearly determine whether one treatment was better than another; (2) data were reported in a manner that did not allow us to perform a meta-analysis; or (3) only one small study assessed a comparison or outcome of interest.

Scope of Report

This report evaluates the comparative efficacy of available treatments for bulimia nervosa and extends on a previous report ECRI Institute published in 2006 titled *Bulimia Nervosa: Efficacy of Available Treatment*, which is available in full on the Bulimia Nervosa Resource Guide website (www.bulimiaguide.org). Unlike the previous report, this report considers only studies in which one treatment is directly compared to another treatment. Thus, we do not consider evidence from studies that compare an active treatment to a placebo or no treatment control condition. The primary treatments of interest to this report are pharmacotherapy, cognitive behavioral therapy, other psychotherapies, and combinations of these therapies. This report does not consider other eating disorders, such as anorexia nervosa or binge eating disorder.

ECRI Institute Evidence Reports are designed to provide a systematic review of a specific application of a particular drug, medical device, healthcare procedure, or healthcare service. The clinical studies chosen for inclusion are generally limited to English-language publications in peer-reviewed journals.

Psychological and Pharmacological Interventions

The eating disorder bulimia nervosa (BN) is a serious, complex, and potentially life-threatening mental health disorder. It is often accompanied by major depression or an anxiety disorder, such as generalized anxiety disorder or obsessive-compulsive disorder. BN is characterized by recurrent episodes of binge eating (the consumption of a large amount of food accompanied by a sense of loss of control) followed by recurrent use of extreme compensatory behaviors such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; and fasting or excessive exercise to prevent weight gain. In addition, the affected person's perceptions about his/her body shape and weight exert undue influence on self-esteem and self-evaluation.

A number of psychological and pharmacological treatments are currently available for BN. In the section below, we describe some of the most commonly reported therapies. According to Mitchell et al., treatments for BN should be considered in terms of the treatment's target objectives.[1] Mitchell et al. describe these objectives as follows:

> (1) to eliminate the pattern of binge eating and compensatory behaviors; (2) to establish more normal eating pattern with regular balanced meals; (3) to address the physical complications of the illness, such as dental enamel erosion and fluid and electrolyte abnormalities; (4) to address psychological issues that accompany the illness including low self-esteem, body image dissatisfaction and other dysfunctional thinking patterns; (5) to address comorbid conditions such as mood disorders; and (6) over time, to prevent relapse.

Psychotherapeutic Approaches

Cognitive Behavioral Therapy

The goal of cognitive behavioral therapy (CBT) is to change bulimic behaviors by restructuring cognitive and behavioral processes. In general, CBT includes the following components: educating individuals about the dangers of their behaviors, directing them toward healthier behaviors, teaching them how to recognize and correct cognitive distortions, and teaching them techniques to prevent relapse.[2] CBT's components are designed to interrupt the proposed cognitive bulimic cycle perpetuated by low self-esteem, extreme concerns about body shape and weight, and extreme means of weight control (strict dieting, binge eating, and purging).[2] Three other maintaining mechanisms have been proposed for inclusion in the cognitive model of BN: perfectionism, mood intolerance, and interpersonal difficulties.[3] CBT for BN is contraindicated for individuals in psychotic states, with severe depression, at high risk of suicide, or with current substance abuse behavior.[4] Although CBT was originally conceived as treatment

delivered on an individual basis, it is now also delivered in groups, via self-help manuals, or more recently, via telemedicine systems.[5,6]

Behavioral Therapy

Unlike CBT, which focuses on changing both the distorted thinking and eating behaviors associated with BN, behavioral therapy focuses solely on modifying the behavioral abnormalities and helping individuals adopt more healthy coping strategies.[7] One form of behavioral therapy that can be used alone or in combination with CBT is exposure response plus prevention (ERP).[7] This technique focuses on vomiting as the perpetuating factor and most ritualistic phase of the bulimic cycle. In ERP, the patient brings foods on which he or she would likely binge to the therapy session and eats them in front of the therapist, who encourages the patient to cope with the anxiety incurred by ingesting the foods in ways other than by purging.

Dialectal Behavioral Therapy

Dialectical behavioral therapy, another form of psychotherapy, focuses on skill development and emotion management.[8] Originally developed to treat borderline personality disorder, this therapy focuses on emotional dysregulation as the underlying pathology of BN and teaches people with the disorder new skills to regulate negative emotions and to replace dysfunctional behavior.

Interpersonal Psychotherapy

Interpersonal psychotherapy focuses on the role of interpersonal problems in BN.[9] Four "problem areas" are the subject of most attention: grief, interpersonal role disputes, role transitions, and interpersonal deficits.[9] Interpersonal psychotherapy focuses on identifying individual patients' problem areas and treating selected difficulties though nondirective, noninterpretive sessions with a psychotherapist. Unlike other forms of therapy for eating disorders, interpersonal psychotherapy does not focus directly on the eating disorder itself. Improvements in bulimic behaviors are thought to be secondary to a generally improved interpersonal and psychological state.

Family-based Therapy

Psychotherapy may include the family of the individual with bulimic symptoms because of the family's suspected role in the pathogenesis and course of BN.[10] This may be especially true in younger individuals with BN.[10] In family-based therapy, the family is viewed as being in the best position to help the patient.[11] Caregivers are educated about eating disorders, encouraged to promote and restore normal eating habits, and empowered to find ways to disrupt bulimic behaviors. Family-based therapy may also be based on family systems theory, which regards the family as the unit of treatment and emphasizes relationships and communication.[12]

Other Forms of Psychotherapy

Several other forms of psychotherapy are available for individuals with BN. Self-psychological treatment for eating disorders is a form of therapy that centers on removing the individual's reliance on food for regulation of self-esteem and on calming, soothing, and transferring that reliance for regulation to other people.[13] Cognitive orientation treatment involves modifying behavior first and then changing underlying beliefs related to, but not directly concerning, disordered eating.[14] Cognitive analytic therapy is a type of cognitive therapy that focuses on the understanding of the patterns of maladaptive behaviors. The therapy's aim is to enable the individual to recognize these patterns, understand their origins, and subsequently learn alternative strategies to cope better.[15]

Supportive group or individual therapy may provide support in addition to cognitive reeducation and behavioral tasks.[16,17] Guided imagery has also been used to treat people with BN, primarily to enhance self-comforting skills.[18] Hypnosis has been implemented in hypnobehavioral treatment and puts focus on

behavioral explanations of the disorder, normal eating patterns, positive suggestions for maintenance of changes, and self-hypnosis for relapse prevention.[19]

Self-help Manuals

Finally, self-care manuals developed specifically for individuals with BN exist. These manuals are frequently based on the principles of CBT.[20,21] Self-help may either be guided or assisted (guided self-help) by a therapist or physician or be largely unguided (pure self-help).[21] Usually, when guidance is provided, a physician or therapist primarily gives support and encouragement for working through the guide's exercises.

Pharmacological Approaches

Pharmacotherapy is thought to alleviate bulimic symptoms by treating the biochemical abnormalities associated with BN. Various types of medications are available to control bulimic symptoms, with antidepressants being the most commonly reported. Antidepressants have been used to treat patients with bulimic symptoms since the late 1970s. It is thought that antidepressants provide relief by alleviating affective disorder, which BN may be a form of, or by reducing urges to binge and purge by assuaging anxiety and depression.[22,23] Below, we list the antidepressants and other prescription medications that have been used to treat BN. The drug labeling information required by U.S. Food and Drug Administration (FDA) describes the drug-related adverse event data for the pharmacologic treatments listed in the table. The adverse event data contain information from a large number of individuals who take the drug and can be found at the following website supported by the U.S. National Library of Medicine and the National Institutes of Health: www.nlm.nih.gov/medlineplus/druginformation.html. Currently, the only drug for which FDA has approved BN treatment is fluoxetine.

Table 1. Medications Available to Treat Bulimia Nervosa

Drug Type	Generic (Brand) Name
Antidepressants	**Tricyclics**
	Amitriptyline (Elavil)
	Clomipramine (Anafranil)
	Desipramine (Norpramin, Pertofrane)
	Imipramine (Janimine, Tofranil)
	Nortriptyline (Aventyl, Pamelor)
	Selective Serotonin Reuptake Inhibitors
	Citalopram (Celexa)
	Escitalopram (Lexapro)
	Fluoxetine (Prozac)
	Fluvoxamine (Luvox)
	Paroxetine (Paxil)
	Sertraline (Zoloft)
	Monoamine Oxidase Inhibitors
	Brofaromine (Consonar)
	Isocarboxazide (Benazide)
	Moclobemide (Manerix)
	Phenelzine (Nardil)
	Tranylcypromine (Parnate)
	Other Antidepressants
	Mianserin (Bolvidon)
	Mirtazapine (Remeron)
	Trazodone (Desyrel)
Opioid Antagonist	Naltrexone (Norlex, intended to target opiodergic component to overeating)
Other Medications	Ondansetron (Zofran, antiemetic used to give a sensation of fullness)
	Topiramate (Topamax, thought to help regulate feeding behaviors)
	Lithium carbonate (thought to act as a mood stabilizer)
	Memantine (thought to improve the core symptoms)
	Psychostimulants (to treat patients with BN who have co-ocurring attention deficit hyperactivity disorder)

Source: Adapted from the National Eating Disorder Association website (www.nationaleatingdisorders.org).

Note: Bupropion (Wellbutrin, Zyban) is now contraindicated for the treatment of eating disorders because of several reports of drug-related seizures.

Bulimia Nervosa

Epidemiology

BN primarily affects females, although it also affects males. According to a nationally representative study of eating disorders in the United States, 1.5% of women and 0.5% of men reported suffering from BN in their lifetime.[24] For college-age women, the prevalence is higher, ranging from 1% to 3%. Recent studies indicate that the prevalence of BN for women of color is also increasing, and prevalence estimates are now similar to those among white women. The prevalence of partial eating disorder syndromes or eating disorder not otherwise specified (EDNOS) is estimated to be between 2% and 5% of young women. The average age of BN onset is between 13 and 20 years.

Etiology

Multiple theories have been proposed to explain the development of BN, but no single theory currently accounts for the disorder's multifaceted presentation.[25] The possibility that the pathologic eating behaviors that define BN may be the effects, and not the primary cause, of the disorder complicates the study of its etiology.[26] The many personality and environmental characteristics associated with patients who have the disorder may also be risk factors for developing the disorder. These characteristics include sexual or physical abuse, depression, anxiety, gender, age, body dissatisfaction, past obesity, parental problems, and genetics.[27] Further complicating etiologic studies of BN is the heterogeneity among individuals with the disorder.[28] Below, we describe some of the more widely studied theories for BN development.

Cognitive-behavioral Models

According to cognitive models of BN, certain thought patterns contribute to the commencement and maintenance of disordered eating. The central features of these models are as follows: the body self-schema, cognitive biases, binge eating, compensatory behavior, negative reinforcement of compensatory behavior by reduction of negative emotions, and psychological risk factors hypothesized to define people who are vulnerable to developing BN.[29]

The body self-schema is a key concept for the cognitive aspect of these models. According to some cognitive theorists, the body self-schema of individuals with BN directs their attention to body- and food-related stimuli and negatively affects their body image.[29] For example, feelings of fullness may be interpreted as "feeling fat." Cognitive models hypothesize that negative emotion interacts with the self-schema to activate some cognitive biases. These negative emotions are often labeled anxiety, feelings of fatness, depression, body disparagement, anger, and self-loathing. The individual experiences this negative emotion as an aversive experience he/she needs to escape or avoid.

In response to negative emotions, people with BN feel compelled to engage in compensatory or other behaviors to escape/avoid this aversive condition. The effect of compensatory behaviors is the reduction of negative emotions, which positively reinforces (and strengthens) the behavior and confirms the necessity of engaging in compensatory behaviors.[29] Cognitive models identify the following psychological characteristics as risk factors for developing BN: fear of fatness, overconcern with body size/shape, internalization of the "thin ideal," and perfectionism/obsessionality.

Interpersonal and Sociocultural Models

Interpersonal models of BN are based on the observation that depression and BN occur in the same individual. Interpersonal problems are purported to act as stressors that influence the onset and preserve the continuance of bulimic behavior.[9] Sociocultural models of BN focus largely on cultural preferences for thin body types in modern Western societies as a cause of disordered eating. Some researchers believe

that pressure from society and the media to be thin, combined with an internalization of a "thin ideal," contribute to disorder onset and its maintenance.[30,31] A misperception about which body types women believe men find attractive may play a role in the pursuit of this "thin ideal."[32] One model, the tripartite influence model of general eating disorder etiology, accounts for the influence of peers, parents, and the media by positing internalization of the "thin ideal" and the comparison of one's own body against the bodies of others, including those in the media.[33] Pursuit of a "thin ideal" may be what causes women who binge eat to purge after each episode.

Pathophysiologic Models

Other etiologic models of BN consider the potential contribution of abnormal physiology. Previous research suggests that individuals with BN have disturbances in brain serotonin, a neurotransmitter that helps regulate eating, mood, and neuroendocrine activity. Marazziti et al. assert that the relationship of altered levels of serotonin to BN development is of particular relevance because of serotonin's role in appetite and impulsivity, both of which are associated with BN.[34] Steiger et al. found associations between reduced serotonin uptake, impulsivity, and bulimic symptoms.[35]

What remains unclear, however, is whether the alterations in serotonin levels in individuals with BN cause the disorder or whether the disorder causes the observed changes in serotonin levels.[36] Cowen et al. report that dieting can decrease L-tryptophan (an essential amino acid that is converted to serotonin by the body), which in turn leads to reduced serotonin levels.[37] Individuals who frequently binge eat may be at increased risk of having reduced serotonin levels.[38]

Opioids are another neurotransmitter class that may play a role in the etiology of BN, but it remains unclear whether alterations in opioid metabolism cause the disorder or are themselves sequelae of BN. Coiro et al. report that opioid activity may be lower in people with BN.[39] This may be because binge eating and purging increase the release of opioids in the brain, resulting in lower anxiety levels and pleasurable feelings,[40,41] thus fostering an addictive cycle.[42] Low concentrations of β-endorphins in the cerebrospinal fluid might be due to an individual having maintained a body weight that is lower than that person's ideal weight. The low body weight may effect estrogen levels or stress.[43] Self-induced vomiting could create sufficient stress that increases production of β-endorphins, indicating that this physiologic abnormality is a function of, rather than a cause of, purging.[44] Success in the treatment of BN by administering drugs intended to alter opioid levels has been limited, detracting from this etiologic theory.

The peptide cholecystokinin (CCK) is also thought to play a role in BN. The gastrointestinal system secretes CCK in response to food intake. Release of this peptide is thought to be one means of transmitting satiety signals to the brain by way of vagal nerves.[45] Some evidence suggests that individuals with BN may have diminished release of CCK following ingestion of food. Measurements of basal CCK values in blood lymphocytes and in cerebrospinal fluid appear lower in individuals with BN. This may help explain their diminished postingestive satiety.[45]

Genetics

Results from family studies of eating disorders indicate that BN may run in families. Bulik et al. studied 854 twin pairs and estimated the heritability of BN to range from 60% to 83%. When corrected for error of estimate, the estimated heritability of broadly defined BN was over 80%.[46] Sullivan et al. separated bulimic behavior into its component parts and estimated the heritability of each; for self-induced vomiting, the heritability estimate was 72%.[47]

Based on these and other similar studies, researchers have begun to examine the relative influence of specific, or candidate, genes in the etiology of BN. Candidate gene studies have focused mostly on genes that encode proteins implicated in the regulation of feeding and body composition and genes involved in neurotransmitter-pathway-regulating behavior.[27] Some evidence suggests a possible association between a polymorphism within the promoter region of the 5-HT (serotonin) gene and BN.[27,48] Additionally, the

results of a study using a broad sample of families with BN indicated a significant linkage with chromosome 10p.[49]

Childhood Sexual Abuse

Several studies have examined the role of childhood sexual abuse as a risk factor for developing BN. Wonderlich et al. (1997) conducted a systematic review of the literature to determine the extent, nature, and specificity of any association between childhood sexual abuse and eating disorders.[50] The overall evidence base for the review consisted of eight studies that the authors considered to be of adequate methodologic quality and to have addressed the key questions. The findings of the review indicated that six of the eight studies "supported the hypothesis that childhood sexual abuse was associated with bulimia nervosa." The other studies produced contradictory results. Further, the results of seven studies that attempted to determine whether childhood sexual abuse was specifically associated with eating disorders compared to other psychiatric disorders indicated no specific relationship. The authors concluded that "childhood sexual abuse is a nonspecific correlate of bulimia nervosa" and that "[childhood sexual abuse] is associated with greater psychiatric comorbidity but not with the overall severity of the eating disorder."

Weight Concerns, Dieting, and Negative Body Image

In their review of risk factors for eating disorders, Jacobi et al. list a number of studies that report dieting as a precursor to BN.[27] Body dissatisfaction and perceived pressure for thinness have also been reported[51,52] as risk factors for the development of BN in several studies.[53] Individuals with BN perceive pressure to be thin from multiple sources, including mass media, family, friends, and the opposite sex. However, because these risk factors are conceptually similar to part of the diagnostic criteria for BN, it remains unclear from the available studies whether they are independent risk factors for BN development or simply part of the symptomatology.

Diagnosis and Screening

According to the latest edition of the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), to qualify for the diagnosis of BN, binge eating and inappropriate compensatory behaviors must occur, on average, at least twice a week for three months.[54] Binge eating is defined as eating an amount of food that is larger than what most individuals would eat in a discrete period of time (usually less than two hours). The most common compensatory method is self-induced vomiting, employed by 80% to 90% of individuals. Other methods include misuse of laxatives, diuretics, and enemas; fasting; and excessive exercising. Two subtypes of BN are typically used to specify the presence or absence of regular use of purging: purging type or nonpurging type. The purging subtype includes individuals who regularly engage in self-induced vomiting or misuse laxatives, diuretics, or enemas. The nonpurging subtype includes individuals who engage in compensatory methods such as fasting and excessive exercising.

Recent studies estimate that up to 70% of individuals with an eating disorder are placed in the EDNOS category. This includes individuals who meet all the criteria for BN except that they engage in binge eating and compensatory mechanisms at a frequency of less than twice a week for less than three months (EDNOS-BN). LeGrange et al. (2006) conducted a study to determine whether BN and EDNOS-BN were qualitatively distinct in terms of eating and general psychology.[55] The results of their study indicated that although women with BN "reported higher lifetime history rates of anorexia, greater binge eating and vomiting frequency, and more eating concerns, no significant differences were observed between the groups on measures of perfectionism, impulsivity, obsessive-compulsive behaviors, anxiety, depression, and alcohol/substance problems." The authors concluded that their findings highlight the clinical significance of EDNOS-BN and "prompt the re-evaluation of existing BN diagnostic boundaries."

The findings of the LeGrange study have been further substantiated by more recent studies that suggest that individuals with EDNOS are at higher risk than might be expected for various morbidities and

mortality.[56] One study that assessed mortality over 8 to 25 years for 1,885 individuals with anorexia nervosa, BN, or EDNOS found crude mortality rates of 4.0% for individuals diagnosed as having anorexia nervosa, 3.9% for those diagnosed as having BN, and 5.2% for those diagnosed as having EDNOS.[56] Such findings have prompted the eating disorders work group to propose expanding the current diagnostic criteria for BN to include individuals who report a lower frequency of binge eating and inappropriate compensatory behaviors, which will be included in the forthcoming DSM-V. The workgroup is recommending that the required minimum frequency be reduced to once per week over the last three months. For more information about the proposed changes for diagnosing eating disorders, visit the DSM-V website (www.dsm5.org).

Complications of Bulimia Nervosa

In addition to the serious psychiatric aspects of the disorder, BN can be extremely harmful to the body. The binge-and-purge cycle can damage the digestive system, and purging behaviors can lead to electrolyte and chemical imbalances in the body. Electrolyte imbalances are caused by dehydration and loss of potassium and sodium from the body and can lead to arrhythmias (irregular heartbeat). In severe cases, arrhythmias can lead to cardiac arrest. A recent study of 906 individuals with BN presenting to an outpatient eating disorders treatment center found that they were 1.6 times as likely to die as others of the same age and race and 6.5 times as likely to commit suicide.[57] Other health consequences include inflammation of the esophagus, Mallory-Weiss tears (tears in the esophagus where it meets the stomach), tooth decay and dental enamel erosion, submandibular enlargement, irregular bowel movements and constipation, and menstrual abnormalities.

Course and Prognosis

In a recent study, Steinhausen and Weber (2009) reviewed the published literature on the outcome of BN, effect variables, and prognostic factors.[58] Overall, their review included 79 case-series studies that enrolled a total of 5,653 patients. The patients were analyzed in terms of recovery, improvement, chronicity, crossover to other eating disorders, mortality, and comorbid psychiatric disorders at outcome. A total of 49 studies reported on prognosis only. Thus, according to the authors, the final analyses for prognostic factors were based on 4,639 patients. The authors indicated that their analyses were hampered by lack of standardized outcome criteria across studies. For instance, information on recovery was reported either as: "(1) a three-level classification in combination with improvement and chronicity; (2) a two-level classification mostly in combination with chronicity; or (3) a single criterion." Similarly, the studies used various terms to denote the outcomes of recovery, improvement, and chronicity. The authors of the review counted 22 synonyms for recovery (e.g., abstinent), 27 for improvement (e.g., partial remission), and 21 for chronicity (e.g., poor course).

The findings of the review, based on the 27 studies that used the 3-level classification of recovery, indicated that on average close to 45% of patients demonstrated full recovery, 27% improved, 23% had a chronic protracted course, and 22.5% crossed over to another eating disorder. The crude mortality rate was 0.32%, and comorbid psychiatric symptoms were common at outcome. According to the authors, the effect variable with the most impact was duration of follow-up, with the highest recovery rates observed between four- and nine-years follow-up.

Similar to the findings of previous reviews, the evidence for prognostic factors was conflicting.[59] In general, individuals with multi-impulsive behaviors had a worse course than those without these behaviors.[58,59] A few studies provided some evidence that rapid reduction of symptoms during the first four weeks of treatment was linked to a positive course. However, no consistent relationship emerged for other factors such as patient or family history or social factors.

Care Setting

Treatment for BN can be provided in an inpatient or outpatient setting. The setting depends on the severity of the illness and the treatment plan that has been developed for a patient. A multidisciplinary team should develop the plan in consultation with the patient and family members as deemed appropriate by the patient and his or her team. The team should be experienced in treating BN and should include at least a medical doctor, psychologist, psychopharmacologist (if drug therapy is planned), and nutritionist. The patient's family doctor should be consulted, and both the family doctor and patient's dentist should be informed of the plan as well.

In 2007, ECRI Institute identified 140 centers that provide inpatient and/or outpatient treatment for individuals with BN. These centers, along with information about their treatment philosophies, BN treatment approaches, staffing, and the clinical and support services they offer, are listed on the Bulimia Nervosa Resource Guide website (www.bulimiaguide.org).

Several considerations enter into finding a suitable BN treatment setting. Options may be limited by factors such as insurance coverage, location, or ability to pay for BN treatment in the absence of insurance. Primary care physicians (family doctors, gynecologists, pediatricians, internal medicine doctors) can often assist in referring patients to appropriate BN treatment facilities because they may have experience with various centers or outpatient therapists.

Recently, the Joint Commission expanded its behavioral health accreditation program to include centers that provide treatment for eating disorders. The Joint Commission is an independent accrediting body for various healthcare services and settings, including hospitals, ambulatory services, long-term care communities, addictions services, community mental health services, and inpatient, outpatient, and residential behavioral health treatment centers. The accreditation process generally involves applying for accreditation, preparing for an on-site visit from Joint Commission representatives, scheduling the site visit, reviewing the results, and making necessary organizational changes to meet the accreditation standards. To date, the Joint Commission has not posted specific accreditation requirements for eating disorders centers on its website (http://www.jointcommission.org/BHCToolkit).

Costs

Costs vary according to the type of care, treatment facility, and availability of insurance reimbursement. Health insurance may pay for some or all of treatment, depending on the patient's coverage. Typical costs of treatment reported from several residential eating disorder centers averaged about $1,000 per day for around-the-clock care. Reported costs for partial inpatient care (3 to 12 hours per day) ranged from $8,000 to $50,000 per month. Reported costs of outpatient psychotherapy ranged from $75 to $150 per one-hour session at private practices. Health insurance may cover a portion of these costs. Support groups may be free or may charge a nominal fee, which is not typically reimbursed through insurance plans.

Reimbursement

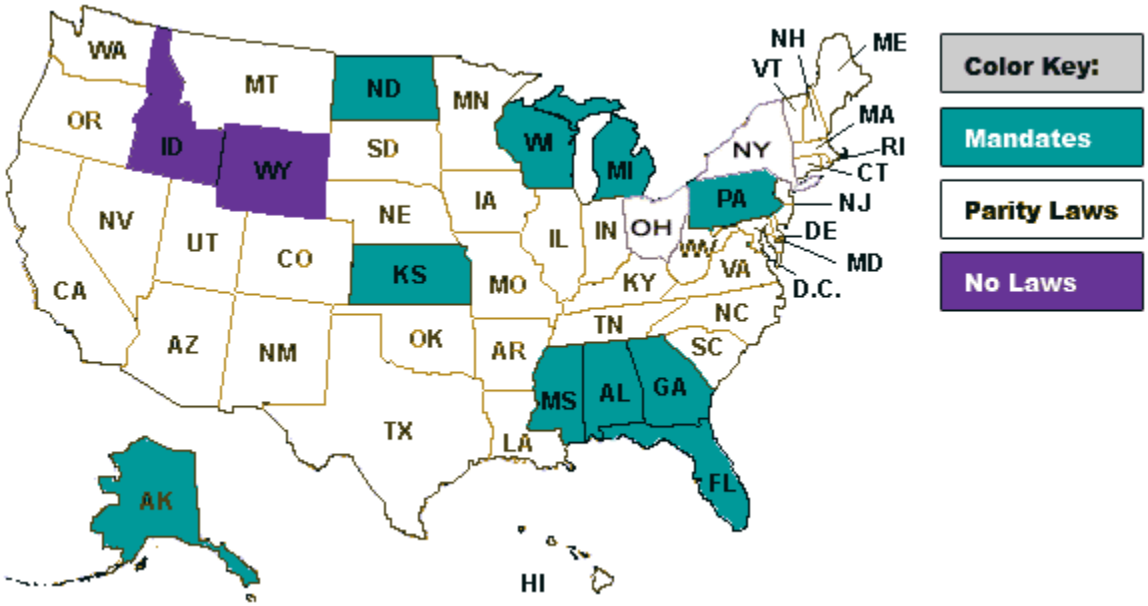
ECRI Institute undertook a systematic search to identify publicly available BN or eating disorder coverage policies of insurers. Some health plans' behavioral or mental health coverage policies are publicly available through their websites; others do not publish them. Some policies are specific to BN; others make general reference to coverage for mental health conditions and disorders. In Table 61 of Appendix J, we list the general policies our searches identified and describe how those policies apply to coverage for BN treatment. Because many insurers do not make their policies publicly available, the summary below is neither comprehensive nor representative of all health plans. It reflects the policies that we identified through publicly available sources as of June 2010.

Overall, we searched the websites of 19 plans. Eleven plans specifically mention BN or eating disorders in their coverage policies. Coverage generally includes the following levels of care: inpatient hospitalization, partial hospitalization, residential care, and outpatient care. The criteria for the different levels of care vary from plan to plan. Most plans cover medication therapy, psychotherapy, and nutritional therapy. CIGNA's medical coverage specifically states that it will not cover dialectical behavioral therapy for the treatment of eating disorders. The remaining eight plans do not mention BN or eating disorders specifically but do describe coverage policies for mental health conditions in general.

Specific coverage limits depend on the applicable federal and state mental health parity laws or mandates, the particular benefit plan an individual has, and the contract language in that plan. Generally, mental health parity laws require health plans to provide benefits coverage for mental health conditions that is comparable to the level of coverage provided for medical conditions. Many U.S. states have crafted mental health parity legislation over the years, but the country remains a legislative patchwork of mental health coverage through parity and mandate laws. Mandates are more specific than parity laws in that they require coverage for specific conditions.

Several states provide full parity (i.e., they require insurers to provide coverage for all mental illnesses the same way that they provide coverage for medical illnesses). Most states, however, provide only partial parity in that they define which mental health conditions are subject to parity with medical benefits and the limitations of coverage. Examples of typical limits of partial parity are "severe mental conditions" only or certain mental conditions named and defined in the DSM-IV for diagnosing mental illnesses. The state in which a patient lives can greatly affect the level of mental health benefits available through an insurer. As of June 2010, 48 states (See Figure 1 below) had some type of mental health policy or mental health benefits mandate. Table 62 in Appendix J lists the states and their policy or mandate.

Figure 1. States with Mental Health Benefits Mandates or Parity Laws



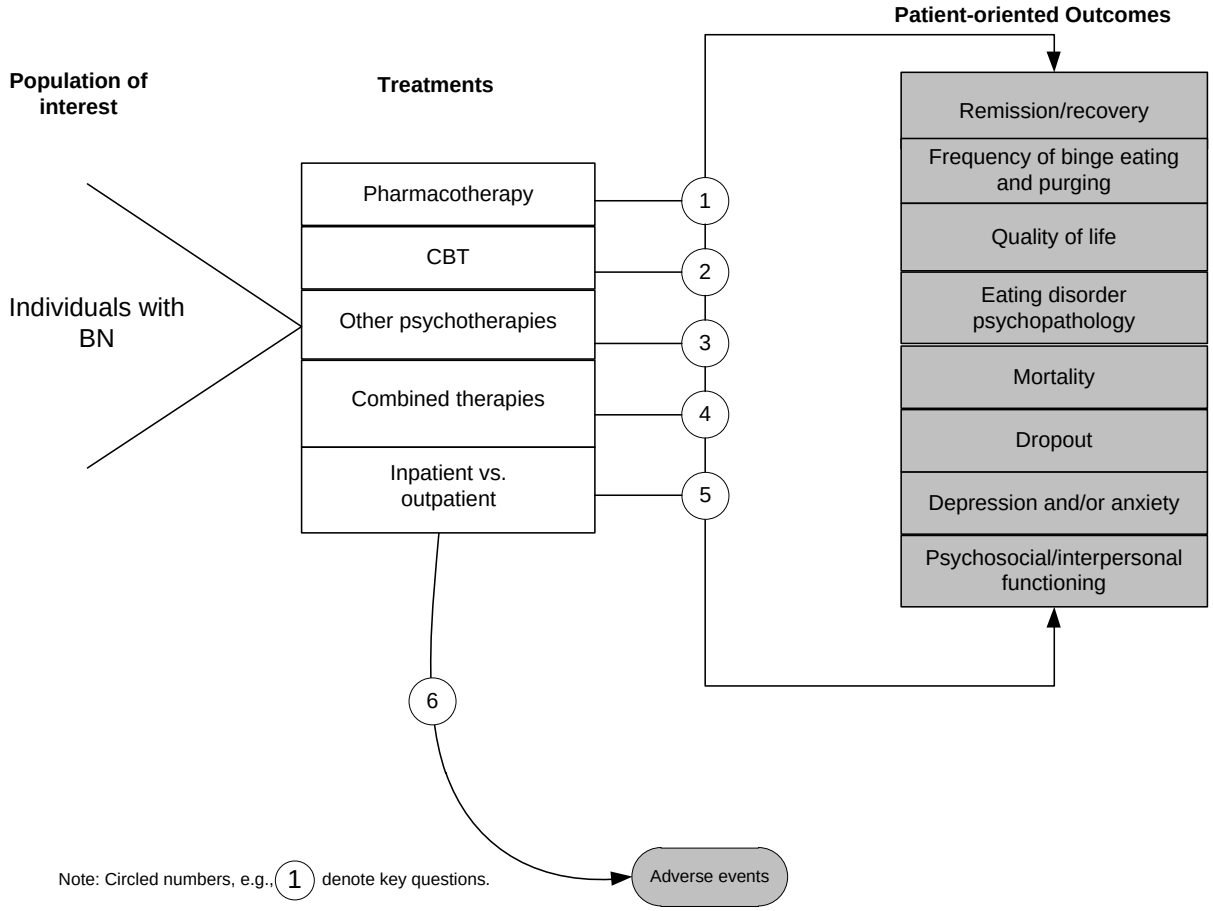
Key Questions and Outcomes of Interest

In this report, we address the following six key questions:

1. What is the relative efficacy of pharmacotherapy for treating individuals with BN to another pharmacotherapy (e.g., selective serotonin reuptake inhibitor antidepressants versus tricyclic antidepressants), CBT, or other forms of psychotherapy (e.g., dialectical behavioral therapy, interpersonal psychotherapy)?
2. What is the relative efficacy of CBT for treating individuals with BN to other forms of psychotherapy (e.g., dialectical behavioral therapy, interpersonal psychotherapy) or variations of CBT (e.g., group versus individual)?
3. What is the relative efficacy of any psychotherapy (other than CBT) for treating individuals with BN to other forms of psychotherapy?
4. Are combination therapies (e.g., pharmacotherapy plus CBT) more effective than single therapies (e.g., CBT alone) for treating individuals with BN?
5. Is inpatient treatment more effective than outpatient treatment for treating individuals with BN?
6. What adverse events/harms are associated with the various treatments for BN?

These questions, along with the treatments and outcomes we evaluated to address them, are illustrated in Figure 2. This figure portrays the events that patients experience, ranging from when they are first identified (the far left of the figure), to the treatments they receive, and finally to patient-oriented outcomes. As such, individuals in the population of interest are identified and "enter" the pathway at the left of the figure. The figure illustrates that patients with BN enter to receive pharmacotherapy, psychotherapy, their combination, or inpatient or outpatient care. The outcomes we address are shown to the right side of the figure. The pathway through the figure represents the direct effect the treatments have on patient-oriented outcomes—outcomes the patient felt or experienced in daily life (e.g., remission or recovery, frequency of primary bulimic symptoms, quality of life).

Figure 2. Analytic Framework



In evaluating the safety and efficacy of interventions for BN, we consider the outcomes listed in Table 2. The table also briefly describes each outcome.

Table 2. Outcomes Assessed

Outcome Measure	Definition
Remission and recovery	Remission is defined as complete freedom from bulimic symptoms of binge eating and purging for at least four weeks before assessment. Recovery is defined as complete freedom from bulimic symptoms for at least 12 months before assessment.
Frequency of binge eating and/or purging	The average number of times individuals engage in binge eating and/or purging or vomiting. Patients are typically asked to record episodes of disordered eating in a diary and then report the number of episodes or number of days that an episode occurred within the week or month before the assessment.
Quality of life	Measure of an individual's perception of the goodness and meaning of his/her life, as well as his/her happiness and well-being. Quality of life can be measured with instruments that take a global view of what constitutes quality of life, such as the Short Form-36, or instruments that are disease specific, such as the Health-Related Quality of Life for Eating Disorders questionnaire
Eating disorder psychopathology	The psychopathology underlying BN is complex and multidimensional. Several psychometric instruments have been developed to measure eating disorder psychopathology. Instruments commonly used to measure levels of eating disorder psychopathology include the following: Body Shape Questionnaire, Bulimic Investigatory Test-Edinburgh, Eating Attitudes Test, Eating Disorder Examination, Eating Disorders Inventory, and Eating Disorder Questionnaire.
Mortality	This refers to the number of deaths that occurred in each arm of a study regardless of the reason (all-cause mortality). This includes death that results from a treatment, the disease itself, suicide, or death resulting from any other cause. Because mortality has been attributed to BN, it is important to determine whether available treatments lead to reductions in mortality rates.
Dropout	All-cause dropout and dropout related to adverse events.
Depression and anxiety	Depression and anxiety are common comorbidities that individuals with BN experience. The extent of depression and anxiety an individual experiences can be measured using a number of different validated psychometric instruments, such as the Beck Anxiety Inventory, Beck Depression Inventory, Hamilton Rating Scales-Anxiety, and Hamilton Rating Scales Depression.
Psychosocial and interpersonal functioning	BN has an impact on an individual's personality and on his/her interaction with others. A number of instruments are available for measuring these traits, including the following: Basic Personality Index, Rosenberg Self-esteem Scale, Weissman Social Adjustment Scale, and Family Environment Scale.

Study Selection Criteria

We selected the studies that we consider in this report using *a priori* inclusion criteria. As mentioned above, arriving at these criteria before beginning the analysis is one way of reducing bias. Some of the criteria we employed are geared toward ensuring that we used only the most reliable evidence. Therefore, some of our criteria are based on study design. For similar reasons, we developed other criteria to ensure that the evidence is not derived from unusual patients or interventions and/or outmoded technologies.

We used the following criteria to determine which studies would be included in our analysis.

1. *At least 85% of individuals enrolled in a study must have met the diagnostic criteria for BN as established in the DSM-IV, International Code of Diagnosis, Tenth Edition, or DSM-III or DSM- III-Revised. If not, results for these individuals must be reported separately.* This report considers individuals who meet the diagnostic criteria for BN, including those who engage in binge eating and inappropriate compensatory mechanisms less than twice a week or for less than three-months duration. Studies in which the majority of individuals enrolled have a bulimic-related disorder, such as binge eating disorder, are not included.
2. *For all key questions, only prospective randomized controlled trials that include at least one active treatment control condition will be accepted.* Nonrandomized controlled trials, retrospective, case-control studies, uncontrolled studies, and historically controlled studies are not included.
3. *For a given outcome to be included, a study must have reported data on that outcome for at least 10 individuals in both groups at follow-up, and these individuals must have represented at least 50% of the randomly assigned individuals in that group.* In very small studies, the different arms of the study are likely to differ substantially on important characteristics, simply due to random chance. Furthermore, data from such studies may represent a center's initial experience with a treatment and therefore misrepresent the effectiveness of a treatment.
4. *At least 85% of individuals in a study must be 12 years of age or older.* Eating disorders typically begin in adolescence or early adulthood, with the average age of onset of BN being between 13 and 20 years.
5. *Individuals reported on in the study were not reported on in other included studies.* Double counting of patients must be avoided because it inflates and may bias the evidence base. Determinations of overlap between studies were based on comparative examinations of study enrollment dates, patient characteristics, treatment regimens, author names, and author affiliation. If the same study was published more than once, we used the data from the publication with the most complete information.
6. *Study must have reported on one of the primary outcomes of interest.* The primary outcomes of interest in this report are remission, frequency of binge eating and purging, quality of life, eating disorder psychopathology, mortality, adverse events, and dropout.
7. *Only studies that followed patients for at least 12 weeks from the start of treatment were included.* The course of BN is known to fluctuate. This criterion ensures that we are not measuring short-term fluctuations in disease symptoms.
8. *The reliability and validity of all instruments except those in which patients provide self-reports of remission or frequency of binge eating and purging must have been verified in the published literature.* However, if a study did not use a validated instrument, then the entire study was not necessarily excluded—only its data from instruments in which the psychometric properties were not reported in the published literature.
9. *Study was reported in the English-language literature.* We recognize the possibility that requiring studies to be published in English could lead to bias, but we believe it is sufficiently unlikely that we cannot justify the additional time and expense for translation.
10. *Study must have been a full article; abstracts alone were not included.* The study did not have to be published or peer reviewed to be considered for inclusion (as recommended by the Evidence-based Practice Center *Guide for Conducting Comparative Effectiveness Reviews* (October 10, 2007, version, page 53).

Literature Search Strategy

We searched 17 external and internal databases, including PubMed and EMBASE, for clinical trials. Journals and supplements maintained in ECRI Institute's collections were routinely reviewed. Nonjournal publications and conference proceedings from professional organizations, private agencies, and government agencies were also screened. Other mechanisms used to retrieve additional, relevant information included review of bibliographies/reference lists from peer-reviewed and gray literature. Gray literature consists of reports, studies, articles, and monographs produced by federal and local government agencies, private organizations, educational facilities, consulting firms, and corporations. These documents do not appear in the peer-reviewed journal literature. All the databases and detailed search strategies used in this report are presented in Appendix A.

Evaluation of Strength and Stability of Evidence Base

We rated the strength and stability of the evidence using a methodology that ECRI Institute developed.[60] This method provides systematic, reproducible, transparent, and *a priori* decision rules for rating the strength of evidence. It extends the recommendations that the U.S. Agency for Healthcare Research and Quality makes in its report, *Systems to Rate the Strength of Scientific Evidence*, which concludes that the strength of evidence depends on the internal validity, quantity, and consistency of the available data.[61]

ECRI Institute's method distinguishes between questions about the direction of effect (e.g., does it work?) and questions about the magnitude of the effect (e.g., how well does it work?). As shown in Table 12, we assign a separate rating of the evidence for these two types of questions. Evidence supporting the answers to questions about the direction of effect is rated according to its strength. Evidence supporting the answers to questions about the magnitude of effect is rated according to its stability. Conclusions about the effect direction that are backed by strong evidence are less likely than weaker conclusions to be overturned by new evidence. If the quantitative estimates that our analysis yields are stable, then these estimates are less likely to change upon publication of new data. These definitions are similar to those proposed by the GRADE (Grading of Recommendations Assessment, Development and Evaluation) working group.[62] Our methodology is discussed in greater detail in Appendix D.

Internal Validity of the Evidence

To help assess the internal validity of each study included in this review, we used an instrument developed by ECRI Institute and shown in Table 18. This instrument examines factors of study design that have the potential to reduce the validity of the conclusions that can be drawn from a trial. Key factors the tool examines include whether the study was randomized, whether the study groups were comparable, and whether the participants were blinded to treatment assignment. In brief, the tool was designed so that a study attribute that theoretically protects a study from bias receives a "yes" response. If the study clearly lacks that attribute, it receives a "no" response. If poor reporting precludes assigning yes or no for an attribute, "not reported" (NR) is recorded.

To estimate the internal validity rating of an individual study, we computed a normalized score so that a perfect study received a score of 10. A study for which the answers to all items were "no" received a score of 0. A study for which the answers to all questions were "NR" received a score of 5.0.

We then classified the overall internal validity rating of the evidence base by using the median score of the studies. Scores were categorized using the terms shown below. The definitions for what constitutes low, moderate, or high internal validity evidence were determined *a priori* by a committee of four ECRI Institute methodologists.

Table 3. Internal Validity Ratings

	Overall Quality of Evidence Base		
	Low	Moderate	High
Median Overall Internal Validity Rating Score	<6	6 to 8	>8

Consistency of Evidence

The consistency of the evidence base was measured with statistical tests of heterogeneity. We used the heterogeneity statistic I^2. Typically, we use a threshold for I^2 of 0.5 because, according to Higgins and Thompson, this value represents moderate heterogeneity.[63,64] Because I^2 may increase with the power of the evidence base, we also considered estimates of tau squared (T^2). T^2 estimates the between-studies variance of the effect size, and the square root of tau estimates its standard deviation.[65,66] The cutoff for quantitative consistency varies depending on the outcome and effect-size metric. For this report, we considered an evidence base to be quantitatively consistent when one of the following was true:

- Tau <0.2 for a meta-analysis of Hedges' g
- Tau $<0.2*SD_{pooled}$ for a meta-analysis in the original metric (i.e., weighted mean difference [WMD]), because WMD ~ $g*SD_{pooled}$
- Tau <0.33 for a meta-analysis of odds ratio (tau itself is on the scale of the log odds ratio). Using the conversion formula proposed by Sanchez-Meca[67] of lnOR ~ g*1.65, this makes the threshold for tau similar to the one for Hedges' g.

Quantity of Evidence and Robustness of Conclusions

The quantity aspect of the overall strength-of-evidence rating was addressed by measuring the stability and precision of summary estimates. A precise, stable summary estimate indicates that the accumulated body of evidence is large enough to have accurately measured the "true" effect size. A precise summary estimate will have a small range encompassed by the 95% confidence intervals (CIs). If the 95% CI around the summary estimate is too wide (see Appendix D for definitions of "too wide"), the precision of the estimate is inadequate and the summary estimate is not stable. The stability of summary estimates was tested with sensitivity analyses as described in Appendix D.

Methods of Analysis

The choice of effect-size metric depended on whether reported outcomes were continuous or dichotomous. Pre-post treatment differences in outcomes measured using continuous data (e.g., scores on psychological tests) were calculated using Hedges' g.[1] We computed baseline-adjusted Hedges' g values using a pre-post correlation of 0.5.[69]

[1] The formula for Hedges' g is $g = \left(\frac{M_1 - M_2}{s}\right) * \left(1 - \frac{3}{(4*(N-2))-1}\right)$ where M_1 is the mean pre-post change score for one group, M_2 is the mean pre-post change score for the other group, s is the pooled standard deviation, and N is the total number of patients in both groups. Hedges' g adds a correction factor to adjust for small samples.[68]

For dichotomous outcomes, we used the odds ratio as the measure of effect size; values greater than one favored the experimental group, and values less than one favored the control group.[2] For all effect-size metrics, we computed 95% CIs using standard methods.

When reported, we used intent-to-treat data from the studies that made up the evidence base for the key questions addressed in this report. In the studies that used an intent-to-treat design, pretreatment scores were used for patients who were missing data at follow-up assessments. Treating missing data in this manner assumes that patients who dropped out of treatment did not improve. If intent-to-treat data were not available, we used data from patients who completed the treatment (or whatever the authors provided).

Where appropriate, we performed a DerSimonian and Laird random-effects meta-analysis[68] using Comprehensive Meta-Analysis software (Biostat, Inc., Englewood, NJ, USA). Additional statistical details are described in Appendix D under the different decision points of the strength-of-evidence system.

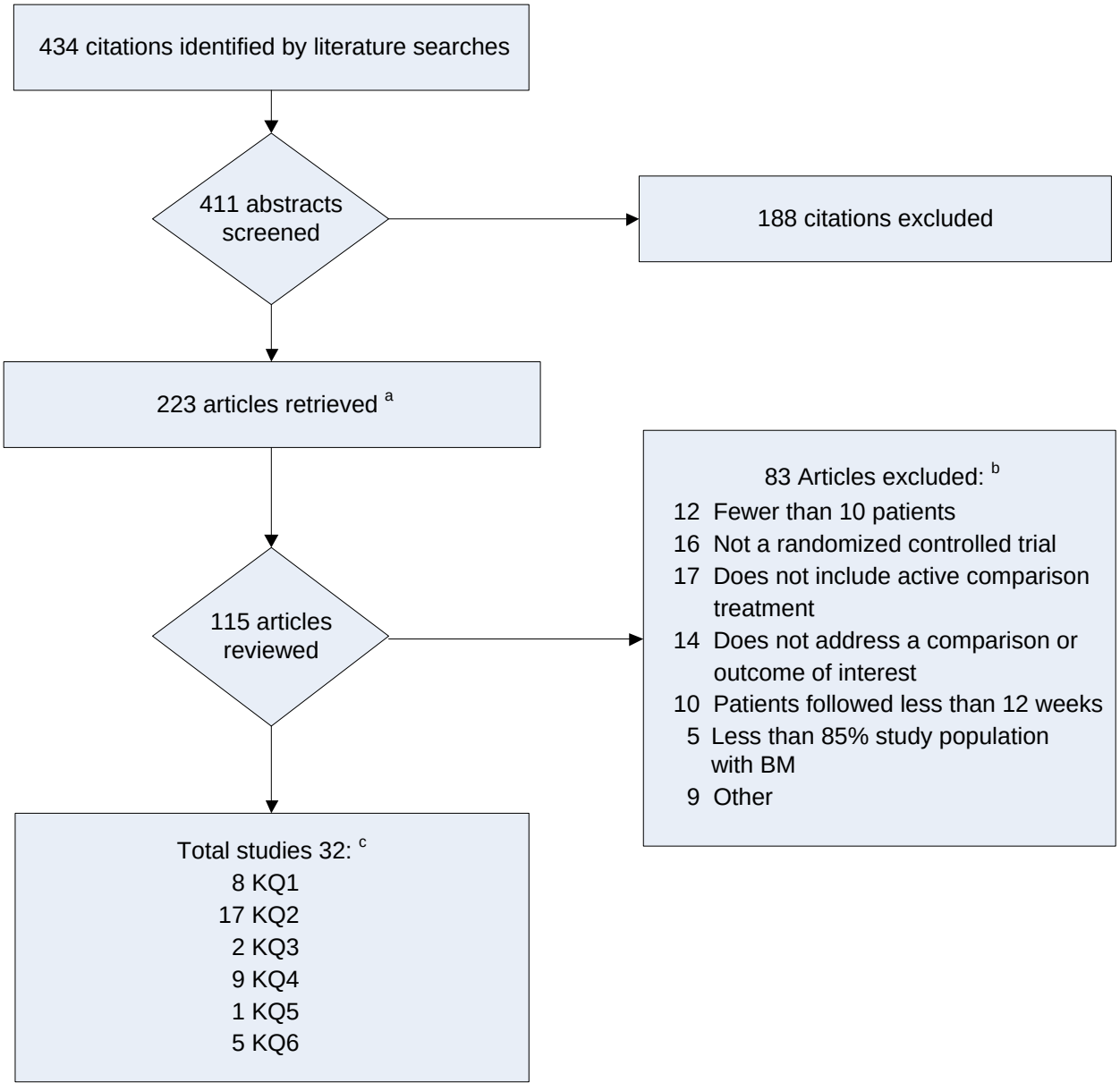
Evidence Base

Databases for this report were searched from 2005 to the present. Any articles from the previous ECRI Institute report on the efficacy of available treatments for BN that met the inclusion criteria for this report were included in the current evidence base. Overall, our searches of the literature identified 411 potentially relevant articles. The abstracts of articles identified by the literature searches were screened for possible relevance by one of three research analysts. The lead research analyst approved all exclusions at the abstract level. In total, 188 studies were excluded at the abstract level because the title and abstract indicated that the article was not a randomized controlled trial, did not address one of the key questions, or did not include an active treatment control.

The full-length articles of studies that appeared relevant at the abstract level were obtained, and three research analysts examined the articles to determine whether they met the inclusion criteria. Overall, 223 articles were retrieved. Of those, 83 were excluded upon further review. The lead research analyst approved all exclusions. The excluded articles and primary reason for exclusion are shown in Table 10 of Appendix B. The majority of studies were excluded because they did not include an active treatment control (k = 17) or they were not a randomized controlled trial (k = 16). Figure 3 below shows the flow of studies through this report. The overall evidence base for the report consists of 32 studies that compared the efficacy of 1 or more treatments for BN and addressed 1 or more key questions.

[2] The formula for odds ratio = (ad/bc) where a, b, c, and d relate to the following cells in a 2 X 2 table: a = number of events in the experimental group, b = the number of events in the control group, c = the number of non-events in the experimental group, and d = the number of non-events in the control group.[68]

Figure 3. Study Attrition Diagram



[a] We excluded 108 additional articles at this level primarily because upon further review the article was found not to address a key question.
[b] Table 10.
[c] Some studies addressed more than one key question.

Included Studies and Outcomes Reported

Table 4 below presents the studies that addressed each key question and the outcomes reported in each study. Table 11 of Appendix C includes a complete list of the instruments used to measure the outcomes reported in the studies that made up the evidence base for this report.

Table 4. Included Studies and Outcomes Reported

Study	Remission	Frequency of binge eating and purging	Quality of life	Eating disorder pathology	Dropout	Depression/ anxiety	Psychosocial functioning	Adverse Events (Key Question 6)
Key Question 1 (Medication)								
Leombruni et al. 2006[70]		✓		✓	✓	✓		✓
Jacobi et al. 2002[71 a]	✓	✓		✓	✓	✓		✓
Mitchell et al. 2002[72]	✓				✓			
Mitchell et al. 2001[73]	✓	✓		✓	✓	✓		
Goldbloom et al. 1997[74]	✓	✓		✓	✓	✓	✓	✓
Walsh et al. 1997[75]	✓	✓		✓	✓	✓		
Agras et al. 1992[76]		✓			✓			✓
Mitchell et al. 1990[77]	✓	✓		✓	✓	✓		✓
Key Question 2 (CBT)								
CBT versus Other Psychotherapies								
Agras et al. 2000[78]	✓	✓		✓	✓		✓	
Walsh et al. 1997[75]	✓	✓		✓	✓	✓		✓
Cooper and Steere 1995[79]	✓	✓		✓	✓	✓	✓	
Garner et al. 1993[80]	✓	✓		✓	✓	✓	✓	
Wolf and Crowther 1992[81]		✓		✓	✓		✓	
Fairburn et al. 1991[82]	✓	✓		✓	✓	✓	✓	
Freeman et al. 1988[16]		✓		✓	✓	✓	✓	
Fairburn et al. 1986[83]		✓		✓	✓	✓	✓	
Variations in the Delivery of CBT								
Mitchell et al. 2008[6]	✓	✓	✓	✓	✓	✓	✓	
Ghaderi 2006[84]	✓	✓		✓	✓	✓	✓	
Nevonen and Broberg 2006[85]	✓	✓		✓	✓	✓	✓	
Chen et al. 2002[86]	✓	✓		✓	✓	✓	✓	
Mitchell et al. 1993[87]	✓	✓		✓	✓	✓	✓	
Self-help CBT								
Bailer et al. 2004[88]	✓	✓		✓	✓	✓		
Durand and King 2003[89]		✓		✓	✓	✓	✓	
Thiels et al. 2003[90] and 1988[91]	✓			✓	✓	✓	✓	

Study	Remission	Frequency of binge eating and purging	Quality of life	Eating disorder pathology	Dropout	Depression/ anxiety	Psychosocial functioning	Adverse Events (Key Question 6)
Key Question 3 (Other Psychotherapy)								
Le Grange et al. 2007[92]	✓	✓		✓	✓	✓		
Schmidt et al. 2007[93]	✓	✓		✓	✓			
Key Question 4 (Combination Therapy)								
Schmidt et al. 2006[94]		✓			✓	✓		
Hsu et al. 2001[95]	✓	✓		✓	✓	✓	✓	
Mitchell et al. 2001[73]	✓	✓		✓	✓	✓		
Goldbloom et al. 1997[74]	✓	✓		✓	✓	✓	✓	✓
Walsh et al. 1997[75]	✓	✓		✓	✓	✓		
Agras et al. 1992[76]		✓			✓			✓
Mitchell et al. 1990[77,96]	✓	✓		✓	✓	✓		✓
Leitenberg et al. 1988[97]	✓	✓		✓	✓	✓	✓	
Argas et al. 1989[98]	✓	✓			✓	✓		
Key Question 5 (Inpatient versus Outpatient)								
Zeeck et al. 2009[99]	✓	✓		✓	✓	✓	✓	

[a] Jacobi et al. assessed the efficacy of combination fluoxetine and CBT to fluoxetine or CBT alone. However, fewer than 10 patients remained in the combination group at the end of the study. Thus, we do not include this study in Key Question 4.

Note: None of the studies included in this review reported on mortality or recovery as they are defined in this report. Thus, these outcomes are not presented in the table.

CBT: Cognitive behavioral therapy

Generalizability

Full details of the enrollment criteria for each of the included studies are presented in evidence tables in the appendices (see Table 15 of Appendix E, Table 25 of Appendix F, Table 39 of Appendix G, Table 46 of Appendix H, and Table 54 of Appendix I). In most of the studies included under Key Question 1 of this report, the enrolled patients were women age 18 to 65 who met the DSM-III-Revised criteria for BN. In most instances, study investigators used modified DSM criteria to ensure that their enrollees had exhibited a minimum level of bulimic behavior for a certain period of time. For example, to be enrolled in Jacobi et al. 2002,[71] Mitchell et al. 2000,[100] or Goldbloom et al. 1997,[74] patients must have met the DSM-III-Revised criteria for BN plus demonstrate binge eating with self-induced vomiting at least three times per week for the last six months. Typical enrollment rates (the percentage of individuals referred to the study who were actually randomly assigned) for studies included under Key Question 1 ranged from 25% to 97%, median 67.3%.

Enrollment criteria for Key Question 2 were similar to those of Key Question 1, with the exception of patients in more recent studies having to meet the DSM-IV criteria for BN.[84-86,88,89] Typical enrollment rates for studies included under Key Question 2 ranged from 32% to 100%, median 61%. Patients enrolled in the studies that were included under Key Question 3 were younger than patients in other studies. The studies addressing Key Question 3 assessed family-based therapy, and the age of patients in these studies ranged from 12 to 19 years. Additionally, patients in these studies met either full or partial DSM-IV criteria for BN. Patients who met partial criteria engaged in bulimic behavior less than twice a

week for less than three months. Enrollment rates of the two studies included in Key Question 3 was 57% for both studies.

Enrollment criteria for studies included under Key Questions 4 and 5 were similar to those of studies addressing the other key questions. In one of the nine studies included under Key Question 4, patients met the DSM-IV diagnostic criteria.[94] In the remaining eight studies, patients met the DSM-III diagnostic criteria. The enrollment rate of the studies under Key Question 2 ranged from 25% to 71%, median 57.4%. In addition to meeting the DSM-IV criteria for BN, patients enrolled in the one study that addressed Key Question 5 (inpatient versus outpatient treatment setting) had to fulfill at least one of the following: failed outpatient psychotherapy within the last two years, have bulimic symptoms that were too severe for outpatient treatment, have a chronic course of the illness for a minimum of five years, or severe comorbidity that does not allow for outpatient treatment. The enrollment rate in this study was 27%

Finally, typical exclusion criteria across the studies included in this report include suicidal thoughts or behavior; a concurrent diagnosis of anorexia nervosa; current use of psychotropic medication; current alcohol or drug abuse, pregnancy, or a risk of becoming pregnant; coexisting major psychiatric disorder other than depression, anxiety disorder, or personality disorder; and any significant medical problem or condition.

Synthesis of Results

Key Question 1: What is the relative efficacy of pharmacotherapy for treating individuals with BN to another pharmacotherapy (e.g., SSRI antidepressants versus tricyclic antidepressants), CBT, or other forms of psychotherapy (e.g., dialectical behavioral therapy, interpersonal psychotherapy)?

Overall Conclusions

- **CBT reduces binge eating episodes compared to antidepressant medications. Summary effect-size estimate Hedges' g of 0.404 (95% CI: 0.081 to 0.726). Stability of estimate: Unstable; Strength of evidence: Low.**

The evidence was of insufficient precision to draw any evidence-based conclusions about the relative efficacy of medication compared to CBT for the following outcomes: frequency of purging, depression, eating disorder pathology, and dropout. The evidence was of insufficient quantity (fewer than two studies) to draw any evidence-based conclusions about the relative efficacy of one medication compared to another medication, or medication compared to interpersonal psychotherapy, self-help CBT, supportive therapy, or intensive group therapy for the treatment of BN.

Overview of Evidence Base

Overall, our searches identified eight studies that assessed the relative efficacy of pharmacotherapy and met our inclusion criteria (See Table 5 below). All the patients in these studies were female, with the average age of patients across the studies ranging from 22.8 to 29.6 years. Patients met the DSM-IV or III diagnostic criteria for BN. Patients in studies that used the DSM-III criteria also engaged in self-induced vomiting at least twice a week for a minimum of three months. Table 16 in Appendix E presents further information about the patients enrolled in the studies. The overall internal validity rating of the studies that assessed pharmacotherapy was moderate. Table 18 presents the internal validity ratings of each study. The primary reasons for the moderate ratings were lack of blinding of the therapists and patients, not reporting methods used to randomly assign patients, the subjective nature of most of the outcomes, and attrition.

Table 5. Studies Meeting Inclusion Criteria for Key Question 1

Study	Treatment (Number of Patients)
Leombruni et al. 2006[70]	Citalopram (19) vs. fluoxetine (18)
Jacobi et al. 2002[71] *	Fluoxetine (16) vs. CBT (19)
Mitchell et al. 2002[72]	Fluoxetine (31) vs. IPT (31)
Mitchell et al. 2001[73] *	Fluoxetine (26) vs. self-help (22)
Goldbloom et al. 1997[74] *	Fluoxetine (12) vs. CBT (14)
Walsh et al. 1997[75]	Desipramine (25) vs. supportive therapy (22) or CBT (25)
Agras et al. 1992[76] *	Desipramine (24) vs. CBT (23)
Mitchell et al. 1990[77] *	Imipramine (54) vs. intensive group therapy (34)

*These studies also assessed the efficacy of combination therapy and are included under Key Question 4, which addresses combination therapy.

Note: In Mitchell et al. (2002) fluoxetine was followed by desipramine for those patients who did not achieve abstinence with fluoxetine after eight weeks of treatment. Similarly, Walsh et al. (1997) indicate that for some patients desipramine was followed by fluoxetine.

CBT: Cognitive behavioral therapy
IPT: Interpersonal psychotherapy

Details about the treatment conditions in each study are presented in Table 27. Briefly, Leombruni et al. (2006) compared the efficacy of citalopram and fluoxetine.[70] Patients in both arms of the study received their medication during 15-minute office visits with a psychiatrist on a monthly basis for 3 months. The dose of medication ranged from 20 to 60 mg for fluoxetine and 20 to 40 mg for citalopram, depending on the patient's needs.

Mitchell et al. (2002) compared the efficacy of fluoxetine followed by desipramine for those who did not achieve abstinence with fluoxetine, to IPT.[72] A psychiatrist administered the medication and reduced or changed the dosage as needed in order to achieve better control of bulimic symptoms. If abstinence was not achieved on fluoxetine after eight weeks of treatment, it was replaced desipramine. Patients in the medication arm of the study were treated for 26 weeks. The IPT method used was originally developed by Klerman et al. and later modified by Fairburn.

In another study, Mitchell et al. (2001) compared the efficacy of fluoxetine to self-help CBT.[73] Patients in the medication arm took 60 mg fluoxetine as a single dose in the morning. A medical doctor provided the medication to patients, and the doctor or his/her research assistant saw subjects weekly for the first 4 weeks and then every other week for the last 12 weeks of the trial. Patients in the self-help arm of the study followed a manual that incorporated many elements of CBT for BN. Patients in this group were required to complete 14 reading and homework assignments focusing on such issues as meal planning, avoidance of binge eating, cognitive restructuring, body image issues, and relapse prevention strategies. Subjects in the self-help arm also received a placebo pill.

Mitchell et al. (1990) also compared the efficacy of imipramine to intensive group psychotherapy.[77] Patients randomly assigned to the medication group received a maximum dose of 300 mg of imipramine per day. Patients in the intensive group therapy condition participated in a highly structured program that combined elements of behavioral therapy and CBT. Both groups were treated for a total of 12 weeks.

Walsh et al. (1997) compared the efficacy of desipramine to supportive therapy.[75] Both groups of patients were treated for 16 weeks. Patients in the medication arm received a maximum of 300 mg of imipramine per day and were monitored by a psychiatrist on a weekly basis. Patients in the supportive therapy group were seen by a psychiatrist, a doctoral-level psychologist, and a master's-level psychologist for 20 sessions over the course of 16 weeks. Treatment in this group was a manual-based, modified version of short-term psychotherapy developed by Fairburn.

Finally, four studies compared the efficacy of medication to CBT for the treatment of BN. Patients in the Walsh et al. (1997)[75] and Agras et al. (1992)[76] studies were randomly assigned to receive either 16 weeks of treatment with desipramine, up to a maximum dose of 300 mg per day, or individual CBT. The Walsh study makes one reference to the fact that some of the patients may have received fluoxetine instead of desipramine but does not elaborate on this issue any further. Jacobi et al. (2002)[71] and Goldbloom et al. (1997)[74] tested the efficacy of fluoxetine, up to 60 mg per day, compared to group and individual CBT, respectively. Both treatments in these studies were delivered over the course of 16 weeks.

Analysis and Results

The individual study results for all the studies that addressed Key Question 1 are reported in Table 19, Table 20, Table 21, Table 22, and Table 23 of Appendix E. Below, we briefly describe the individual study results.

Medication versus Medication

Leombruni et al. (2006) reported on the following outcomes: vomiting episodes per week, depression, eating disorder psychopathology , overall symptom severity, dropout, and adverse events.[70] Patients in the citalopram and fluoxetine groups improved from baseline to three-months' follow-up on most outcomes. The only statistically significant between-group difference was in the number of reported episodes of vomiting per week, which declined more in the fluoxetine group. The dropout rate was similar

for both groups: four (22.0%) patients dropped out of the fluoxetine group, and five (26.0%) dropped out of the citalopram group. Reasons for dropping out included poor motivation (n = 5), move to another city (n = 1), and adverse events (n = 3). The authors of the study did not report the specific nature of the adverse events.

Medication versus Interpersonal Psychotherapy

Mitchell et al. (2002) assessed the following outcomes: frequency of binge eating and purging, abstinence, eating disorder pathology, depression, self-esteem, interpersonal and social adjustment, and dropout.[72] According to an intent-to-treat analysis, five (16%) patients in the interpersonal psychotherapy group were abstinent at post-treatment and three (10%) in the fluoxetine group were abstinent. Overall, 13 (42.0%) patients in the interpersonal psychotherapy group dropped out of treatment and 16 (51.6%) patients in the fluoxetine group dropped out. The majority of patients dropped out of treatment because they were not happy with their treatment assignment.

Medication versus Self-help CBT

Mitchell et al. (2001) reported on the following outcomes: episodes of binge eating and vomiting per week, eating disorder pathology, depression, and severity of symptoms.[73] The authors did not provide enough data to calculate individual study effect-size estimates. They did report the mean percentage decrease for frequency of binge eating and vomiting episodes, which are reported in Table 21. According to the authors, both treatments were found to be effective in reducing the frequency of binge eating and vomiting from baseline to post-treatment. However, the reduction was statistically significant only for vomiting episodes of patients who received fluoxetine. No statistically significant differences were observed at post-treatment between the medication and self-help group for abstinence rates or secondary outcomes of depression and global symptom severity. Further, the authors indicated that data were not obtained for two patients at post-treatment.

Medication versus Intensive Group Psychotherapy

In this study, Mitchell et al. (1990) reported on the following outcomes: episodes of binge eating and vomiting per week, eating disorder pathology, depression, anxiety, global severity and improvement of symptoms, abstinence rates, and dropout.[77] The authors did not report data in a manner that allowed us to calculate individual effect-size estimates for the outcomes of interest to this report (no measures of dispersion were provided in either tables or figures). In Table 19, we report the results provided by the authors. In general, patients in both the medication and group therapy treatment conditions improved from baseline on measures of disordered eating. Patients in the intensive therapy group, however, demonstrated more improvement than patients in the medication group. Dropout was significantly higher in the imipramine group compared to the intensive group therapy arm (43% compared to 15%).

In subsequent publications, the authors of this study again randomly assigned patients who responded to imipramine plus group therapy to a second treatment regimen of imipramine alone.[96] Patients from the original trial and the rerandomized study were contacted at 10-years follow-up. Less than half of the original sample was reported on in the 10-year follow-up study.[20] Neither of these reports was used to address Key Question 1.

Medication versus Supportive Therapy

Walsh et al. (1997) reported on the following outcomes: episodes of binge eating and vomiting per week, abstinence, eating disorder pathology, depression, anxiety, global symptoms, and dropout.[75] According to the individual study results, both groups improved from baseline to post-treatment, with no between-group differences observed for any of the outcomes. Overall, 12 (43.0%) patients who received desipramine dropped out of treatment, 9 (36.0%) who received CBT dropped out of therapy, 6 (27%) who received supportive therapy dropped out. The difference between groups in the number of patients who dropped out was not statistically significant.

Medication versus CBT

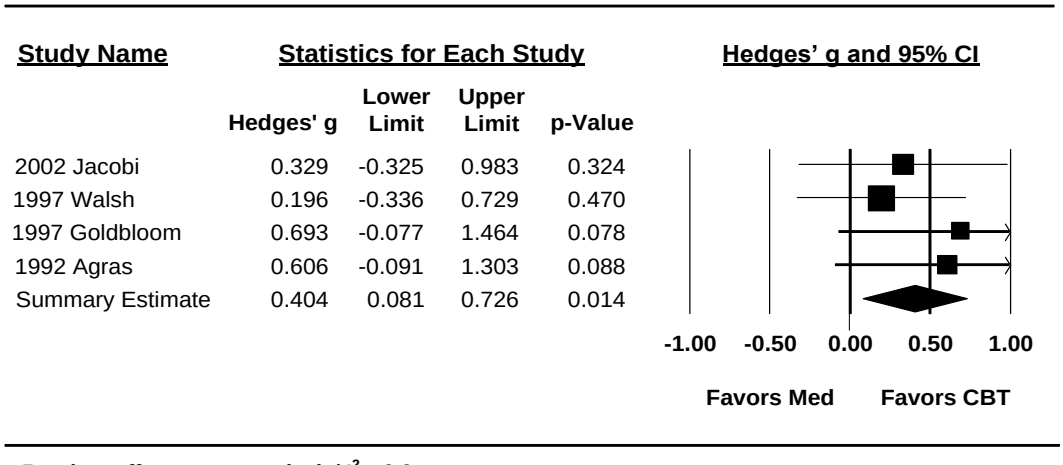
All four studies that assessed the efficacy of medication versus CBT reported the frequency of binge eating and purging or vomiting; two of the studies reported episodes per week,[75,76] and two reported episodes per month.[74,101] Three studies reported on level of depression using the Beck Depression Inventory,[71,74,75] and two measured eating disorder pathology using the Three Factor Eating Questionnaire.[71,75] Further, all studies reported on the number of patients who dropped out of therapy. Across all four studies, patients in both treatment conditions improved from baseline to post-treatment on frequency of binge eating and purging, eating disorder pathology, and depression. The only between-group difference was observed in the Jacobi et al. study[71] In this study, patients who received fluoxetine had significantly lower levels of depression at post-treatment than patients who received CBT. No significant between-group differences were observed in the number of patients who dropped out of treatment.

Results of Meta-analyses

Since only one small study compared the efficacy of medication to other medication, interpersonal psychotherapy, self-help, intensive group therapy, and supportive therapy, we considered the evidence for these comparisons of insufficient quantity to draw any evidence-based conclusion. We did combine data from the four studies that compared medication to CBT for the following outcomes: frequency of binge eating and purging, depression, eating disorder pathology, and dropout. For all but one of the outcomes assessed, the results of our meta-analyses were considered insufficient because the CIs were too wide to clearly determine whether one treatment was better than the other. See Table 24 for the results of these analyses.

The results of our analysis of frequency of binge eating episodes indicated that CBT significantly reduced the frequency of binge eating episodes compared to antidepressant medication. The estimated summary effect-size estimate is a Hedges' g of 0.404 (95% CI: 0.081 to 0.726), p = 0.014. Figure 4 presents the findings of our analysis. The estimate was quantitatively consistent ($I^2 = 0$ and $T^2 = 0$). However, because the 95% CI is not narrow (exceeded the bounds of clinical significance), we rated the stability or precision of the estimate as unstable. Further, sensitivity analysis (removal of one study) indicated that the findings were not robust (Figure 16 of Appendix E). Thus, we rated the strength of the evidence as low.

Figure 4. Meta-analysis Results for Frequency of Binge Eating Episodes



Conclusions

Overall, the results of our analyses indicated that CBT reduced the frequency of binge eating episodes compared to antidepressant medication. However, the evidence was of insufficient precision to draw any evidence-based conclusions about the relative efficacy of medication compared to CBT for the following outcomes: frequency of purging, depression, eating disorder pathology, and dropout. Further, the evidence was of insufficient quantity to draw any evidence-based conclusions about the relative efficacy of one medication compared to another medication, or medication compared to interpersonal psychotherapy, self-help CBT, supportive therapy, or intensive group therapy for the treatment of BN.

Key Question 2: What is the relative efficacy of CBT for treating individuals with BN to other forms of psychotherapy (e.g., dialectical behavioral therapy, interpersonal psychotherapy) or variations of CBT (e.g., group versus individual)

Overall Conclusions:

- **Patients who receive CBT are more likely to go into remission from vomiting than patients treated with supportive therapies. The estimated odds ratio is 3.83 (95% CI: 1.229 to 11.923). Stability of the estimate: Unstable; Strength of the evidence: Low.**
- **CBT is more effective than supportive therapies in improving eating disorder pathology. The estimated effect size is Hedges' g of 0.571 (95% CI: 0.142 to 1.000). Stability of the estimate: Unstable; Strength of the evidence: Low.**
- **CBT is more effective than behavioral therapy in reducing vomiting episodes. Estimated effect size is Hedges' g of 0.37 (95% CI: 0.002 to 0.739). Stability of the estimate: Unstable; Strength of the evidence: Low**.
- **Therapist-led CBT is more effective than self-help CBT in reducing symptoms of depression. Estimated effect size is Hedges' g of 0.447 (95% CI: 0.101 to 0.793) Stability of the estimate: Unstable; Strength of the evidence: Low.**

Due to clinical heterogeneity, the evidence was considered insufficient to draw any evidence-based conclusions about the relative efficacy of variations in CBT delivery.

Overview of the Evidence Base

Overall, our searches identified 17 studies that met the inclusion criteria for this report and addressed Key Question 2. We organized our analysis of these studies according to the following categories: manual-based CBT compared to other forms of psychotherapy (k = 8), self-help CBT compared to therapist-led CBT (k = 4), and variations in CBT delivery (e.g., group sessions versus individual sessions, k = 5 studies).

CBT versus Other Forms of Psychotherapy

Our searches identified 8 studies enrolling a total of 640 patients that compared the efficacy of CBT to other psychotherapies. The table below lists the studies and treatment conditions.

Table 6. Studies of CBT versus Other Forms of Psychotherapy

Study	Treatment (Number of Patients)
Agras et al. 2000[78]	CBT (110) vs. IPT (110)
Walsh et al. 1997[75]	CBT (12) vs. SPT (12)
Cooper and Steere 1995[79]	CBT (13) vs. ERP (14)
Garner et al. 1993[80]	CBT (25) vs. SET (25)
Wolf and Crowther 1992[81]	CBT (15) vs. BT (15)
Fairburn et al. 1991[82]	CBT (25) vs. IPT (25) vs. BT (25)
Freeman et al. 1988[16]	CBT (32) vs. BT (30) vs. GRP (30)
Fairburn et al. 1986[83]	CBT vs. Short-term psychotherapy

BT: Behavioral therapy
CBT: Cognitive behavioral therapy
ERP: Exposure plus response prevention
GRP: Group therapy
IPT: Interpersonal psychotherapy
SET: Supportive expressive therapy
SPT: Supportive psychotherapy

All the studies included only female patients, with the average age ranging from 22 to 28 years. Patients in most of the studies met the DSM-III criteria for BN. Individual study criteria excluded patients with any coexisting major psychiatric disorder (e.g., psychosis)[16,78,83] and any concurrent treatment.[78,81,83] See Table 25 and Table 26 for further information about the characteristics of the patients enrolled in these studies. Overall, the internal validity rating of the studies was moderate.

Table 28 presents the internal validity ratings of each study. The primary reasons for these ratings were lack of blinding of patients and clinicians, lack of reporting of the method used to randomly assign patients, subjective nature of most of the outcomes, and attrition.

Details about the treatment conditions in each of the studies are presented in Table 27. Briefly, in one multicenter study by Agras et al.,[78] patients were randomly assigned to CBT or interpersonal psychotherapy. Both types of therapies were manual-based and delivered by doctorate-level psychologists/psychiatrists in an outpatient university setting. Patients received treatment over a period of 20 weeks, which included 19 individual sessions lasting 50 minutes. Unlike CBT, interpersonal psychotherapy did not include self-monitoring or a discussion of eating habits or attitudes toward shape and weight.

Fairburn et al. compared CBT to interpersonal psychotherapy and behavioral therapy.[82] Treatment was administered over 19 individual sessions (50 minutes). Fairburn et al. developed the manual used to administer CBT. The manual focused primarily on behavioral and cognitive techniques to modify eating habits and concerns about shape and weight. Interpersonal psychotherapy was based on a treatment model by Klerman et al. for the New Haven-Boston Collaborative Depression project. A three-phase therapy, interpersonal psychotherapy, focused on the patient's current circumstances and relationships. Treatment using behavioral therapy was exclusively focused on normalizing eating habits. Common features to the delivery of behavioral therapy and CBT included self-monitoring, education about healthy eating habits, and introduction of a pattern of regular eating. Two common components of CBT and interpersonal psychotherapy were the preparation for future difficulties and emphasis on the patient's independent competence. Interpersonal psychotherapy did not share any common treatment components with behavioral therapy.

One study compared CBT to exposure and ERP.[79] Study authors Cooper and Steere personally administered therapy in the hope of controlling therapist-specific effects. The first and final phases of treatment were identical for all patients. The first phase focused on the importance of self-monitoring eating habits and incorporating behavioral techniques to gain better control of eating. The second phases followed modified programs of Fairburn (CBT) or Rosen and Leitenberg (ERP). The final phase of both treatments focused on maintenance.

CBT was compared to supportive expressive therapy and supportive psychotherapy in studies by Garner et al.[80] and Walsh et al.,[75] respectively. In Garner et al., clinicians administered treatment in an outpatient hospital setting.[80] Treatment lasted 16 weeks and was administered in 19 individual sessions lasting 45 to 60 minutes. CBT was Fairburn-based, while supportive expressive therapy utilized a Luborsky-manual supplemented by psychodynamic writings on eating disorders. During supportive expressive therapy sessions, therapists helped identify problems and solutions but did not provide any specific advice to patients. The supportive expressive therapy approach assumed that the BN symptoms "serve as a functional role by disguising underlying interpersonal problems." In the Walsh et al. study, treatment in the CBT group was based on a modified version of the Fairburn manual. The CBT treatment focused on maintaining improvement and preventing relapse; in contrast, the supportive psychotherapy approach was "nondirective and emphasized patient self-exploration and understanding." Both forms of therapy were administered over the course of 16 weeks.

In 1992, Wolf and Crowther published results of a study comparing CBT to behavioral therapy. The behavioral therapy approach focused on the self-monitoring of eating behaviors, self-control, relaxation, and relapse prevention. The CBT approach included similar components in addition to a cognitive

component whereby patients were trained to restructure cognitive distortions and irrational thinking about weight, body image, eating, and dieting. This approach also included training in stress management and problem solving.

A 1986 study by Fairburn et al.[83] examined CBT compared to short-term focal psychotherapy. Common features between treatments included the monitoring of eating habits and the identification of conditions under which overeating occurred. Distinctive features included the use of behavioral and cognitive techniques to modify concerns about shape and weight (CBT approach) and the training to problem solve (short-term focal psychotherapy approach).

Finally, in 1988, Freeman et al. randomly assigned patients to CBT, behavioral therapy, or group therapy.[16] Treatments were administered over 15 weeks by 2 trained therapists in a hospital setting. CBT focused on identifying dysfunctional behavior and responding with a more positive behavior. Behavioral therapy focused on reestablishing normal eating patterns by incorporating techniques of self-monitoring and relaxation training. During group, sessions focused on a discussion of weekly topics, with therapists providing a nondirective role.

Analysis and Results

In the section below, we briefly describe the individual results of the studies that compared CBT to other forms of psychotherapy. All individual study results are presented in Table 29, Table 30, and Table 31. For most of the reported outcomes, we calculated the individual effect-size estimates. In some situations, however, the data were not reported in a manner that permitted us to calculate an effect size. For these outcomes, we present the authors' results in the evidence tables.

CBT versus Exposure plus Response Prevention

According to Cooper and Steere,[79] all patients demonstrated short-term improvement in both specific and nonspecific psychopathology measures. However, the majority of patients initially responding to ERP later relapsed. Short-term improvements included similar reductions in frequency of bulimic episodes (an average of 78%) and even greater reductions in vomiting episodes (CBT 91.1% compared to ERP 82.8%). While patient's weight did not change significantly over the course of treatment, substantial improvements were reported for attitudes toward shape and weight, level of dietary restraint, and dissatisfaction with body shape.

Corresponding improvements were reported for nonspecific psychopathology measures of anxiety, depression, and self-esteem. Post-treatment results indicated similar remission rates for both treatments (bulimic episodes: 46% CBT versus 50% ERP; purging episodes: 54% CBT versus 43% ERP). Over the 12-month follow-up period, patients continued to benefit from CBT in all measures, especially showing significant improvement in measures of depression and anxiety. At this time point, however, measurable relapse was reported in responders to ERP (five of seven patients who ceased binge eating and five of six patients who ceased purging post-treatment). Of the 13 responders to CBT, only 1 who had ceased purging relapsed. Two patients dropped out (one from each treatment condition), and two patients were withdrawn due to depression (one from each treatment group).

CBT versus Short-term Focal Psychotherapy

One small study by Fairburn et al. compared CBT to short-term focal psychotherapy.[83] The authors reported significant reductions in frequency of bulimic episodes and self-induced vomiting for all patients. While both treatment groups sustained this improvement throughout the 12-month follow-up, patients in the CBT group demonstrated significantly greater reduction in frequency of vomiting at 8 months and greater improvements in depression and general psychopathology throughout follow-up. Two patients were withdrawn (one from each treatment group) on clinical grounds.

CBT versus Interpersonal Psychotherapy

In a multicenter study, Agras et al. attempted to replicate Fairburn et al.'s earlier comparison of CBT versus interpersonal psychotherapy.[78,82] Fairburn et al. (1991) demonstrated that interpersonal psychotherapy was as effective as CBT in controlling overeating (mean frequency fell from 16.5 to 1.2 episodes per month) and treating depression as well as general psychiatric symptoms of BN. CBT was more effective, however, in controlling vomiting episodes, dietary restraint, and attitudes toward shape and weight. The authors reported similar rates of remission for binge eating (71% for CBT and 62% for interpersonal psychotherapy) and purging (47% for CBT and 37% interpersonal psychotherapy).

Unlike Fairburn et al., Agras et al. reported a much higher "recovery" rate (defined as no binge eating or purging during the previous 28 days) at post-treatment for CBT compared to interpersonal psychotherapy (29% versus 6%). Similar post-treatment scores for binge eating, purging, self-esteem, and social adjustment were reported. Similar dropout rates were also reported for both CBT and interpersonal psychotherapy, although one site in this study reported a higher overall dropout rate (35.9% versus 18.5%). Reasons reported for this difference include a patient population with more severe associated psychopathology and patients being more mobile and less committed.

CBT versus Supportive Therapies

Two studies compared CBT to supportive forms of psychotherapy for the treatment of BN. Walsh et al. (1997) randomly assigned patients to CBT plus placebo (n = 25) or supportive psychotherapy plus placebo (n = 22) as part of a larger study of combination medication and psychotherapy.[75] Post-treatment results for binge eating and scales of eating disorder psychopathology indicated slightly better results for CBT. Post-treatment results for episodes of vomiting, depression, and anxiety were similar between groups. Dropout was slightly higher with CBT than supportive psychotherapy (36% versus 27%, respectively). Remission rates for binge eating (38% for CBT and 31% for supportive psychotherapy) and vomiting (29% for CBT and 12% for supportive psychotherapy) favored CBT over supportive psychotherapy. In a similar size study, Garner et al. compared CBT (n = 25) to supportive expressive therapy (n = 25).[80] Post-treatment results indicated similar effectiveness between treatments for reducing binge eating. According to the authors, CBT was "marginally superior" to supportive expressive therapy in reducing vomiting frequency; higher remission rates for purging (36% for CBT versus 12% for supportive expressive therapy). CBT-treated patients also showed greater improvement on several eating disorder psychopathology outcomes (e.g., dietary restraint, drive for thinness). Dropout was similar, with 17% of patients withdrawing from both treatment conditions. See the section below for results from meta-analyses of several study outcomes for these studies.

CBT versus Behavioral Therapy

Overall results from three studies comparing CBT to behavioral therapy indicate minimal differences between CBT and behavior therapy in the reduction of binge eating and vomiting episodes.[16,81,82] No significant differences were found between CBT and behavioral therapy for any study outcomes in a small study by Wolf and Crowther.[81] Both treatment groups reported fewer episodes of binge eating and improvements in several subscales of eating disorder psychopathology at post-treatment and one- and three-month follow-up periods. Rates for dropout or remission were not reported.

Fairburn et al. reported results from a trial comparing CBT to interpersonal psychotherapy to behavioral therapy. Post-treatment results from patients randomly assigned to CBT and behavioral therapy indicated significant improvements on three subscales of eating pathology measurement: dietary restraint, attitudes toward shape, and attitudes toward weight. However, no significant differences were found for reductions in objective bulimic episodes or self-induced vomiting. Rates for remission indicated a trend for patients to be more likely to experience remission with CBT, although dropout rates were higher in this treatment group.

Lastly, Freeman et al. randomly assigned patients to three treatment groups (CBT versus behavioral therapy versus group therapy).[16] Results from the CBT to behavioral therapy comparison again indicated slightly better improvements for CBT-treated patients for binge eating and vomiting post-treatment. Remission rates were not reported in this study.

CBT versus Group Therapy

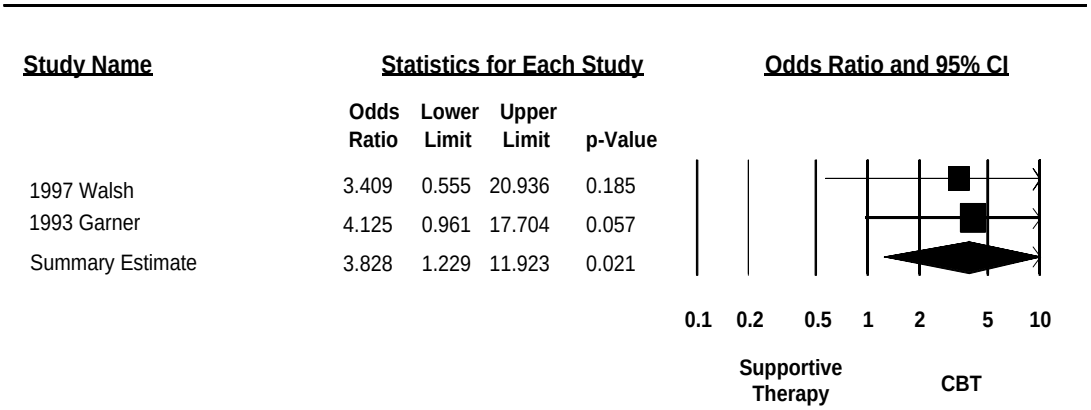
Results from Freeman et al. indicated slightly better improvements for patients who received individual CBT for binge eating and vomiting post-treatment results compared to those who received group therapy.[16] Overall, the authors reported no significant differences between results for these treatment comparisons, although results from bulimic investigatory test scores suggested that "bulimic behavior and attitudes improved more quickly with this treatment [CBT]." Dropout was high (37%) for patients in group therapy.

Results of Meta-analyses

CBT versus Supportive Therapies

We were able to perform meta-analyses for several outcomes comparing these two treatments. For the outcome of "remission from vomiting," we concluded that patients with CBT are more likely to go into remission from vomiting than patients treated with supportive therapies. The results of our analysis are presented in Figure 5. The estimated odds ratio is 3.83 (95% CI: 1.229 to 11.923, $p < 0.05$). These results equate to a relative risk of 2.86 in favor of CBT, meaning that patients in the CBT group are almost three times as likely as patients treated by supportive psychotherapies to experience remission from vomiting. The estimate was quantitatively consistent ($I^2 = 0.00$ and $T^2 = 0.00$). However, because the 95% CI was not narrow, we rated the stability or precision of the estimate as unstable. Further, removal of one study resulted in the summary estimate no longer being statistically significant. Thus, the finding was not robust, and we rated the strength of the evidence as low.

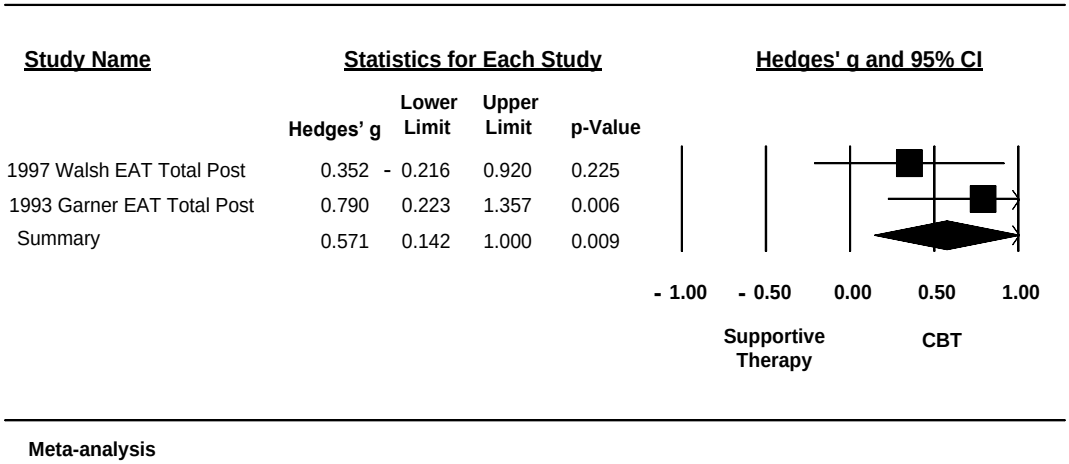
Figure 5. Meta-analysis Results of Remission from Vomiting Episodes



Random effects meta-analysis/ $I^2 = 0.00$

Both studies also reported the total score for the Eating Attitude Test (EAT).[102] Based on the results of our meta-analysis for this outcome, we can conclude that CBT is more effective than supportive therapies in improving eating disorder pathology. The estimated effect size is Hedges' g of 0.571 (95% CI: 0.142 to 1.000), $p = 0.009$ (See Figure 6). This translates to a difference of about nine points in favor of patients in the CBT group. The estimate was quantitatively consistent ($I^2 = 0.00$ and $T^2 = 0.00$). However, because the 95% CI was not narrow, we rated the stability or precision of the estimate as unstable. Further, removal of one study resulted in the summary estimate no longer being statistically significant. Thus, the finding was not robust, and we rated the strength of the evidence as low.

Figure 6. Meta-analysis Results of Eating Disorder Pathology

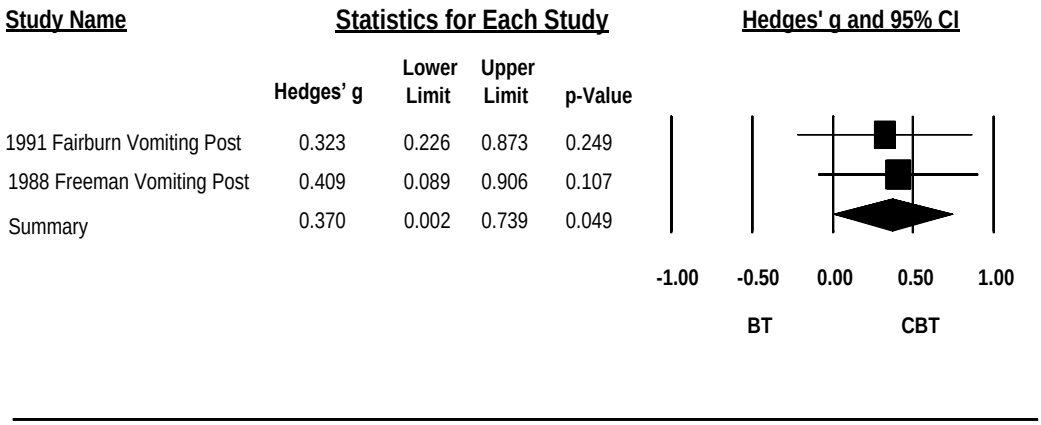


Currently, no evidence-based conclusion can be drawn about the relative efficacy of CBT and supportive therapies for the following outcomes: post-treatment scores for binge eating, vomiting, Beck Depression Inventory, and dropout. The evidence was considered insufficient for binge eating and dropout because the CIs were too wide to clearly determine whether there is a difference in outcomes between these treatments. For other outcomes, such as subscales of the Eating Disorder Examination and self-esteem, the evidence was insufficient because only one study reported on that outcome or the data for that outcome were reported in a manner that did not allow us to perform a meta-analysis. More studies with larger sample sizes are needed to be able to draw evidence-based conclusions for these outcomes. Table 32 presents the findings of our meta-analysis for these outcomes.

CBT versus Behavioral Therapy

We combined data in a meta-analysis from the two studies that assessed CBT and behavioral therapy for the outcome of vomiting frequency post-treatment.[16,82] The findings of our analysis indicated that CBT is more effective than BT in reducing vomiting episodes. Estimated effect size is Hedges' g of 0.37 (95% CI: 0.002 to 0.739), p = 0.049 (See Figure 7). The estimate was quantitatively consistent (I^2 = 0.00 and T^2 = 0.00). However, because the 95% CI was not narrow, we rated the stability or precision of the estimate as unstable. Further, removal of one study resulted in the summary estimate no longer being statistically significant. Thus, the finding was not robust, and we rated the strength of the evidence as low.

Figure 7. Meta-analysis Results of Frequency Vomiting Episodes



The evidence is of insufficient precision to determine whether there is a difference between CBT and behavioral therapy in reducing frequency of binge eating episodes. Similarly, the evidence is of insufficient precision to determine whether patients randomly assigned to CBT are less likely to drop out than those randomly assigned to BT. Results for the meta-analyses for outcomes of binge eating/vomiting post-treatment and dropout are shown in Table 32. Barriers to performing further meta-analyses included partial reporting of eating disorder psychopathology subscales and only one study reporting on nonspecific psychopathology measures.

CBT versus Interpersonal Psychotherapy

We combined data in two separate meta-analyses from the two studies that compared CBT to interpersonal psychotherapy for the following outcomes: frequency of binge eating episodes and dropout. However, no evidence-based conclusions could be drawn about the relative efficacy of these two treatments because the CIs were too wide to clearly determine whether there is a difference in outcomes between these treatments. Thus, we considered the evidence for the outcomes to be insufficient. Table 32 presents the findings of our meta-analyses for these outcomes. For other outcomes (remission, frequency of purging episodes, and eating disorder pathology), the evidence was also considered insufficient because the data for these outcomes were reported in a manner that did not allow us to perform a meta-analysis. More studies with larger sample sizes are needed to be able to draw evidence-based conclusions about the relative efficacy of CBT to interpersonal psychotherapy.

Conclusions

Overall, the results of our analyses indicated that patients who receive CBT are more likely to go into remission from vomiting than patients treated with supportive therapies. CBT is more effective than supportive therapies in improving eating disorder pathology and more effective than behavioral therapy in reducing vomiting episodes.

Variations in Delivering CBT

Our searches identified five studies that assessed variations in CBT delivery. One study enrolling a total of 128 patients compared CBT delivered in person (face to face) to CBT delivered via telemedicine.[6] Two studies enrolling a total of 142 patients compared individual CBT to group CBT,[85,86] 1 study enrolling 50

patients compared manual-based CBT to individualized CBT,[84] and 1 study enrolling 143 patients compared high-intensity CBT to low-intensity CBT[87] The average age of the patients in these studies ranged from 20 to 29 years, and the majority of the patients were female. Patients met the DSM-IV or III diagnostic criteria for BN or EDNOS. See Table 26 for further information about the characteristics of the patients enrolled in each of the studies. Overall, the internal validity rating of the studies that considered variations in the delivery of CBT was moderate.

Table 28 presents the internal validity ratings of each of the studies. The primary reasons for these ratings were lack of blinding of the therapists and patients, not reporting methods used to randomly assign patients, the subjective nature of most of the outcomes, and attrition.

Treatment conditions varied across the studies. Details about the treatment conditions in each of the studies are presented in Table 27. Briefly, two studies, Nevonen and Broberg[85] and Chen et al.,[86] compared individual CBT to group CBT. In the Nevonen study, patients in both the individual (n = 42) and group treatment (n = 44) conditions received CBT followed by interpersonal psychotherapy. Both types of therapies were manual-based and delivered by therapists trained to use the treatment manuals. Patients in the individual therapy group received 23 weekly sessions (10 CBT and 13 interpersonal psychotherapy) lasting 50 to 60 minutes. Patients in the group condition received 20 weekly sessions (10 CBT and 10 interpersonal psychotherapy) lasting 2 hours. During the first phase of treatment, patients' relatives and friends were invited to participate in a psychoeducational session lasting two hours, and all patients received a CBT self-help manual to address eating concerns during the interpersonal psychotherapy phase of therapy.

In the Chen study, both patients in the individual (n = 30) and group condition (n = 30) received CBT based on the manual developed by Fairburn et al. Patients in the individual condition received 19 sessions lasting 50 minutes over the course of 4.5 months, and patients in the group condition received 19 sessions lasting 90 minutes over the same time period as the individual sessions. Like the Nevonen and Broberg study, relatives and friends were invited to participate in an informational session.

Treatment conditions in the other three studies included one study by Mitchell et al. (2008) that compared CBT delivered face to face to CBT delivered via telemedicine.[6] Patients in the face-to-face group (n = 66) received 20 individual sessions over a 16-week period. Patients in the CBT delivered via telemedicine group (n = 62) received the same number of sessions delivered using a telemedicine system linking regional healthcare system facility using T1 lines. Units were placed to mimic the interpersonal distance and height equality used in face-to-face therapy. The average length of sessions was 50.5 minutes across both treatment conditions. Another study by Ghaderi compared manual-based CBT (n = 26) to individualized CBT (n = 24).[84] Patients in both groups received 19 weekly individual sessions lasting 50 minutes. Treatment in the manual-based group followed the manual developed by Fairburn et al., whereas treatment in the individualized group followed an individual form of CBT that was based on logical functional analysis for each patient. The content of each session was defined according to what the analysis indicated was perpetuating the BN (e.g., trauma, abuse, interpersonal relationships).

The final study by Mitchell et al. (1993) compared the intensity (or timing of delivery) and emphasis on abstinence from disordered eating behavior of CBT.[87] In this study, individuals were randomly assigned to one of four groups: high intensity and high emphasis on abstinence (n = 33), high intensity and low emphasis on abstinence (41), low intensity and high emphasis on abstinence (n = 35), and low intensity and low emphasis on abstinence (n = 34). Patients in all groups received group CBT delivered over the course of 12 weeks for a total of 45 hours of treatment. Treatment in all groups was based on two treatment manuals: *The Healthy Eating Meal Planning System* and *Bulimia Nervosa Group Treatment Manual* (University of Minnesota). In the high-intensity conditions, sessions were clustered toward the beginning of therapy, whereas in the low-intensity condition, sessions were evenly distributed over the course of 12 weeks. In the high-abstinence conditions, patients were asked to gain control of their eating behavior early in treatment.

Analysis and Results

Because of the variation in the treatment conditions of the studies, we did not attempt to combine individual study results in any meta-analysis. In the section below, we briefly describe the individual results of the studies. All individual study results are presented in Table 33, Table 34, and Table 35.

In the study comparing face-to-face CBT to CBT delivered via telemedicine, both groups demonstrated similar improvement from baseline to post-treatment in the number of reported binge eating and purging episodes, with no significant difference in overall effect size observed between the treatment groups. Both groups also demonstrated similar trajectories at later follow-up times, with the number of episodes slightly increasing but with no significant between-group differences observed. Our analysis of remission rates also revealed no significant differences between the groups, with similar numbers of patients in each group reporting remission at post-treatment and follow-up. The only significant difference between groups in favor of the face-to-face CBT condition was on the eating and shape concerns subscale of the Eating Disorder Evaluation. Finally, the overall dropout rate in this study was high but similar in each group (62% dropped out of the face-to-face CBT, and 59% dropped out of the CBT delivered via telemedicine group).

In the Nevonen and Broberg study comparing individual CBT plus interpersonal psychotherapy to group CBT plus interpersonal psychotherapy, patients in both groups demonstrated similar improvement at post-treatment and follow-up on all outcomes except episodes of binge eating and purging and dropout rates. Patients who received individual therapy reported significantly fewer episodes of binge eating and purging than patients who received group therapy at post-treatment and follow-up. Similarly, fewer patients who received individual therapy dropped out than patients who received group therapy (10% compared to 30%). In the Chen study comparing individual CBT to group CBT, patients demonstrated similar improvement with no significant between-group difference in the number of reported binge eating or vomiting episodes, rates of remission, or on other reported outcomes at post-treatment or follow-up. The overall dropout rate in this study was 38% (number of dropouts per group not reported).

In the study comparing manual-based CBT to individualized CBT, patients in both groups demonstrated similar improvement at post-treatment and follow-up on all outcomes except the number of days reported abstinent from binge eating. For this outcome, patients in the individualized CBT group reported more days of abstinence than patients in the manual-based group at post-treatment. This difference was not observed at follow-up. Only two patients were reported to have dropped out of this study. Finally, in the Mitchell et al. (1993) study comparing high-intensity CBT to low-intensity CBT, patients in all four study conditions demonstrated similar improvement from baseline to post-treatment on all outcomes except on some of the subscales of the Eating Disorder Inventory, according to the authors. Overall, dropout rates were low and similar across the groups.

Conclusions

Because of the variation in the studies' treatment conditions, we did not attempt to combine individual study results in any meta-analysis. Further, the low to moderate quality of the studies and the small sample size in most of the studies precluded us from drawing overall conclusions based on individual studies. Thus, the evidence was considered insufficient to draw any evidence-based conclusions about the relative efficacy of variations in CBT delivery.

Self-help CBT versus Individual CBT

Our searches identified three studies reported in four separate publications that evaluated self-help CBT and met our inclusion criteria for this report.[88,89,91,103] The studies enrolled a total of 211 patients that met the DSM-IV diagnostic criteria for BN. The majority of the patients enrolled in these studies were female, with an average age ranging between 23.3 to 28.7 years old. The average duration of BN for the studies

that reported this information ranged from 5.9 to 7.7 years. The average age reported for onset of the disorder ranged from 17.3 to 20.3 years old. Further information about the characteristics of the patients enrolled in the studies is presented in Table 26 in Appendix F.

Overall, the internal validity ratings for the studies assessing self-help were low to moderate, depending on the outcome.

Table 28 presents the internal validity ratings of each of the studies. The primary reasons for these ratings were lack of blinding of the therapists and patients, the subjective nature of most of the outcomes, and attrition.

Details about the treatment conditions in each of the studies are presented in Table 27. Briefly, in all three studies, therapist-delivered CBT or a variation of CBT was compared to guided self-help. In the most recent study, by Bailer et al. (2004), patients in the guided self-help group (n = 41) were given a self-help manual and informed that their progress using the manual would be monitored.[88] Patients were also offered 18 brief weekly sessions (lasting no longer than 20 minutes a visit) in which they met with a resident in psychiatry to receive motivation and encouragement to continue following the treatment manual. Patients in the CBT condition received 18 weekly sessions of manual-based group CBT. Treatment in this condition followed the manual developed by Jacobi et al. (1996), which is the German version of Fairburn's original CBT manual. Each session lasted 90 minutes and was delivered by a therapist trained to use the treatment manual.

Patients in the Durand and King (2003) study were randomly assigned to receive CBT plus interpersonal psychotherapy (n = 34) or general-practice-based self-help (n = 34).[89] Patients in the self-help group were given a copy of *Bulimia Nervosa: A Guide to Recovery* and were advised to work though the guide while maintaining regular contact with their general practitioner. General practitioners also received a copy of the manual along with guidelines on how to provide support to patients. Patients in the CBT plus interpersonal psychotherapy group were seen individually on a weekly or biweekly basis for as long as necessary. A trained specialist delivered treatment in an outpatient clinic that specialized in treating eating disorders. Patients in this group also had access to other staff and forms of care delivered in the clinic, such as nutritional therapy.

A third study, by Thiels et al. 1998,[91] randomly assigned patients to individual CBT delivered by a trained professional (n = 31) or guided self-help (n = 31). Patients in the CBT group received 16 weekly treatment sessions lasting 50 to 60 minutes per visit. Treatment was based on principles outlined by Fairburn et al. Patients in the guided self-help group were given a treatment manual and asked to work through the chapters. Patients in this group had contact with a therapist every other week for eight weeks. Therapy sessions for the guided self-help group were primarily used to help encourage and motivate patients to use the manual. Unlike the CBT treatment group, less time was reported on educational and skills training for the guided self-help group due to reinforcement of these areas using the self-treatment manual.

Analysis and Results

Table 36 and Table 38 present the individual study results of all the studies that made up the evidence base for this key question. For most of the reported outcomes, we calculated the individual effect-size estimates. In some situations, however, the data were not reported in a manner that permitted us to calculate an effect size. For these outcomes, we present the authors' results in the evidence tables.

Individual Study Results

The primary outcomes reported in Bailer et al. were monthly frequencies of self-reported binge eating and vomiting episodes, recovery, remission, and attrition/patient dropout.[88] Secondary outcomes included eating-disorder-related psychopathology and depression, which were assessed with the Eating Disorder Inventory and Beck Depression Inventory, respectively. Using the authors' intent-to-treat samples, no

significant difference was observed at post-treatment between the guided self-help and CBT groups in the proportion of patients, as follows, who experienced remission (defined in this report as complete abstinence from binge eating or purging during the preceding month): 5 (12.2%) for the guided self-help group compared to 3 (7.5%) for the CBT group. Similar results were observed for the proportion of patients, as follows, who experienced partial remission (no longer meeting DSM-IV criteria for BN): 16 (40%) patients in the guided self-help condition and 12 (29.3%) in the CBT group. No statistically significant between-group differences were observed for the proportion of people who experienced full or partial remission at one-year follow-up. Overall, 9 (22.5%) patients in the guided self-help group and 6 (14.6%) patients in the CBT group experienced full remission, while 20 (50%) in guided self-help and 15 (36.6%) in CBT experienced partial remission. The authors reported that 15 (37.5%) patients in the guided self-help group and 11 (26.8) in the CBT group dropped out of treatment (difference not statistically significant).

In Thiels et al. (1998), the primary outcome was eating disorder pathology, which was assessed using the Eating Disorder Evaluation subscales for overeating, vomiting, dietary restraint, weight and shape concern, and other measures.[91] Secondary outcomes were depression as measured using the Beck Depression Inventory and self-esteem using the Self-Concept Questionnaire. Individual study results indicated that both treatments (individual CBT and guided self-help) led to significant improvement from baseline to post-treatment and 10-months' follow-up on all subscales of the Eating Disorder Evaluation, with no significant between-group differences observed at either time point. Similar results were demonstrated on other measures of eating disorder pathology and for self-esteem. Compared to patients who received guided self-help, patients in individual CBT demonstrated greater reduction in levels of depression at post-treatment. The authors also noted that this reduction occurred faster in the CBT group. No between-group differences were observed at 10-months' follow-up. The authors reported that nine (29.0%) patients in guided self-help and four (12.9%) in the CBT group dropped out of treatment (difference not statistically significant). A four-year follow-up study by Thiels et al. published in 2003 reported similar outcomes. However, due to attrition rates >50%, data from this study were not included in this report.

Finally, Durand and King 2003[89] compared guided self-help to CBT plus interpersonal psychotherapy. The authors assessed the following outcomes: symptom severity using the Bulimic Investigatory Test Edinburgh, eating pathology using the Eating Disorder Evaluation, depression using the Beck Depression Inventory, frequency of bulimic episodes (in previous 28 days), and social adjustment. Outcomes were measured at six- and nine-months' follow-up. The individual study results indicate that patients in both groups improved from baseline to both follow-up times on all outcomes, with no statistically significant between-group differences observed for any of the outcomes. The authors reported that eight (23.5%) patients in the guided self-help group and six (17.6%) in the CBT group dropped out of treatment (difference not statistically significant).

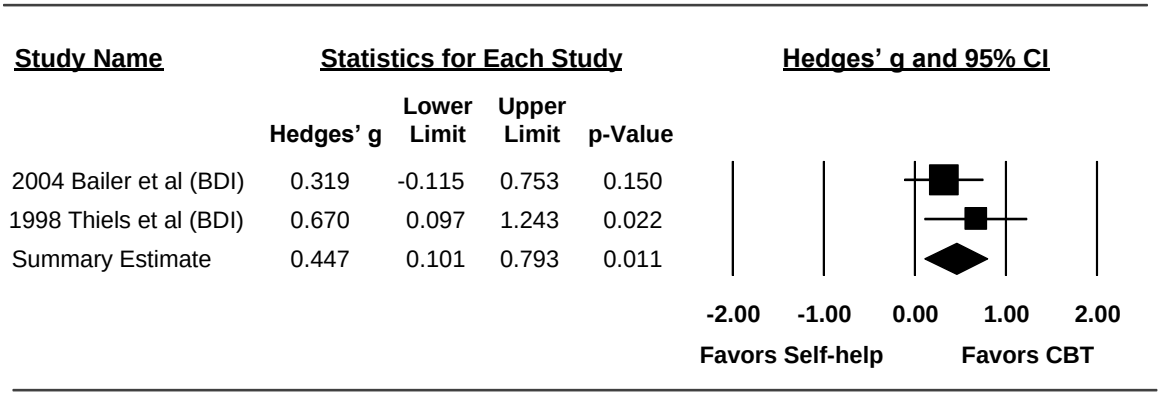
Results of Meta-analyses

We combined individual study results from the Bailer and Thiels study in three separate meta-analyses to assess the efficacy of guided self-help and therapist-led CBT for the following outcomes: depression as measured by the Beck Depression Inventory (post-treatment and follow-up) and dropout rate. Data from other outcomes reported in the studies were not used in any analyses because only one study reported on the outcome (e.g., frequency of binge eating and vomiting, self-esteem), the outcomes were measured using different subscales of eating disorder pathology instruments (e.g., Eating Disorder Evaluation versus Eating Disorder Inventory), or they were defined differently (e.g., remission within the past week versus remission in the past month). Further, we did not combine data from the Durand and King study with the other two studies because the CBT condition in this study differed substantially. Patients in the CBT condition received a combination of CBT plus interpersonal psychotherapy with access to other professional staff and care services offered in the center where the treatment took place. Finally, none of

the studies reported on the following outcomes: quality of life, recovery (defined as completely free of bulimic episodes within the past 12 months), mortality, and adverse events.

The results of our analyses indicated that therapist-led CBT is more effective than self-help CBT in reducing sypmtoms of depression at six months' follow-up. The estimated effect size is Hedges' g of 0.477 (95% CI: 0.101 to 0.793), p = 0.011 (See Figure 8). This translates to a difference of about five points in favor of patients in the therapist-led CBT group. The estimate was quantitatively consistent (I^2 = 0.00 and T^2 = 0.00). However, because the 95% CI was not narrow, we rated the stability or precision of the estimate as unstable. Further, removal of one study resulted in the summary estimate no longer being statistically significant. Thus, the finding was not robust, and we rated the strength of the evidence as low. At 12 months' follow-up, no statistically significant between group difference was observed on symptoms of depression (Hedges' g of 0.121 [95% CI:-0.220 to 0.463]). Finally, the evidence is of insufficient precision to determine whether patients randomly assigned to therapist-led CBT are more or less likely to drop out than those randomly assigned to self-help CBT (odds ratio of 0.51 [0.238 to 1.097]).

Figure 8. Meta-analysis Results of Depression Scores at Six Months' Follow-up



Conclusions

Overall, we performed three separate meta-analyses to assess the efficacy of guided self-help and therapist-led CBT for the following outcomes: depression (post-treatment and follow-up) and dropout rate. The results of our analyses indicated that therapist-led CBT is more effective than self-help CBT in reducing symptoms of depression in the short-term. However, at further follow-up times, no statistically significant between group differences were observed for symptoms of depression. The evidence was of insufficient precision to determine whether patients participating in therapist-led CBT are more or less likely to drop out of treatment than patients in self-help CBT. Further, the evidence was insufficient for other outcomes, such as frequency of binge/purge, remission, eating disorder pathology, and psychological functioning because only one study reported on the outcome or the data were reported in a manner that did not allow us to perform a meta-analysis. None of the studies reported on the following outcomes: quality of life, recovery (defined as completely free of bulimic episodes within the past 12 months), mortality, and adverse events.

Key Question 3: What is the relative efficacy of any psychotherapy (other than CBT) for treating individuals with BN compared to other forms psychotherapy?

Overall Conclusions

Due to clinical heterogeneity, the evidence was insufficient to draw evidence-based conclusions about the relative efficacy of family-based therapy compared to other forms of psychotherapy for patients with BN.

Overview of the Evidence Base

Our searches identified 2 studies enrolling a total of 165 patients that compared the efficacy of family-based therapy to individually based psychotherapy. In the Le Grange et al. study,[92] patients were randomly assigned to family-based therapy (n = 41) or individual supportive psychotherapy (n = 39). In the other study by Schmidt et al.,[93] patients were randomly assigned to receive family-based therapy (n = 41) or guided self-help (n = 44). The patients in these studies were adolescents between the ages of 12 and 20 years who met the DSM-IV criteria for BN or EDNOS. The majority of the patients were female, and all were living with their parents or caregivers at the time of the study. Patients in each of the studies were similar in terms of age, duration of eating disorder, and severity of eating disorder. See Table 40 for further information about the characteristics of the patients enrolled in these studies.

The median internal validity rating of the studies was moderate. Table 42 presents the internal validity ratings of each study. The primary reasons for the moderate rating were lack of blinding of the therapists and patients and the subjective nature of most of the outcomes.

In both studies, family-based therapy was based on the Maudsley model of family therapy for anorexia nervosa.[11] Briefly, the Maudsley model of family therapy views the family as being in the best position to help the patient. Caregivers are provided with education about eating disorders, encouraged to promote and restore normal eating habits, and empowered to find ways to disrupt bulimic behaviors. Patients in the Le Grange study received 20 sessions of family-based therapy with their caregiver over the course of 24 weeks, and in the Schmidt study, patients received 13 sessions with their caregiver and 2 individual sessions over the course of 24 weeks. In the Le Grange study, patients in the comparison group received short-term focal psychotherapy for the same amount of time as the family-based therapy group (20 sessions for 24 weeks). Treatment in the short-term focal psychotherapy group was based on the manual developed by Walsh et al., which was derived from earlier work by Fairburn et al.[83] In the Schmidt study, patients in the comparison group received guided self-help over the course of 24 weeks. Patients followed a version of the Schmidt and Treasure manual, *Getting Better Bit(e) by Bit(e)*, which was modified for use with adolescents.[104] The guided self-help condition included 15 brief weekly sessions with a therapist who guided patients through the workbook. See Table 41 for more details about the treatment conditions in each study.

In both studies, full remission was defined as the number of patients who reported being abstinent from binge eating and/or vomiting for 28 days before assessment. Both studies also reported on the frequency of binge eating and purging. LeGrange measured eating disorder pathology using the Eating Disorder Examination,[105,106] depression using the Beck Depression Inventory,[107] and self-esteem using the Rosenberg Self-esteem Scale.[108] Finally, Schmidt measured eating disorder pathology using the Short Evaluation of Eating Disorders instrument.[109]

Analysis and Results

Because the two studies that assessed family-based therapy employed different comparator conditions (one individual supportive therapy and the other guided self-help), we did not attempt to combine the studies in a meta-analysis to draw overall conclusions about the efficacy of family-based therapy. Table 43 through Table 45 present the individual results for both studies. Results of the Le Grange study indicated that significantly more patients in the family-based therapy group reported full or partial

remission from binge eating and purging at post-treatment than patients in the short-term focal psychotherapy group (39% versus 18% and 41% versus 21%, respectively). These differences remained significant at six-months' follow-up only for patients in the family-based therapy group who reported full abstinence (29% versus 10%). Patients who received family-based therapy in the Le Grange study also demonstrated significantly better outcomes on the following scales of the Eating Disorder Examination: episodes of vomiting, dietary restraint, and weight and shape concerns. No significant differences were observed in the number of dropouts in each of the study groups. The primary reason for dropping out in each group was dissatisfaction with treatment and irregular attendance.

Our analysis of the results of the Schmidt study did not reveal any differences between patients who received family-based therapy and those who received guided self-help on remission of eating disorder behaviors or other eating disorder pathologies. Further, there was no difference in the number of patients who dropped out of the treatment groups. The authors conducted a cost assessment and found that direct costs of treatment were lower for guided self-help than for short-term focal psychotherapy between baseline and six-months' follow-up.

Conclusions

Due to clinical heterogeneity, the evidence was insufficient to draw evidence-based conclusions about the efficacy of family-based therapy compared to other forms of psychotherapy for patients with BN.

Key Question 4: Are combination therapies (e.g., pharmacotherapy plus CBT) more effective than single therapies (e.g., CBT alone) for treating individuals with BN?

Overall Conclusions

The evidence was of insufficient precision to determine whether CBT plus ERP is better than CBT alone for the outcomes of remission, depression, and frequency purging. The evidence was also of insufficient precision to determine whether CBT plus an antidepressant is better than CBT or an antidepressant alone for frequency of binge eating or purging. Finally, the evidence was of insufficient quantity (fewer than two studies) to determine whether the following combination therapies are better than either component alone: CBT plus feedback, cognitive therapy plus nutritional therapy, self-help plus antidepressant medication, supportive therapy plus medication, or group therapy plus medication.

Overview of the Evidence Base

Overall, our searches identified 9 studies enrolling a total of 814 patients that assessed combination therapies for the treatment of BN and met our inclusion criteria for this report. The combination therapies assessed in each of the studies are presented below in Table 7. The majority of the patients enrolled in the studies were female, with the average age ranging between 22 and 29 years. The average duration of BN for the studies that reported this information ranged from 4 to 10 years. Further information about the characteristics of the patients enrolled in the studies is presented in Table 46 and Table 47 in Appendix H.

Table 7. Combination Therapies Assessed in Studies

Study	Number of Patients Randomly Assigned	Combination Therapy
Schmidt et al. 2006[94]	61	CBT + GSH with feedback vs. CBT + GSH alone
Hsu et al. 2001[95]	100	CT + NT vs. CT alone or NT alone
Mitchell et al. 2001[73]	91	Fluoxetine + self-help manual vs. medication alone or medication alone
Goldbloom et al. 1997[74]	71	Fluoxetine + CBT vs. CBT alone or medication alone
Walsh et al. 1997[75]	120	Desipramine + CBT or Desipramine + SPT vs. CBT alone or SPT alone or medication alone
Agras et al. 1992[76]	76	Desipramine (16 weeks or 24 weeks) + CBT vs. CBT alone or medication alone
Mitchell et al. 1990[77]	171	Imipramine + group therapy vs. group therapy alone or medication alone
Agras et al. 1989[98]	77	CBT + ERP vs. CBT alone or self-monitoring alone
Leitenberg et al. 1988[97]	47	CBT + ERP (multiple setting) or CBT-ERP (single setting) vs. CBT alone
Total	814	

Note: Table arranged by like combinations across studies.

CBT: Cognitive behavioral therapy
CT: Cognitive therapy
ERP: Exposure response prevention
GSH: Guided self-help
NT: Nutritional therapy
SPT: Supportive psychotherapy

Overall, the internal validity rating of the studies was moderate to low. Table 49 presents the internal validity ratings of each of the studies. The primary reasons for these ratings were lack of blinding of the therapists and patients, the subjective nature of most of the outcomes, and attrition.

The treatment conditions varied across the studies. Details about the treatment conditions in each of the studies are presented in Table 48. Briefly, in four of the nine studies, CBT or a variation of CBT was combined with a nonmedication therapy. In the most recent of these studies, Schmidt et al. (2006) compared CBT plus guided self-help and feedback (n = 32) to CBT plus guided self-help without feedback (n = 29).[94] Patients in the feedback condition received personalized "feedback on their current physical and psychological status, risks and problems likely to arise as a result of their condition, and variables facilitating or hindering change." Feedback was delivered using personalized letters, midtreatment assessment, and a computer. The study by Hsu et al. (2001) may be more appropriately classified as a dismantling study of CBT.[95] Patients in this study were randomly assigned to receive cognitive therapy plus nutritional counseling (n = 27), cognitive therapy alone (n = 26), or nutritional counseling alone (n = 23) or were assigned to a support group (n = 24). In the cognitive therapy plus nutritional therapy condition, patients received cognitive therapy that focused on helping them understand and identify the antecedents of a bulimic episode and nutritional counseling that aimed at teaching them about the principles of good nutrition and helping them establish normal eating patterns.

The other two studies that combined CBT with a nondrug therapy assessed CBT plus ERP. In the Leitenberg et al. (1988) study, patients were randomly assigned to receive CBT plus ERP in a single setting (n = 11), CBT plus ERP in a multiple setting (n = 12), or CBT alone (n = 11).[97] In the multiple setting condition, therapy was delivered in the patient's home, the clinic, or a restaurant. In the second study by Agras et al. (1989), patients received CBT plus ERP (n = 17), CBT alone (n = 22), or self-monitoring (n = 19) alone in the clinic.[98]

The remaining five studies assessed psychotherapy plus medication to psychotherapy alone or medication alone. Two of the studies compared fluoxetine combined with psychotherapy to medication or therapy alone. In the first study, Mitchell et al. (2001) compared 60 mg of fluoxetine plus a self-help manual (n = 21) to medication alone (n = 26) or self-help alone (n = 22).[73] Goldbloom et al. (1997) compared 60 mg of fluoxetine plus CBT (n = 29) to CBT alone (n = 24) or medication alone (n = 23).[74] The other three studies assessed the efficacy of combining a tricyclic antidepressant with psychotherapy. Walsh et al. (1997) compared 200 to 300 mg of desipramine plus CBT (n = 23) or supportive therapy (n = 22) to CBT alone (n = 25), supportive therapy alone (n = 22), or medication alone (n = 28). Agras et al. (1992) compared 200 to 300 mg of desipramine plus CBT at 16 weeks (n = 12) or 24 weeks (n = 12) to CBT alone (n = 23) or medication alone for 16 weeks (n = 12) or 24 weeks (n = 12). Finally, Mitchell et al. (1990) compared 200 mg of imipramine plus intensive group psychotherapy (n = 52) to group therapy alone (n = 34) or medication alone (n = 54).

Individual Study Results

Table 50, Table 51, and Table 52 present the individual study results of the studies that made up the evidence base for this key question. For most of the reported outcomes, we calculated the individual effect-size estimate. In some situations, however, the data were not reported in a manner that permitted us to calculate an effect size. For these outcomes, we present the authors' results in the evidence tables.

CBT Combined with Nondrug Therapy

According to Schmidt et al., CBT-guided self-care with feedback had no effect on participation or dropout from treatment.[94] Attrition was high in the CBT plus feedback group and the CBT without feedback group. A total of 15 (47%) patients in the CBT plus feedback did not respond to post-treatment assessments, and 12 (41%) did not respond in the CBT alone group. At 6-months' follow-up, 10 (31%) patients from each group failed to respond. While patients in both study groups improved on eating

disorder outcomes from baseline to post-treatment, patients who received feedback demonstrated more improvement than patients who did not receive feedback on reducing self-induced vomiting and dietary restrictions.

In the study by Hsu et al., the authors report that all active treatments (cognitive therapy plus nutritional therapy, cognitive therapy alone, nutritional therapy alone, and support group) produced significant decreases in binge/vomit episodes. According to the authors, intent-to-treat analysis found cognitive therapy with or without nutritional therapy to be more effective than support group therapy in improving dysfunctional attitudes, self-control, and abstinence from bulimic behavior. Further, nutritional therapy alone was better than support group therapy in improving self-control. The overall dropout rate in this study was 27% (number per group not reported).

The results of the two studies that assessed CBT plus ERP compared with CBT alone or self-monitoring alone indicated the following: treatment groups showed a significant improvement on the frequency of purging and the percentage abstaining from purging (Agras et al. 1989[98]) and CBT plus ERP groups receiving treatment in multiple or single settings exhibited a significant difference on vomiting frequency from pretreatment to follow-up (Leitenberg et al. 1988[97]).

In the Agras et al. study, the authors report that CBT alone was superior to CBT plus ERP and self-monitoring alone groups in producing psychological benefits, with the exception of the dieting variable.[98] At follow-up, the assessment of maintenance of the three treatment groups on the measures of vomiting frequency, percentage of patients abstaining from vomiting, and depression was reported to be satisfactory. The percentage of dropouts for the CBT plus ERP group was 6% (n = 1) and 23% (n = 5) in the CBT group. According to Leitenberg et al., on evaluation of the pasta, candy, and dinner test meals, CBT plus ERP groups showed a significant improvement compared to CBT alone in eating pasta and dinner. All groups are reported to have improved in the amount of candy eaten without subsequent vomiting episodes. Lastly, improvements were seen for this study on eating pathology and psychosocial functioning measures, with small differences reported between the treatment groups. This study reported zero dropouts for the CBT plus ERP group and the CBT alone group.

CBT Combined with Drug Therapy

Two studies (Walsh et al. 1997[75] and Agras et al. 1992[76]) assessed combinations of desipramine plus CBT and/or desipramine plus supportive psychotherapy. In the Walsh et al. study, the reduction of vomiting frequency was found to be superior in the CBT plus desipramine group compared to desipramine alone. Unexpectedly, the authors found that supportive psychotherapy plus desipramine was inferior to desipramine alone in the reduction of binge frequency. However, it is reported that supportive psychotherapy significantly added to desipramine in reducing the importance of shape and weight as assessed by the Eating Disorder Examination.[75] The authors report that, in general, patients receiving medication in combination with psychological treatment experience greater improvement in binge eating and depression than patients receiving psychological treatment alone.[75] Walsh et al. report a 35% (n = 8), 36% (n = 9), and 43% (n = 12) dropout rate for CBT plus desipramine, CBT alone, and desipramine alone, respectively. According to Agras et al. (1992), at the 16-week assessment, the CBT plus desipramine group had a lower reduction of purging percentage than the CBT alone and desipramine alone groups. Yet, the CBT plus desipramine group had a higher percentage than the other two treatment groups in the reduction of binge eating. The authors report that 24 weeks of CBT plus desipramine treatment was superior to 16 and 24 weeks of desipramine alone, and the combined group appeared to reduce associated psychopathology.[76] The overall dropout percentage for the Agras et al. study was 18% (n = 13). (Agras et al. did not report dropouts separately for each group.)

The means for outcome measures of patients receiving imipramine plus group therapy in the Mitchell et al. (1990) study are reported to have approached zero upon the last visit. The outcome measures include self-ratings of eating behaviors, Hamilton Rating Scale for Depression, and Hamilton Rating Scale for

Anxiety. The authors found that group therapy plus drug therapy was superior to group therapy alone, except on perfectionism, interpersonal distrust, and maturity fears scales of the Eating Disorder Inventory. The overall dropout percentages for each treatment group were 25% (n = 13), 43% (n = 23), and 15% (n = 5) for imipramine plus group therapy, imipramine alone, and group therapy alone, respectively.

In the Goldbloom et al. study (1997), 45% (n = 13) of the fluoxetine plus CBT group, 67% (n = 16) of the CBT alone group, and 61% (n = 14) of the fluoxetine alone group dropped out. The reported reasons for dropout include medication side effects, early termination of the treatment course, and noncompliance with attendance requirements of the fluoxetine plus CBT protocol. The fluoxetine plus CBT group showed the highest mean percentage reduction in vomiting episodes and binge frequency, followed by the CBT alone and fluoxetine alone groups. The authors performed an intent-to-treat analysis and reported no significant outcome differences between treatment groups on measures of psychological distress and baseline and last-visit levels of symptoms.[74]

The combination group of fluoxetine and a self-help manual in the Mitchell et al. (2001) study showed the greatest improvement in vomiting and binge eating episodes at assessment periods.[73] The authors performed an analysis of variance and reported no treatment effects, manual effects, or interaction on eating disorder pathology and comorbid psychological symptom changes from baseline to endpoint assessments. However, when comparing baseline measurements of psychosocial functioning to endpoint measurements, statistically significant improvements were shown as a result of fluoxetine with no evidence of manual effect.[73] Dropouts were reported as a whole versus individually for each treatment group. Overall, 8.8% (n = 8) of the randomly assigned patients dropped out of the study.

Results of Meta-analyses

We combined individual study results in seven separate meta-analyses to assess the efficacy of combination versus single therapies for the treatments and outcomes listed in Table 8. For all other combination therapies considered in the studies that made up the evidence base for this key question, the treatment conditions were clinically heterogeneous, and we did not attempt any pulled analyses. Further, data from other outcomes reported in the studies listed in the table below were not used in any analyses because the outcomes were not reported in a manner that allowed us to perform a meta-analysis (remission, dropout) or the outcomes studies (eating disorder pathology, psychosocial functioning, comorbid psychological symptoms) were reported in only one of the studies. Agras et al. and Leitenburg both assessed the number of patients who reported remission of bulimic symptoms. However, these authors defined remission as complete abstinence for only seven days before assessment. In this report, we considered data from this outcome only if the authors defined remission as complete abstinence for at least four weeks before assessment.

Table 8. Evidence Base for Meta-analyses

Studies Combined	Therapies	Outcomes Analyzed
Agras et al. 1989[98] Leitenburg et al. 1988[97]	CBT plus ERP versus CBT alone	Frequency of purging, depression (using scores from the Beck Depression Inventory)
Walsh et al. 1997[75] Agras et al. 1992[76] Goldbloom et al. 1997[74]	CBT plus desipramine or fluoxetine versus CBT or desipramine, or fluoxetine alone	Frequency of binge eating and purging

CBT: Cognitive behavioral therapy
ERP: Exposure response plus prevention

Overall, the results of our analyses were inconclusive. The CIs were too wide to determine whether the combination therapies assessed were better than single therapies. See Table 53 for the results of our analyses. However, for one analysis—the frequency of binge eating of patients who received combination

CBT and an antidepressant compared to patients who received CBT alone—sensitivity analysis yielded results that differed from the primary meta-analysis. Our sensitivity test for this analysis involved removal of the study that included fluoxetine, the results of which indicated that the combination of desipramine and CBT is more effective than CBT alone. These findings suggest that further studies may be helpful to determine whether differential effects exist between different drug combinations. See Figure 9 and Figure 10 for the results of these analyses.

Figure 9. Results of Meta-analysis of Binge Eating with Three Studies

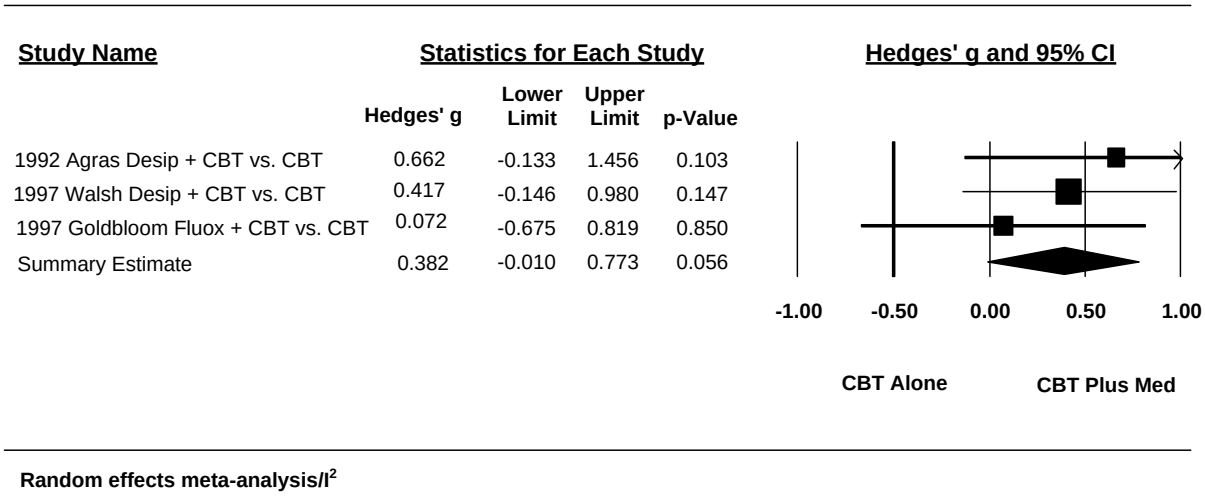
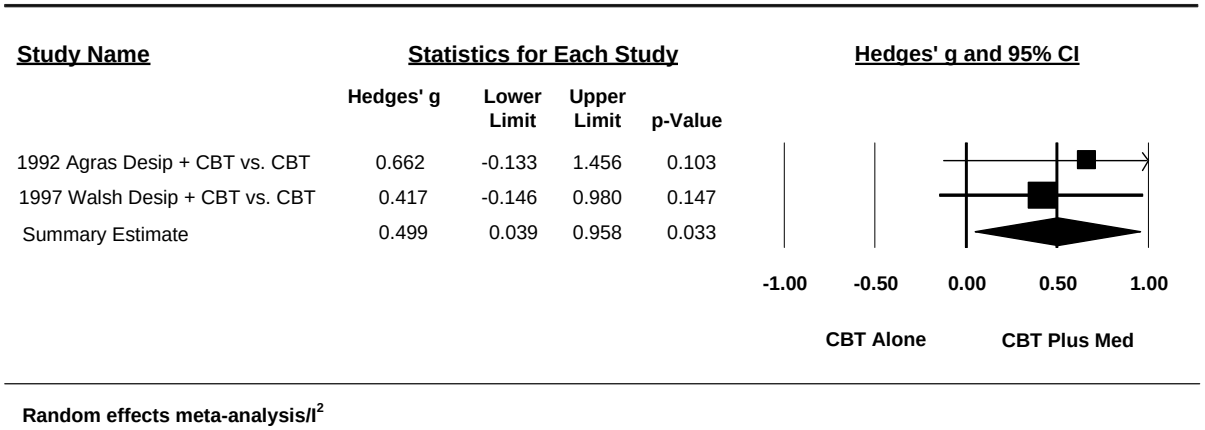


Figure 10. Results of Meta-analysis of Binge Eating with Two Studies



Conclusions

Currently, no evidence-based conclusions can be drawn about the relative efficacy of CBT plus ERP versus CBT alone for the outcomes of remission, depression, and frequency of vomiting or purging. Similarly, no clear evidence-based conclusions can be drawn about the relative efficacy of CBT plus an antidepressant to CBT or an antidepressant alone for frequency of binge eating or purging. For the most part, the evidence was considered insufficient for these comparisons and outcomes because the CIs were too wide to clearly determine whether combination therapy is more effective than single therapies. The findings of our analysis of combination drug therapy plus CBT are likely to be altered by additional studies as sensitivity analysis suggests there might be a differential effect of the type of antidepressant used in combination with CBT. Finally, the evidence was of insufficient quantity to determine whether the following combination therapies are better than either component alone: CBT plus feedback, cognitive therapy plus nutritional therapy, self-help plus antidepressant medication, supportive therapy plus medication, or group therapy plus medication.

Key Question 5: Is inpatient treatment more effective than outpatient treatment for treating individuals with BN?

Overall Conclusions

The evidence was of insufficient quantity (fewer than two studies) to draw any conclusion about the relative efficacy of inpatient treatment and outpatient treatment for BN.

Overview of the Evidence Base

Overall, our searches identified 1 study enrolling a total of 55 patients that assessed inpatient treatment versus outpatient treatment and met our inclusion criteria for this report.[99] Patients in this study were 18 years of age or older, diagnosed as having BN according to the DSM-IV or International Classification of Diseases, and lived within a 1-hour commute of the treatment facility. They also fulfilled 1 or more of the following criteria: failed to improve in outpatient psychotherapy with a minimum of 25 sessions within the last 2 years; demonstrated severe bulimic symptoms that did not allow outpatient treatment as measured by the Structured Inventory of Anorexic and Bulimic Syndromes (scores range from 0 or no bulimic episodes to 3 or 1 or more episodes a day); had a chronic course of illness with a minimum of 5 years; and/or evidenced severe comorbidity that precluded outpatient treatment. Patients who were psychotic, substance dependent, or had unstable serious medical conditions were not enrolled in this trial. The internal validity of this study was moderate. Table 57 presents the quality ratings for the outcomes reported in this study. The reasons for this rating were lack of blinding of patients and clinicians and the subjective nature of the outcomes.

A total of 43 patients actually started treatment. Reasons for not starting treatment included family and/or job responsibilities, lack of motivation, and preference for one type of treatment (e.g., outpatient, inpatient). At the time of enrollment, this predominantly female sample was in its mid-20s, and over one-third had a history of anorexia. According to the Structured Inventory of Anorexic and Bulimic Syndromes, severity of binge eating and vomiting at the time of enrollment for the inpatient group was 2.7 and 2.4, respectively, and 2.5 and 2.9, respectively, for the day clinic group.

Inpatient treatment consisted of individual and group sessions, use of a food diary, access to a social worker and family counseling as needed, and a variety of complementary therapies, including art and relaxation therapy. The day clinic treatment was identical to inpatient care except that patients attended therapy from 8 a.m. to 4 p.m. Monday through Friday rather than receiving around-the-clock care. Both treatments lasted a total of 12 weeks. Table 55 and Table 56 provide more information about the enrolled patients and treatment conditions assessed in this study.

Analysis and Results

The individual results of the outcomes assessed by Zeeck et al. are presented in Table 58 through Table 60 in Appendix I. The authors reported results for the BN scale of the Eating Disorder Index, Structured Inventory of Anorexic and Bulimic Syndromes severity of binge eating and vomiting, the Symptom Check List-Global Severity Index, remission, and dropout. Remission in this study was defined as no binge eating or purging and a rating of two of less (rarely present or less) on the preoccupation with body slimness, shape, and weight item of the Structured Inventory of Anorexic and Bulimic Syndromes scale. Remission rates reported are for the last four weeks before discharge from study treatment and for the last three months. Patients in both settings improved significantly from baseline to post-treatment and follow-up on all outcomes. No significant between-group differences were observed for any outcome at post-treatment or follow-up.

Conclusion

Because only one small study addressed this key question, we considered the evidence to be of insufficient quantity to draw any conclusions.

Key Question 6: What adverse events/harms are associated with the various treatments for BN?

Five studies made reference to adverse events in their publications.[70,71,74,76,77] In the single trial that evaluated the comparative effectiveness of two medications, fluoxetine and citalopram, pre- and post-treatment rates of adverse events as measured by the clinical global impression scale were reported.[70] The authors reported that no statistically significant difference was observed between the two medications on this variable. No further information about the types of adverse events patients were experiencing was reported by the study's authors, although they did comment that three people dropped out of the study due to adverse effects of study medication.

Jacobi et al. commented that four subjects in their study discontinued medication because of side effects.[71] No further information was provided. Likewise, Goldbloom et al. reported that four patients receiving fluoxetine dropped out of the trial due to side effects but offered no explanation of what those effects entailed.[74] Similarly, the Agras et al. trial lost seven study subjects to unspecified side effects.[76] Finally, Mitchell et al. reported that one patient in both the medication and group therapy plus placebo group developed a rash during the study period.[77] They also commented that "our clinical experience during the protocol was that many of these young women did not like some of the effects of the antidepressant. In particular, they frequently complained of sedation, constipation, dry mouth, palpitations and dizziness."

Other Published Systematic Reviews

This report adds to a previous report published by ECRI Institute in 2006 titled *Bulimia Nervosa: Efficacy of Available Treatments.*[110] The current report expands on the previous report by including questions about the efficacy of combination therapies to single therapies and inpatient care settings to outpatient settings. The current report also considers variations in CBT delivery. Unlike the previous report, the current report focuses on the comparative effectiveness of available treatments for BN and considers only studies in which one treatment is directly compared to another treatment. The previous ECRI Institute report, along with other previous systematic reviews and controlled trials, have, for the most part, established that the more widely used forms of treatment (e.g., CBT, interpersonal psychotherapy, antidepressants) are better than a nonactive treatment control (waitlist control) or placebo in the treatment of individuals with BN. What remains unclear, however, is the relative efficacy of one treatment to another.

In the section below, we briefly describe the findings of ECRI Institute's previous review and those of more recently published reviews. ECRI Institute's previous review is available in full on the Bulimia Nervosa Resource Guide website (www.bulimiaguide.org), and more detailed information about the eight more recent reviews (published from 2006 to present) are presented in Table 64 in Appendix K of this report.

The previous ECRI Institute review considered the following four key questions: (1) Is pharmacotherapy an effective treatment for BN? (2) Is psychotherapy or another nondrug intervention an effective treatment for BN? (3) Is psychotherapy or another nondrug intervention a more effective treatment for BN than pharmacotherapy? and (4) Is CBT a more effective treatment option than other forms of psychotherapy for individuals with BN? The previous report focused on the same outcomes as this report. The evidence base consisted of 48 unique randomized controlled trials: 26 addressed Key Question 1, 15 addressed Key Question 2, 6 addressed Key Question 3, and 13 addressed Key Question 4.

The overall conclusions for key questions were as follows:

> **Key Question 1**: Pharmacotherapy reduced anxiety and depression, eating-disorder psychopathology, and binge eating and purging frequency compared to placebo in some individuals with BN.
>
> **Key Question 2**: CBT reduced purging behavior compared to no treatment in some individuals with BN. A lack of available evidence precluded us from determining the effectiveness of other currently available forms of psychotherapy or nondrug interventions.
>
> **Key Question 3**: CBT was more effective than pharmacotherapy in reducing purging behavior in individuals with BN. It remains unclear whether other forms of psychological or nondrug interventions are as effective as or more effective than pharmacotherapy.
>
> **Key Question 4**: The evidence was insufficient to allow us to determine whether CBT is more effective than other forms of psychotherapy or nondrug interventions.

Similar to the present review, the findings of the previous report were limited in terms of generalizability and the internal validity of the studies that made up the evidence base. Up to 70% of patients in the studies that made up the evidence base for the previous review did not meet the inclusion criteria for the trials or, when recruited to participate, refused. Further, as is the case for this review, the internal validity of the studies was limited due to lack of blinding, attrition, subjectivity of outcomes, and lack of reporting methods of randomization.

Some of the previous report's findings differ from those in the current report, particularly the finding that the evidence was insufficient to determine whether CBT is more effective than other forms of psychotherapy. The analytic findings of this report indicate that CBT is more effective than supportive

therapies and behavioral therapy for some outcomes. Differences in this report's findings to those of the previous report are due primarily to differences in methodology. ECRI Institute's methods of analyses and system of evaluating the stability and strength of the evidence have evolved. As with any science, methods change over time, and our current methodology reflects that which is currently being used in the field. Further, our knowledge of treatments for BN has grown as a result of our experience conducting the previous review. This knowledge is reflected in the key questions, study inclusion criteria, and other aspects of the present report.

Our searches of the literature for other more recent systematic reviews assessing treatments for BN identified eight reviews published from 2006 to present (see Table 64 in Appendix K). In general, ECRI Institute's review differed from these reviews in terms of scope, study inclusion/exclusion criteria, assessment of internal validity and strength of evidence, and analytic methods employed. Below, we describe the findings of selected published reviews.

The Cochrane Collaboration published a recent update of a previous report on psychological treatments for BN and binge eating disorder.[15] The objective of the update, published in 2009, was to evaluate the efficacy of CBT and other psychotherapies in the treatment of adults with BN or related syndromes of recurrent binge eating. The evidence base for the review included 48 randomized controlled trials enrolling a total of 3,054 patients. The overall findings of the review indicated that CBT, particularly CBT that has been modified specifically for BN, is effective in treating people with BN and to a lesser extent treating people with related eating syndromes. The findings also indicated that self-help approaches using highly structured CBT treatment manuals show promise and that exposure response prevention did not enhance the efficacy of CBT. The review authors concluded that "there is a small body of evidence for the efficacy of CBT in bulimia and similar syndromes, but the quality of trials is very variable and sample sizes are often small. More and larger studies are needed, particularly for binge eating disorder and other [eating disorder not otherwise specified] syndromes."

Another review by the Cochrane Collaboration published in 2006 evaluated the efficacy of pure and guided self-help for individuals with eating disorders.[111] The review's main objective was to compare the efficacy of self-help to waitlist or placebo/attention control, other psychological or pharmacological treatments, or combinations or augmentations of treatment. The evidence base for this review consisted of 15 controlled trials all focusing on BN, binge eating disorder, EDNOS, or a combination of these in adults. The studies assessed manual-based self-help across various settings. The overall findings indicated that self-help did not differ significantly from a waitlist control or other forms of psychological therapies in improving eating disorder symptoms. The findings suggested a trend in favor of self-help compared to no treatment in improving eating disorder pathology, other psychiatric symptoms, and interpersonal functioning. The authors concluded that manual-based self-help "may have some utility as a first step in treatment and may have potential as an alternative to formal therapist-delivered psychological therapy."

Finally, the Agency for Healthcare Research and Quality published a large-scale narrative review in 2006 on the management of eating disorders.[112] The review focused on the efficacy and harms of treatment as well as factors associated with efficacy. The evidence base for BN consisted of 47 studies of medication only, behavioral intervention only, and medication plus behavioral interventions for adults or adolescents. The overall findings of the report suggest that "fluoxetine (60 mg/day) decreases the core symptoms of binge eating and purging and associated psychological features in the short-term. Cognitive behavioral therapy reduces core behavioral and psychological features in the short and long-term." The report authors concluded that the evidence was strong for medication and CBT but weak for self-help and either weak or nonexistent for other interventions. Further, the authors indicate that "attention to sample size, standardization of outcome measures, attrition, and reporting of abstinence from target behaviors are required" in future studies.

Ongoing Clinical Trials

Searches of ClinicalTrials.gov identified 25 ongoing trials. These trials are summarized in Table 63 of Appendix K.

Clinical Perspectives

Recent studies suggest that the majority of individuals with BN do not receive treatment for their eating problems. In a community-based study of outcomes for patients with BN, researchers found that "only 26% of young adult women diagnosed with bulimia nervosa ever received treatment for an eating problem."[113] More often, when treatment is received, it is for a comorbid mental health problem (e.g., depression), for a problem or perceived problem with weight, or for physical health complications associated with disordered eating (e.g., gastrointestinal complaints)—the patient's entire disorder is not addressed as a whole. According to Mond et al. (2009), nonspecific treatments are unlikely to be of sustained benefit in reducing eating disorder pathology, and their use can "place considerable burden on health services, particularly in the primary care sector."[113]

A number of factors may affect whether a patient receives treatment for BN or eating disorders in general, such as the "ability to recognize symptoms of the disorder, beliefs concerning the effectiveness of treatment, and perceived stigma associated with disclosure of symptoms."[113] For instance, Hay et al. (2007) found that misconceptions about treatment contributed to low or inappropriate treatment-seeking among individuals with BN.[114] Specifically, the majority of respondents with eating disorder symptoms surveyed in the Hay et al. study indicated that they thought of antidepressants as harmful. Other individual factors such as chronicity and severity of the disorder, age and gender, and access to and affordability of treatment also influence treatment-seeking behavior.

Individual attitudes and beliefs, however, are not the only factors that affect the ability of individuals with BN to receive effective, evidence-based treatments. According to the literature, "attitudes toward innovation can be a facilitating or limiting factor in the dissemination and implementation of new technologies."[115] Within the mental health field, knowledge and attitudes of providers can be a precursor to adopting evidence-based practices for treating individuals with BN. Previous research that measured mental health providers' attitudes toward evidence-based practices in general found that providers support the science behind the treatments but reported concern about how implementing such treatments would affect their ability to exercise clinical judgment and their relationship with their clients.[116]

According to Aarons (2005), provider characteristics such as level of education, training, primary discipline, and amount of professional experience may also affect the likelihood of adopting evidence-based practices.[115] For instance, previous research has demonstrated that higher educational attainment and intern status are associated with higher scores on the Evidence-Based Practice Attitude Survey Appeal dimension. According to Aarons:

> level of education and intern status overlap and are clearly related, but [they] represent qualitatively different aspects of a mental health provider's professional developmental trajectory. This relationship suggests that while more professional education is associated with openness to EBPs, professional internships may be an especially opportune stage of a service provider's professional development in which to introduce and reinforce the value of the use of EBPs.

In addition, organizational factors such as leadership, support and training for evidence-based practices, social influences, and climate and culture can increase or decrease the likelihood that new practices or services will be adopted. For instance, providers working in mental health programs with low levels of bureaucracy endorsed more positive attitudes to adoption of evidence-based practices. Further, whether an organization supports creativity and innovation can also influence adoption of evidence-based practices.

Clinical Practice Guidelines

ECRI Institute's searches of the National Guideline Clearinghouse™ identified four treatment guidelines published between 2006 and 2009 that provide recommendations for treatments of BN. The following organizations published these guidelines:

- University of Arkansas for Medical Sciences, 2009[117]
- Finnish Medical Society Duodecim, 2007[118]
- American Academy of Pediatrics Committee on Sports Medicine and Fitness, 2006[119]
- American Psychiatric Association, 2006[120]

Our literature searches also identified position statements from two organizations:

- Academy for Eating Disorders, 2010[121]
- American Dietetic Association, 2006[122]

In general, the guidelines and position statements published by the organizations listed above are in agreement when recommending treatments for BN.[3] The American Psychiatric Association's *Practice Guideline for the Treatment of Eating Disorders* reviews psychosocial treatments, medications, and the combination of psychosocial therapy and medication when treating BN and based the recommendations on the available evidence and clinical consensus. Nutritional counseling, CBT, family therapy, antidepressants (specifically fluoxetine), and the combination of CBT and fluoxetine are treatments recommended for patients diagnosed as having BN. The Finnish Medical Society Duodecim guideline *Eating Disorders among Children and Adolescents* and the Academy for Eating Disorders position statement *The Role of the Family in Eating Disorders* also recommend family and/or supportive therapy for patients with BN. The American Academy of Pediatrics Committee on Sports Medicine and Fitness guideline *Promotion of Healthy Weight-Control Practices in Young Athletes* and the American Dietetic Association's position statement *Nutrition Intervention in the Treatment of Anorexia Nervosa, Bulimia Nervosa, and Other Eating Disorders* both recommend the importance of a collaborative treatment team when treating BN patients. The treatment team should include medical specialists, psychologists, and nutritionists. Table 9 provides more information about the individual guidelines and position statements.

[3] The University of Arkansas for Medical Sciences 2009[117] guideline addresses *Eating Disorders During Pregnancy and Postpartum* and does not address the key questions or meet the inclusion criteria for patients assessed in the literature search. We have listed this guideline in the text but have not provided further detail in the guideline table.

Table 9. Recently Published (2006 to Present) Guidelines and Position Statements on Treatment of Individuals with Bulimia Nervosa

Reference	Title	Objective	Relevant Conclusions/Recommendations
Guidelines			
Finnish Medical Society Duodecim 2007[118]	*Eating Disorders Among Children and Adolescents*	Collect, summarize, and update the core clinical knowledge essential in general practice, and describe the scientific evidence underlying the given recommendations.	• Treatment is divided into restoring the state of nutrition and psychotherapeutic treatment. • Forms of psychotherapy such as individual and family therapy have brought results in cases of BN cognitive therapy and medication. • In adolescents (age 14-16 years), positive results have been obtained by treating the entire family. • In older patients, individual, supportive, and long-lasting treatment has been the best way to promote recovery. • Fluoxetine has been found to decrease binge eating and vomiting for about two-thirds of bulimic patients.
American Academy of Pediatrics Committee on Sports Medicine and Fitness 2006[119]	*Promotion of Healthy Weight-Control Practices in Young Athletes*	Provide resources and recommendations that can be used to counsel athletes, parents, coaches, and school administrators in discouraging inappropriate weight-control behaviors and encouraging healthy methods of weight gain or loss, when needed.	Physicians should obtain appropriate medical, psychological, and nutritional consultation for young athletes with these symptoms and engage the services of a registered dietitian familiar with athletes to help with weight-control issues.
American Psychiatric Association 2006[120]	*Practice Guideline for the Treatment of Patients with Eating Disorders*	Provide guidance to psychiatrist in the assessment and care of patients with eating disorders.	• Nutritional counseling is a useful part of treatment and helps reduce food restriction, increase the variety of foods eaten, and promotes healthy exercise patterns. • Psychosocial interventions should be selected on the basis of a comprehensive evaluation; evidence strongly supports the value of CBT as the most effective single intervention for acute episodes in BN in adults. • Family therapy should be considered whenever possible, especially for adolescent patients living with parents, older patients with ongoing conflicted interactions with parents, and patients with marital discord may benefit from couples therapy. • Antidepressants are effective as one component of an initial treatment program for most BN; antidepressant therapy is to continue for a minimum of nine months. • Combine antidepressant therapy and CBT when qualified CBT therapists are available. If CBT alone does not result in substantial symptom reduction after 10 sessions, it is recommended that fluoxetine be added • Bright light therapy may be used as an adjunct when CBT and antidepressant therapy have not been effective in reducing binge eating symptoms.

Reference	Title	Objective	Relevant Conclusions/Recommendations
Position Statements			
Academy for Eating Disorders (AED) 2010[121]	*AED Position Paper: The Role of the Family in Eating Disorders*	Review what is known about family influences in AN and BN.	AED stands firmly against any etiologic model of eating disorders in which family influences are seen as the primary cause of AN or BN and condemns generalizing statements that imply families are to blame for their child's illness. AED recommends that families be included in the treatment of younger patients, unless doing so is clearly ill advised on clinical grounds.
American Dietetic Association (ADA) 2006[122]	*Position of the ADA: Nutrition Intervention in the Treatment of Anorexia Nervosa, Bulimia Nervosa, and Other Eating Disorders*	Discuss the importance of a collaborative approach by an interdisciplinary team (psychologist, nutritional, and medical specialists) when treating AN, BN, and EDNOS.	Nutrition intervention, including nutritional counseling, by a registered dietitian is an essential component of the treatment team of patients with AN, BN, and EDNOS during assessment and treatment across the continuum of care.

AN: Anorexia nervosa
BN: Bulimia nervosa
CBT: Cognitive behavior therapy
EDNOS: Eating disorder not otherwise specified

Conclusions

This report evaluates the comparative efficacy of available treatments for bulimia nervosa (BN). This report's primary treatments of interest are pharmacotherapy, cognitive behavioral therapy (CBT), other psychotherapies, and combinations of these therapies. The comparative efficacy of these treatments is addressed through five separate key questions. The first focuses on medication therapy and includes studies that compared one form of medication to another, medication to CBT, or medication to other forms of psychotherapy. The second focuses on the relative efficacy of CBT to other forms of psychotherapy, and the third considers the relative efficacy of non-CBT psychotherapies. The fourth question considers the efficacy of combination therapies to single therapies, and the fifth compares outpatient treatment to inpatient treatment for BN. A final question considers the adverse events reported to be associated with the various treatments that this report assesses. The primary outcomes of interest are remission and recovery, frequency of binge eating and/or purging, quality of life, eating disorder psychopathology, mortality, dropout, depression and anxiety, and psychosocial and interpersonal functioning.

Overall, our literature searches identified 32 studies that addressed 1 or more of the key questions and met the inclusion criteria for this report. Of the 32 studies included, 8 addressed Key Question 1, 17 addressed Key Question 2, 2 addressed Key Question 3, 9 addressed Key Question 4, 1 addressed Key Question 5, and 5 addressed Key Question 6. Based on our analyses of the evidence, we were able to draw the following conclusions:

- CBT reduces binge eating episodes compared to antidepressant medications.
- Patients who receive CBT are more likely to go into remission from vomiting than patients treated with supportive therapies.
- CBT is more effective than supportive therapies in improving eating disorder pathology.
- CBT is more effective than behavioral therapy in reducing vomiting episodes.
- Therapist-led CBT is more effective than self-help CBT in reducing symptoms of depression.

For all other outcomes and comparisons considered in this report, the evidence was insufficient to draw any evidence-based conclusions. The evidence was insufficient for one of the following reasons: (1) the results of our meta-analyses indicated that 95% confidence interval surrounding the summary estimate was too wide to clearly determine whether one treatment was better than another, (2) data were reported in a manner that did not allow us to perform a meta-analysis, or (3) only one small study assessed a comparison or outcome of interest. Finally, only one of the five studies that made reference to adverse events actually described the type of adverse events experienced by the patients. In this study, the authors indicated that patients who were treated with an antidepressant complained of sedation, constipation, rash, dry mouth, palpitations, and dizziness.

The overall stability and strength of the evidence supporting the conclusions in this report were considered low. The low rating was based on the size of the evidence base, internal validity of the studies, and the lack of precision and robustness of the meta-analytic findings. For the most part, the evidence base for the conclusions consisted of fewer than three small studies. The overall internal validity of the studies that made up the evidence base for this report was moderate. The primary reasons for this rating were lack of blinding of patients and clinicians, not reporting the methods used to randomly assign patients, the subjective nature of most of the outcomes, and attrition. We recognize that in many situations it is not possible to blind the therapist or the patient. However, even though blinding may not be possible, not blinding can introduce potential bias. For that reason, a lack of blinding hinders the interpretability of study results, and we downgrade the internal validity rating accordingly.

In the majority of the studies that made up the evidence base for this report, the dropout rate was high. The overall dropout rate ranged from 0% to 67% (median 27%) across all studies. However, the results of our meta-analyses for dropout were insufficient, and we could not determine whether patients were more likely to drop out of one treatment compared to another. For the most part, the findings of individual studies also found no statistically significant difference between treatments for the number of patients who dropped out. Further, few studies reported any analyses comparing differences on patient or clinical level characteristics of patients who dropped out of treatment and those who completed treatment. Among those studies that did such an analysis, no clear patterns emerged. One study indicated that patients who dropped out tended to be younger and more socially stable.

The small size of the evidence base and internal validity of the studies contributed to the lack of stability and strength of the evidence. In all our analyses, the stability of the overall effect-size estimates was considered unstable due to the width of the 95% confidence interval. The confidence intervals were not narrow enough to rule out the likelihood that the conclusions would easily change with future evidence. Finally, the robustness of the evidence was considered low because the findings of our meta-analyses were overturned in sensitivity analyses (removal of one study).

Discussion

Based on our evaluation of the evidence on the comparative efficacy of available treatments for BN, ECRI Institute identified several limitations in the literature that should be addressed by future research. In general, the studies that made up the evidence base in this report lacked adequate sample sizes; consistent definitions of important outcomes, such as remission and recovery; a standard battery of outcome measures; and longer follow-up times. To address these shortcomings, future research needs to include larger sample sizes that are based on power calculations that take into account the high rate of attrition observed among this treatment population. Future research also needs to follow patients for longer than three to six months to determine whether the effects of treatment are long lasting.

Further, researchers in the field of eating disorders need to develop standard definitions of outcomes such as remission, recovery, and relapse and agree upon a standard battery of measures for these and other outcomes. In the studies included in this report, the definitions of recovery and remission varied in terms of the duration of time patients were required to remain abstinent from core eating disorder symptoms. For instance, some studies defined remission as being abstinent for 12 weeks, while other studies defined it as being abstinent for only 2 weeks. Similarly, the instruments or methods used to measure outcomes varied across studies. The lack of consistency makes it difficult, and in some cases impossible, to compare outcomes across studies.

Overall, more information about the comparative efficacy of available treatments for BN is needed. Such information is crucial for individuals with BN, their family members, and healthcare providers to help them weigh the benefits and harms of the various treatments. Thus, future research needs to focus more on questions that address the relative efficacy of the various treatment options. Future research also needs to consider what treatments are more effective for different patient populations with BN (e.g., adolescents, males, or individuals with co-occuring disorders). Further, given the high dropout rate observed in the studies included in this report and previous research indicating that only a small percent of individuals with BN enter into treatment, future research should also focus on methods of delivering treatment that encourage individuals to seek and continue treatment.

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230. Berkman ND, Bulik CM, Brownley KA, Lohr KN, Sedway JA, Rooks A, Gartlehner G. Management of eating disorders. Evidence report/technology assessment No. 135 (Prepared by the RTI International-University of North Carolina Evidence-Based Practice Center under Contract No. 290-02-0016). Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006 Apr. 1239 p. (AHRQ Publication; no. 06-E010). Also available: http://www.ahrq.gov/downloads/pub/evidence/pdf/eatingdisorders/eatdis.pdf.

231. Espindola CR, Blay SL. Bulimia and binge eating disorder: Systematic review and metasynthesis. [Portuguese, English. Revista de Psiquiatria do Rio Grande do Sul 2006 Sep;28(3):265-75.

232. Stefano SC, Bacaltchuk J, Blay SL, Hay P. Self-help treatments for disorders of recurrent binge eating: a systematic review. Acta Psychiatr Scand 2006 Jun;113(6):452-9. PMID: 16677221

Appendix A. Literature Search Methods

Electronic Database Searches

The following databases have been searched for relevant information:

Name	Date Limits	Platform/Provider
ClinicalTrials.gov	Searched May 11, 2010	www.clinicaltrials.gov
The Cochrane Central Register of Controlled Trials (CENTRAL)	Through 2010, Issue 5	www.thecochranelibrary.com
The Cochrane Database of Methodology Reviews (Methodology Reviews)	Through 2010, Issue 5	www.thecochranelibrary.com
The Cochrane Database of Systematic Reviews (Cochrane Reviews)	Through 2010, Issue 5	www.thecochranelibrary.com
Database of Abstracts of Reviews of Effects (DARE)	Through 2010, Issue 5	www.thecochranelibrary.com
EMBASE (Excerpta Medica)	2005 through July 12, 2010*	OVID
Health Technology Assessment Database (HTA)	Through 2010, Issue 5	www.thecochranelibrary.com
Healthcare Standards	Searched February 17, 2010	www.ecri.org
MEDLINE	2005 through July 12, 2010*	OVID
Pre MEDLINE	Searched July 12, 2010	OVID
PsycINFO	2005 through July 12, 2010*	OVID
U.K. National Health Service Economic Evaluation Database (NHS EED)	Through 2010, Issue 5	www.thecochranelibrary.com
U.S. National Guideline Clearinghouse™ (NGC)	Searched May 24, 2010	www.ngc.gov

*Note: The date range for searches of these resources for RCTs involving drug therapy was 1985–2010.

Journals and supplements maintained in ECRI Institute's collections were routinely reviewed. Nonjournal publications and conference proceedings from professional organizations, private agencies, and government agencies were also screened. Other mechanisms used to retrieve additional relevant information included review of bibliographies/reference lists from peer-reviewed and gray literature. (Gray literature consists of reports, studies, articles, and monographs produced by federal and local government agencies, private organizations, educational facilities, consulting firms, and corporations. These documents do not appear in the peer-reviewed journal literature.)

The following sources have been searched for relevant gray literature:

- Clinica
- Lexis-Nexis
- Wall Street Journal
- Windover.com
- National Center for Health Statistics
- MedlinePlus
- World Health Organization
- Medscape
- New York Times Conferences
- National Library for Health

The search strategies employed combinations of freetext keywords as well as controlled vocabulary terms including (but not limited to) the following concepts. The strategy below is presented in OVID syntax; the search was simultaneously conducted across EMBASE, PsycINFO and MEDLINE. A parallel strategy was used to search the databases comprising the Cochrane Library.

Medical Subject Headings (MeSH), EMTREE and Keywords

Conventions:

OVID

$	=	truncation character (wildcard)
exp	=	"explodes" controlled vocabulary term (e.g., expands search to all more specific related terms in the vocabulary's hierarchy)
/	=	limit to controlled vocabulary heading
.fs.	=	floating subheading
.hw.	=	limit to heading word
.md.	=	type of methodology (PsycINFO)
.mp.	=	combined search fields (default if no fields are specified)
.pt.	=	publication type
.ti.	=	limit to title
.tw.	=	limit to title and abstract fields

Topic-specific Search Terms

Concept	Controlled Vocabulary	Keywords
Bulimia	Bulimia/ Eating disorder/ Eating disorders/ Purging eating disorders/	Bulimi$
Combination therapy	Combined modality therapy/	Combin$ Multidisciplinary Multimodal Multivariate
Drug therapy	dt.fs. (drug therapy) tu.fs. (therapeutic use) antidepressive agents/ antidepressive agents, second generation/ antidepressive agents, trycyclic/ exp antimanic agents/ exp antipsychotic agents/	6-azamianserin AF-1161 Abilify Amezipine Amfebutamone Amineurin Amitrip Amitrol Amitriptyline Anafranil Anapsique Antaxone Anticonvulsant$ Antiemetic$ Aripiprazole Atypical antipsychotic$ Auroix Brofaromine Bupropion Carbamazepine Citalopram Clomipramine Clozapine Clozaril Convulsofin Crisomet Cymbalta Citalopram DU-2300 Damilon Depakene Depakote Desipramine Desmethylimipramine Divalproex Dobupal Domical Duloxetine

Concept	Controlled Vocabulary	Keywords
		Efexor Effexor Elavil Endep Epitol Epitomax Ergenyl Escitalopram Fenelzin Finlepin Fluoxetine Fluoxetine Fluvoxamine Gabapentin Geodon Hydipen Imidobenzyl Imipramine Imizin Inositol Isocarboxazide Janimine Labilino Lamictal Lamiktal Lamotrigine Laroxyl Lentizol Leponex Lerivon lilly-110140 Lithane Lithium Lithobid Lithonate Lithotabs Luvox

Concept	Controlled Vocabulary	Keywords
		mao inhibitor$ Maoi$ Melipramine Mianserin Micalith Mirtazapine Moclobamide Moclobemide Molipaxin monomaine oxidase inhibitors mood stabilizer$ mood stabiliser$ Nalorex Naloxone Naltrexone Narcan Narcanti narcotic antagonists Nardil Neurontin Neurotol Norchlorimipramine norepinephrine reuptake inhibitor$ Norset Nortryptiline Novoprotect ORG 3770 ORG GB 94 Olanzapine Ondansetron opioid antagonist$ Paxil Paroxetine Pertofrane Phenelzine Phenethylhydrazine Priadol Prozac Pryleugan Quetiapine Quilinorm$ Quomen

Concept	Controlled Vocabulary	Keywords
		Remeron Remixin ReVia Rexer RIMA Risperdal Risperidone Sarafem Saroten Sarotex selective serotonin reuptake inhibitor$ Seroquel Seroxat Sertraline SSRI$ Syneudon Tegretol tetracyclic$ Tofranil Tolvon Topiramate Topomax Topamax Tradozone Trazodone Tranylcipromine Trevilor Trexan Triptafen Trittico Tryptanol Tryptine Tryptizol

Concept	Controlled Vocabulary	Keywords
		Valproate Valproic acid Vandral Vasotocin Venlafaxine Vupral Wellbutrin Zinc Ziprasidone Zispin Zofran Zoloft Zyban Zyprexa

EMBASE/MEDLINE/PsycINFO

English language, human, remove overlap

Set Number	Concept	Search Statement
1	Bulimia	eating disorders/ OR eating disorder/ or bulimia/ OR bulimi$ or purging (eating disorders)/
2	Limit by publication type	1 not (letter/ or editorial/ or news/ or comment/ or case reports/ or note/ or conference paper/ or (letter or editorial or news or comment or case reports).pt.)
3	Limit by study type	2 and (Randomized controlled trial/ or random allocation/ or double-blind method/ or single-blind method/ or placebos/ or cross-over studies/ or crossover procedure/ or cross over studies/ or double blind procedure/ or single blind procedure/ or placebo/ or latin square design/ or crossover design/ or double-blind studies/ or single-blind studies/ or triple-blind studies/ or random assignment/ or exp controlled study/ or exp clinical trial/ or exp comparative study/ or cohort analysis.mp. or follow-up studies/ or intermethod comparison/ or parallel design/ or control group/ or prospective study/ or retrospective study/ or case control study/ or major clinical study/ or evaluation studies/ or follow-up studies/ or random$.hw. or random$.ti. or placebo$.mp. or ((singl$ or doubl$ or tripl$ or trebl$) and (dummy or blind or sham)).mp. or latin square.mp. or ISRCTN$.mp. or ACTRN$.mp. or (NCT$ not NCT).mp.)
4		2 and (Systematic review/ or meta-analysis/ or meta-analysis/ or pooled.mp. or meta-analysis.pt.)
5		2 and (st.fs. or guideline.pt. or consensus.pt. or practice parameter.mp. or position statement.mp. or position paper.mp. or policy statement.mp. or standard$.ti. or guideline$.ti. or white paper.mp. or clinical pathway.mp. or practice guidelines/ or exp practice guideline/ or consensus development/)
6	Combine sets	or/3-5
7	Drug therapy	3 and (dt.fs. or tu.fs.)
8		3 and ((6-azamianserin or AF-1161 or abilify or amezipine or amfebutamone or amineurin or amitrip or amitrol or amitryptyline or anafranil or anapsique or antaxone or anticonvulsant$).mp. or antidepressive agents/ or antidepressive agents, second generation/ or antidepressive agents, trycyclic/ or antiemetic$.mp. or exp antimanic agents/ or exp antipsychotic agents/ or aripiprazole.mp. or atypical antipsychotic$.mp. or auroix.mp.)
9		3 and (brofaromine or bupropion or carbamazepine or citalopram or clomipramine or clozapine or clozaril or convulsofin or crisomet or cymbalta or cytalopram or DU-2300 or damilon or depakene or depakote or desipramine or desmethylimipramine or divalproex or dobupal or domical or duloxetine or efexor or effexor or elavil or endep or epitol or epitomax or ergenyl or escitalopram or fenelzin or finlepin or fluoxetine or fluoxetin or fluvoxamine).mp.
10		3 and (gabapentin or geodon or hydipen or imidobenzyl or imipramine or imizin or inositol or isocarboxazide or janimine or labilino or lamictal or lamiktal or lamotrigine or laroxyl or lentizol or leponex or lerivon or lilly-110140 or lithane or lithium or lithobid or lithonate or lithotabs or luvox or mao inhibitor$ or maoi$ or melipramine or mianserin or micalith or mirtazapine or moclobamide or moclobemide or molipaxin or monomaine oxidase inhibitors or mood stabilizer$ or mood stabiliser$).mp.

Set Number	Concept	Search Statement
11		3 and (nalorex or naloxone or naltrexone or narcan or narcanti or narcotic antagonists or nardil or neurontin or neurotol or norchlorimipramine or norepinephrine reuptake inhibitor$ or norset or nortryptiline or novoprotect or ORG 3770 or ORG GB 94 or olanzapine or ondansetron or opioid antagonist$ or paxil or paroxetine or pertofrane or phenelzine or phenethylhydrazine or priadol or prozac or pryleugan or quetiapine or quilinorm$ or quomen or remeron or remixin or ReVia or rexer or RIMA or risperdal or risperidone or sarafem or saroten or sarotex or selective serotonin reuptake inhibitor$ or seroquel or seroxat or sertraline or SSRI$ or syneudon).mp.
12		3 and (tegretol or tetracyclic$ or tofranil or tolvon or topiramate or topomax or topamax or tradozone or trazodone or tranylcipromine or trevilor or trexan or triptafen or trittico or tryptanol or tryptine or tryptizol or valproate or valproic acide or vandral or vasotocin or venlafaxine or vupral or wellbutrin or zinc or ziprasidone or zispin or zofran or zoloft or zyban or zyprexa).mp.
13	Combine sets	or/7-12
14	Combination therapy	6 (combined modality therapy/ or combin$ or multidisciplinary or multimodal or multivariate)

Appendix B. Excluded Studies

The table below lists the studies that were retrieved for further review, but were excluded because they did not meet study inclusion criteria. Specific reasons for exclusion are reported in the table.

Table 10. Studies Retrieved but Not Included (Ordered Alphabetically)

Study	Reason for Exclusion
Alger et al. 1991[123]	Fewer than 10 patients with BN per treatment group and patients followed for less than 12 weeks
Anderson et al. 2002[124]	Study is a post-hoc analysis of treatment completers from the Bulik et al. 1998 study[125] and no longer meets criteria for a randomized controlled trial.
Andrewes et al. 1996[126]	Fewer than 10 patients with bulimia nervosa per treatment group and no active treatment control
Bacher et al. 1999[18]	Fewer than 10 patients in the study groups at the end of treatment.
Banasiak et al. 2005[127]	Does not include an active treatment control
Bergh et al. 2002[128]	Fewer than 10 patients with bulimia nervosa per treatment group
Beumont et al. 1997[129]	Does not consider a comparison of interest to this report
Blouin et al. 1988[130]	Patients followed for less than 12 weeks
Blouin et al. 1996[131]	Does not include an active treatment control
Bossert et al.[132]	Fewer than 10 patients in study
Brambilla et al. 1995[133]	Not a randomized controlled trial
Bruce et al. 2009[134]	Not a randomized controlled trial
Burton et al. 2007[135]	Does not include an active treatment control
Carei et al. 2010[136]	Does not address a comparison of interest in this report and mixes eating disorder patients without reporting outcomes separately for individuals with bulimia nervosa
Carruba et al. 2001[137]	Does not include an active treatment control
Carter et al. 2002[138]	Same patient population as Bulik et al. 1998 study[125], and does not consider an outcome of interest in this report
Carter et al. 2003[139]	Patients followed for less than 12 weeks
Carter et al. 2006[140]	Same patient population as Carter et al.[139] and does not measure new outcomes using a validated instrument.
Copper et al. 2007[141]	Does not include an active treatment control and follows patients for less than 12 weeks
Davis et al. 1999[142]	Both groups received 6 weeks of psychoeducation and were then randomized to receive no further treatment or 16 weeks of CBT. Thus, the comparisons were of unequal duration and dose.
Doyle et al. 2009[143]	Study includes same patient population as le Grange et al. 2007[92] and does not address one of the key questions.
Esplen et al. 1998[18]	Patients followed for less than 12 weeks
Fahy et al. 1993[144]	Does not consider a drug of interest to this report
Fairburn et al. 2009[145]	Does not distinquish outcomes for individuals with bulimia by treatment group.
Fairburn et al. 1981[146]	Not a randomized controlled trial
Faris et al. 2000[147]	Does not include an active treatment control

Study	Reason for Exclusion
Fichter et al. 1991[148]	Patients followed for less than 12 weeks
Fluoxetine Bulimia Nervosa Collaboration Study Group, 1991[149]	Patients followed for less than 12 weeks
Ghaderi and Scott 2003[150]	Fewer than 10 patients remained in the study groups at the end of treatment and study mixes patient populations without reporting results separately for individuals with bulimia nervosa.
Ghaderi, Ata. 2005[151]	Fewer than 85% of enrolled patients diagnosed with bulimia
Goldbloom and Olmsted, 1993[152]	Same patient population as Fluoxetine Bulimia Nervosa Collaboration Study Group[149] in which patients followed for less than 12 weeks.
Griffiths et al. 1994[19]	Patients followed for less than 12 weeks
Hoopes et al. 2003[153]	Does not include an active treatment control
Huon and Brown 1985[17]	Does not include an active treatment control
Jager et al. 1996[154]	Not a randomized controlled trial
Kirkley et al. 1985[155]	Not a randomized controlled trial
Korrelboom et al. 2009[156]	Fewer than 85% of enrolled patients diagnosed with bulimia nervosa and patients followed for less than 12 weeks
Laessle et al. 1987[157]	Fewer than 10 patients per treatment group
Laessle et al. 1991[158]	Does not address a comparison of interest to this report
Lam et al. 1994[159]	Not a randomized controlled trial
Le Grange et al. 2008[92]	Same patient population as Le Grange et al. 2007 study,[92] and does not consider an outcome of interest in this report
Lee and Rush 1986[5]	Does not include an active treatment control
Liedtke et al. 1991[160]	Not a randomized controlled trial
Liedtke et al. 1996[154]	Not a randomized controlled trial
Ljotsson et al. 2006[161]	Does not include an active treatment control
Loeb et al. 2005[162]	Study is a post-hoc analysis of treatment completers from the Agras et al. 2000 study[78] and no longer meets criteria for a randomized controlled trial.
Marrazzi et al. 1995[163]	Does not include an active treatment control
Mitchell et al. 1989[164]	Does not measure outcome of interest to this report
Munoz et al. 2009[165]	Not a randomized controlled trial
Naessen et al. 2007[166]	Does not address one of the key questions
Nevonen et al. 2006[167]	Not a randomized controlled trial
O'Malley et al. 2007[168]	Does not include population of interest (alcohol dependent with eating disorder)
O'Brien and LeBow 2007[169]	Study population does not have a clinical diagnosis of bulimia nervosa (general population)
Olmsted et al. 1996[170]	Not a randomized controlled trial
Ordman and Kirschenbaum, 1985[171]	Does not include an active treatment control
Palmer et al. 2002[172]	Fewer than 85% of enrolled patients diagnosed with bulimia nervosa
Pyle et al. 1990[96]	This study assesses maintenance treatment and is thus beyond the scope of this report.

Study	Reason for Exclusion
Ricca et al. 2001[173]	Evaluates patients with binge eating disorder, not bulimia nervosa
Richards et al. 2006[174]	Fewer than 85% of enrolled patients diagnosed with bulimia nervosa
Robertson et al. 2006[175]	Not a randomized controlled trial
Roehig et al. 2006[176]	Study population does not have a clinical diagnosis of bulimia nervosa (general population)
Rothschild et al. 1993[177]	Fewer than 10 patients remained in active treatment groups at 6 weeks of treatment
Rowe et al. 2008[178]	Study is a post-hoc analysis of treatment completers from the Bulik et al. 1998 study[125] and no longer meets criteria for a randomized controlled trial.
Safer et al. 2001[8]	Does not include an active treatment control
Sanchez-Johnson et al. 2008[179]	Does not address one of the key questions
Schmidt et al. 2008[180]	Does not include an active treatment control
Seongsook, K. 2005[181]	Fewer than 85% of enrolled patients diagnosed with bulimia nervosa
Shapiro et al. 2007[182]	Study population does not have a clinical diagnosis of bulimia nervosa (binge eating disorder)
Shelley-Ummenhofer and MacMillan 2007[183]	Study population does not have a clinical diagnosis of bulimia nervosa (binge eating disorder)
Stice et al. 2008[184]	Does not address one of the key questions
Sundblad et al. 2005[185]	Few than 10 patients remained in the study groups at the end of the study
Sundgot-Borgen et al. 2001[186]	Does not consider a comparison of interest to this report
Thackwray et al. 1993[187]	Number of patients assigned to each group not reported. Estimates of effect size cannot be determined without this information
Treasure et al. 1994[104]	Outcomes measured prior to patients receiving full course of therapy (measured after receiving only 8 weeks of 16 weeks)
Treasure et al. 1999[188]	Outcomes measured prior to patients receiving full course of therapy (measured after receiving only 4 weeks)
Van den Eynde et al. 2009[189]	Does not include an active treatment control and patients followed for less than 12 weeks.
Ventura and Bauer 1999[190]	Does not consider a comparison of interest to this report
Walsh et al. 1988[191]	Does not include an active treatment control
Walsh et al. 2000[192]	Does not include an active treatment control
Walsh et al. 2004[21]	Fewer than 10 patients remained in the study groups at the end of treatment
Walsh et al. 2006[193]	Does not address one of the key questions
Wilson et al. 1986[194]	Fewer than 10 patient per treatment group
Wilson et al. 1991[195]	Fewer than 10 patients per treatment group
Wooley et al. 1995[196]	Not a randomized controlled trial

Appendix C. List of Instruments Used to Measure the Outcomes Reported in Included Studies

Table 11. Instruments Used in Included Studies

Outcome Measure	Instrument
Depression and anxiety	Beck depression inventory (BDI),[107] Hospital anxiety and depression scale (HADS),[197,198] Hamilton rating scale for anxiety (HAM-A)[199] Hamilton rating scale for depression (HAM-D),[200] Montgomery and Asberg Depression Rating Scale (MADRS),[201] Snaith irritability, depression and anxiety (SNAITH),[202] State trait anxiety disorder (STAI)[203]
Eating disorder psychopathology	Binge eating adjective checklist (BEAQ),[204] Bulimic Investigatory Test Edinburgh (BITE),[205] Body shape questionnaire (BSQ),[206] Clinical global improvement scale (CGI),[207] Eating attitude test (EAT),[102] Eating disorder examination (EDE),[105,106] Eating disorder inventory (EDI),[208] Eating disorder questionnaire (EDQ),[209] Rating of anorexia and bulimia interview (RAB),[85] Symptom checklist 90-revised (SCL-90-R),[210] Short evaluation of eating disorders (SEED),[109] Three-factor eating questionnaire (TFEQ)[211]
Psychosocial and interpersonal functioning	Dysfunctional attitudes scale (DAS),[212] Inventory of interpersonal problems (IIP),[213] Intake inventory self-report (ITI),[214] Lawson social self-esteem scale (LSE),[215] Present State Examination (PSE),[216] Perceived social support (PSS),[217] Rosenberg self-esteem scale (RSE),[108] Social adjustment scale (SAS)[218,219]
Quality of life	Health-Related Quality of Life for Eating Disorders (HeRQoLED),[165] Medical outcomes study short-form 36 (SF-36)[220]

Appendix D. Methodology for Rating the Strength of Evidence

Evaluating the Strength and Stability of a Body of Evidence

Ideally, the body of evidence to support a conclusion would be strong. Often, however, the evidence suffers from various limitations concerning the possible risk of bias in available studies, small numbers of studies and patients, and/or inconsistent effects. These limitations often mean that the strength of the evidence is only moderate, low, or even insufficient to permit any conclusion. In order to gauge the impact of these possible limitations, we applied a formal rating system developed at ECRI Institute.[60]

Our system allows one to separate the question "is the treatment effective" (leading to a yes or no conclusion) from the question "how effective is the treatment" (leading to a quantitative conclusion with an estimate of the magnitude of effect). Thus, even if the evidence for a precise quantitative effect may be low, the same evidence may have high strength with respect to the direction of the effect. The interpretation of the strength of the evidence for these different types of conclusions is shown in Table 12.

Table 12. Interpretation of Categories of Strength of Evidence Supporting Conclusion

Strength of Evidence	Interpretation
Evidence Ratings for Conclusions about Effect *Direction*	
High	Evidence supporting the conclusion is convincing. It is highly unlikely that new evidence will lead to a change in this conclusion.
Moderate	Evidence supporting the conclusion is somewhat convincing. There is a small chance that new evidence will overturn or strengthen our conclusion. ECRI Institute recommends regular monitoring of the relevant literature at this time.
Low	Although some evidence exists to support the conclusion, this evidence is tentative and perishable. There is a reasonable chance that new evidence will overturn or strengthen our conclusions. ECRI Institute recommends frequent monitoring of the relevant literature at this time.
Insufficient	Although some evidence exists, this evidence is not of sufficient strength to warrant drawing an evidence-based conclusion from it. ECRI Institute recommends frequent monitoring of the relevant literature at this time.
Evidence Ratings for Conclusions about Effect *Magnitude*	
High Stability	The estimate of effect is stable. It is highly unlikely that the magnitude of this estimate will change substantially as a result of the publication of new evidence.
Moderate Stability	The estimate of effect is somewhat stable. There is a small chance that the magnitude of this estimate will change substantially as a result of the publication of new evidence. ECRI Institute recommends regular monitoring of the relevant literature at this time.
Low Stability	The estimate of effect is likely to be unstable. There is a reasonable chance that the magnitude of this estimate will change substantially as a result of the publication of new evidence. ECRI Institute recommends frequent monitoring of the relevant literature at this time.
Unstable	Estimates of the effect are very unstable. ECRI Institute recommends frequent monitoring of the relevant literature at this time.

The system employs 14 decision points (listed in Table 13). The rest of this appendix defines these decision points and describes how we resolved them for this report. After these descriptions, the pathways for the full system appear in Figure 12 through Figure 15. We applied this system separately for each comparison of interest and each outcome of interest. This is because many aspects of the evidence (internal validity, consistency, etc.) can vary by comparison or outcome.

Table 13. The ECRI Institute System

Category	Decision Point
General	1) Is each study of acceptable internal validity?
	2) What is the overall internal validity?
	3) Is meta-analysis appropriate?
	4) Is substantial imputation necessary?
Effect magnitude	5) Are data quantitatively consistent?
	6) Are data informative?
	7) Is the 95% confidence interval narrow?
	8) Are data quantitatively robust?
	9) Are there sufficient data to perform meta-regression?
Effect direction	10) Does meta-regression explain heterogeneity?
	11) Are data robust in the direction of effect?
	12) Are data consistent in the direction of effect?
	13) Is it a multicenter study?
	14) Is the magnitude of effect extremely large?

1: Is each study of acceptable internal validity?

We included all studies as long as they (1) met the inclusion criteria and (2) did not have a major flaw. Potential major flaws had to be agreed to by the internal review committee before the study was excluded. An example of a major flaw is a large baseline difference between groups in the primary outcome variable. Such a difference means that the study was clearly biased against one of the two groups.

2: What is the overall internal validity of evidence?

To aid in assessing the internal validity of each of the studies included in this assessment, we used an instrument developed by ECRI Institute for interventional trials. This instrument examines different factors of study design (attributes) that have the potential to reduce the validity of the conclusions that can be drawn from a trial. For example, one attribute is whether patients were randomly assigned to treatment groups. In brief, the scale was designed so that a study attribute that, in theory, protects a study from bias receives a "Yes" response. If the study clearly does not contain that attribute it receives a "No" response. If poor reporting precludes assigning a "Yes" or "No" response for an attribute, then "NR" is recorded (NR = not reported).

To assess the internal validity of an individual study, we computed a normalized score so that a perfect study received a score of 10, a study for which the answers to all items was "No" received a score of 0, and a study for which the answers to all questions was "NR" was 5. Scores were converted to categories as shown in Table 3 (see Methods section of main document). The definitions for what constitutes low, moderate, or high internal validity were determined *a priori* by a committee of four methodologists.

Because this was determined separately for each outcome, a study that scored as high for one outcome might score as moderate or low for another.

We classified the overall internal validity of the evidence base by taking the median score of the individual studies. We used the median because it is the appropriate measure of central tendency to represent the "typical" score, and is less sensitive to outliers than the mean. Depending on the median score for a given outcome, we then followed the high, moderate, or low internal validity pathway of the system. If the median score was less than 6.0, we followed the low internal validity pathway; if it was between 6.0 and 8.0, we followed the moderate internal validity pathway; if it was greater than 8.0, we followed the high internal validity pathway.

3: Is meta-analysis appropriate?

The answer to this question depends upon the adequacy of reporting in available studies as well as the number of available studies. In order to permit a quantitative estimate of an effect size for a given outcome, the data for that outcome must be reported in at least two studies in a manner that allows the data to be pooled in a meta-analysis. If only one study is available, meta-analysis is not possible and a quantitative estimate is not appropriate, because of the lack of replication. Another situation where meta-analysis is inappropriate is if there is substantial clinical heterogeneity (differences in treatments or patient populations) among studies. A third situation would be if imputation of effect sizes is not possible, in which case meta-analysis is not possible. In a two-study evidence base, meta-analysis would be inappropriate if the studies had statistically significant effects in opposite directions. If meta-analysis is not appropriate or possible with an evidence base of two or more studies, then one moves directly to question 12 to determine whether the evidence supports a conclusion about the direction of effect. If the evidence base consists of a single study, then one moves directly to question 6 to determine whether the evidence support a conclusion about the direction of effect.

4: Is substantial imputation necessary?

If meta-analysis is appropriate, the next question is whether substantial imputation is necessary to calculate effect sizes in more than 25% of studies. Examples of instances where imputation is required include lack of reporting of measures of dispersion, and when the only reported data are imprecise p-values (e.g., $p < 0.05$). If substantial imputation is necessary, one moves directly to question 6 to determine whether the evidence supports an unstable quantitative conclusion.

5: Are data quantitatively consistent?

Quantitative consistency (also referred to as lack of substantial heterogeneity) refers to the extent to which the effect sizes of studies in an evidence base were statistically similar.[61] We used the heterogeneity statistic I^2. Typically, we use a threshold for I^2 of 0.5, because, according to Higgins and Thompson, this value represents moderate heterogeneity.[63,64] Because I^2 may increase with the power of the evidence base, we also considered estimates of tau (τ). T^2 estimates the between-studies variance of the effect size, and T estimates its standard deviation.[65,66] Tau is on the scale of whatever effect size was used in the meta-analysis, therefore the threshold for tau varies depending by effect size metric. For this report, we considered an evidence base to be quantitatively consistent when one of the following was true:

- tau <0.2 for a meta-analysis of Hedges' g, or
- tau $< 0.2 * SD_{pooled}$ for a meta-analysis in the original metric (i.e., weighted mean differences or WMD), because WMD ~ $g * SD_{pooled}$
- tau <0.33 for a meta-analysis of odds ratio (tau itself is on the scale of the log odds ratio). Using the conversion formula proposed by Sanchez-Meca[67] of lnOR ~ g*1.65, this makes the threshold for tau similar to the one for Hedges' g

6: Are data informative?

For this question, we determined whether the precision of an evidence base was sufficient to permit a conclusion. Statistically significant results are informative because they mean that a treatment effect may exist. Statistically nonsignificant results are also potentially informative, but only if they exclude the possibility that a clinically significant (or substantial) treatment effect exists.

When a meta-analysis is performed, a key piece of output is the confidence interval around the random-effects summary statistic. If this interval is so wide that it includes a clinically significant (or substantial) effect in one direction *and also a clinically significant effect in the opposite direction*, then the evidence is inconclusive, and therefore uninformative.[221,222] This evidence is deemed insufficient to permit conclusions. Also, if the evidence for the outcome being analyzed only comprises a single study, and it only reported that the difference was not statistically significant, and did not provide enough information to rule out the possibility of a clinically significant difference in either direction, the data are uninformative.

Thus, when considering the summary effect size from a meta-analysis (or the effect size from a single study), there are four ways in which the effect can be "informative":

a) The effect size is statistically significantly different from 0. This is indicated whenever the confidence interval does not overlap 0. This means that the confidence interval is either fully above 0, or fully below 0. This corresponds to a conclusion that one treatment is ***better*** than the other on the outcome being analyzed.

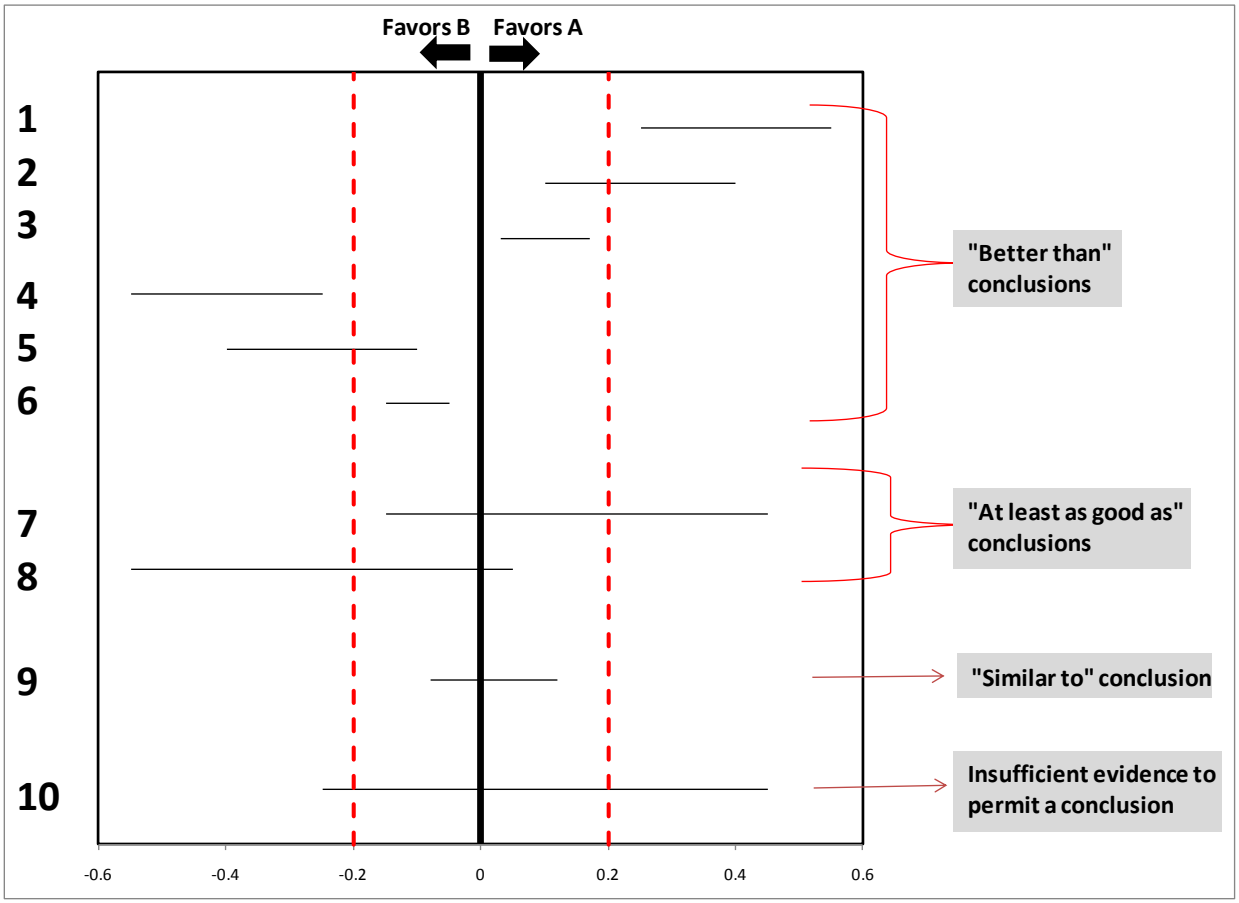
b) The confidence interval is narrow enough to exclude the possibility that a *clinically significant difference* exists. This means that the confidence interval is fully within the range of –0.2 to +0.2, where 0.2 is the previously decided-upon minimum clinically significant difference. This corresponds to a conclusion that the treatments yield ***similar results*** on the outcome being analyzed.

c) The confidence interval is narrow enough to exclude the possibility that a *substantial difference* exists. This possibility is included to address situations when even a very small effect can be considered "clinically significant" (e.g., a difference in mortality rates), but the effect may not be "substantial." This means that the confidence interval is fully within the range of –1.39 to +1.39 for data presented as an odds ratio, where 1.39 is the previously decided-upon "substantial" difference for all dichotomous outcomes. This corresponds to a conclusion that the treatments yield ***similar results*** on the outcome being analyzed.

d) The confidence interval is narrow enough to exclude the possibility that a clinically significant advantage of treatment B over treatment A exists, but not narrow enough to exclude the possibility that a clinically significant advantage of treatment A over treatment B exists. This corresponds to a conclusion that treatment A is "***at least as good as***" treatment B on the outcome being analyzed.

The nine types of conclusions are shown graphically in Figure 11. This graph is purely hypothetical, and it assumes that the minimum clinically significant difference is 0.2. This assumption is displayed by the two vertical dashed lines at +0.2 and -0.2. Each horizontal segment is a hypothetical meta-analytic confidence interval for a specific outcome comparing treatment A and treatment B. Points to the right of 0 favor treatment A, whereas points to the left of 0 favor treatment B. The first six situations (#1-#6) yield conclusions of type a; #7 to #8 yield conclusions of type c; and #9 yields a conclusion of type b or type d. #10 is the only one that is uninformative, because it is the only one that overlaps both vertical dashed lines. Conclusions #1 to #3 differ regarding what can be said about the clinical significance of the difference (for #1 the difference is clinically significant, for #2 one cannot determine whether the difference is clinically significant, and for #3 the difference is not clinically significant). Corresponding statements apply to situations #4 to #6.

Figure 11. Hypothetical Types of Conclusions



These types of conclusions require definitions of a minimum "clinically significant difference" for each outcome. Table 14 below lists our definitions of "clinical significance."

Table 14. Definitions of Minimal Clinical Significance

Outcome	*Minimum* Difference Between Groups Considered to be Clinically Significant	Comments
Remission and recovery	Any statistically significant difference Substantial difference: odds ratio of 1.39	Any statistically significant difference in this type of dichotomous outcome can be considered clinically significant. The 1.39 corresponds to a Hedges' g of 0.2, using the formula recommended by Sanchez-Meca.[67] The figure of 0.2 was stated by Cohen (1988)[223] to be a "small" effect.
Frequency of binge eating and/or purging	Hedges' g of 0.2	The figure of 0.2 was stated by Cohen (1988)[223] to be a "small" effect.
Quality of life	For the SF-36 mental health subscale a minimum difference 5 points is considered clinically significant. Unless specified in the study, for all other scales a Hedges' g of 0.2	The clinical significance level for the SF-36 was defined by O'Reilly (2007)[224] as the threshold for a small difference. The figure of 0.2 was stated by Cohen (1988)[223] to be a "small" effect.
Mortality	Any statistically significant difference Substantial difference: odds ratio of 1.39	Any statistically significant difference in this type of dichotomous outcome can be considered clinically significant. The 1.39 corresponds to a Hedges' g of 0.2, using the formula recommended by Sanchez-Meca.[67] The figure of 0.2 was stated by Cohen (1988)[223] to be a "small" effect
Eating disorder psychopathology	Hedges' g of 0.2	The figure of 0.2 was stated by Cohen (1988)[223] to be a "small" effect.
Depression and anxiety	Hedges' g of 0.2	The figure of 0.2 was stated by Cohen (1988)[223] to be a "small" effect.
Psychosocial and interpersonal functioning	Hedges' g of 0.2	The figure of 0.2 was stated by Cohen (1988)[223] to be a "small" effect.
Dropout	≥10% between-group difference in the proportion of patients who drop out of a study is considered clinically significant	We arbitrarily deemed that a ≥10% between-group difference in the proportion of patients who drop out of the study is a clinically important difference.

Similarly, the third possibility requires that, for any outcome for which clinical significance is defined as any statistically significant difference, one must determine definitions of a "substantial difference." For this report, complete remission of symptoms and mortality were the only outcomes for which clinical significance was defined as any statistical significance. In this report a substantial difference is an odds ratio of 1.39.[67]

7: Is the 95% confidence interval narrow?

An important component of the evidence for a summary estimate is the precision of that estimate. Specifically, we refer to the 95% confidence interval (CI) around the estimate as a measure of precision. This is an objective measure of the quantity of evidence that simultaneously incorporates three key attributes: (1) the number of studies; (2) within-study variability of effect sizes; and (3) between-study variability of effect sizes (because we only perform random-effects meta-analyses). An imprecise estimate is one that could easily change when future evidence becomes available (i.e., a wide confidence interval), whereas a precise estimate is unlikely to change (i.e., a narrow confidence interval).

To assess whether precision is "sufficient," we refer to the minimum difference that is considered to be clinically significant. Specifically, we defined a "narrow" confidence interval as one where the lower and upper confidence bounds were *each within one clinically significant difference* from the summary estimate. If not, then the evidence base is not precise enough to locate the effect within a clinically equivalent range. For example, suppose the summary effect size is 10, with a CI of 8.5 to 11.5. Further suppose that the definition of clinical significance is 2 units. This indicates that data *are* sufficiently precise to provide an estimate that is within 1 clinically significant difference, and so the interval is considered narrow. However, suppose the CI had been 7 to 13. Then the interval suggests that the true effect could be a full three units above or below the estimate of 10. Three units are greater than the minimum clinically significant difference of 2, therefore a 7 to 13 interval would not be considered narrow.

For some variables (e.g., mortality), any difference at all can be considered clinically significant. In this case, we then use the magnitude of a "substantial difference," as defined in #6 above, in determining whether the CI is narrow.

8: Are data quantitatively robust?

Robustness of findings refers to whether the evidence for a summary estimate is *stable*. A stable estimate is one that does not change substantially in response to minor alterations in the analysis. We considered an estimate to be quantitatively robust if it passed all of the following tests:

a) **Removal of one study at a time**. The summary estimate should not depend heavily on the inclusion of any particular study in the evidence base. To test this, we perform a series of subsequent analyses, each with one study removed. In order to pass this test, the lower and upper bounds of the 95% CI in all analyses should be within one clinically significant difference from the *all-study* summary estimate. Thus, this test produces a new set of CIs (one CI for each study removal), and each CI is compared to the all-study summary estimate.

b) **Cumulative robustness test by year.** If recent studies have reported very different effect sizes from older studies, then not-yet published studies may be expected also to cast doubt on a summary effect size. For this test, we determined whether effect sizes demonstrate a clear downward or upward trend over time. If so, the quantitative estimate was deemed not robust.

9: Are there sufficient data to perform meta-regression?

We required a minimum of five studies before attempting meta-regression.

10: Does meta-regression explain heterogeneity?

This question provides decision rules for the conduct of a meta-regression analysis and the interpretation of its results. The project internal review committee must determine *a priori* what methods will be used in performing a meta-regression should one be necessary. In addition, the committee must define the rules that will be used for interpretation of the findings of the meta-regression analysis. We use the permutation test for all meta-regressions. This test was developed by Higgins and Thompson in attempt to control the Type I error rate for meta-regression.[225]

For this topic, we chose the following covariates as potential explanations of heterogeneity:

- Blinding status (patient blinded, investigators blinded)
- Concealment of allocation
- Overall attrition rate
- Differential attrition rate
- Follow-up time
- Drug type (fluoxetine, imipramine, etc.)
- Mode of delivery of psychotherapy (individual, group, etc.)

In order to determine that a given covariate "explains" the heterogeneity, the resulting tau must have been less than 0.2, and the beta coefficient for the covariate must have been statistically significant by the permutation test.

If a covariate does explain a substantial portion of the heterogeneity, then one should redefine the evidence base using this covariate, and re-enter the system from the beginning.

11: Are data robust in the effect direction?

If the evidence base for an outcome had two or more studies, we determined whether the conclusion about the effect direction was overturned in sensitivity analyses. We considered findings to be overturned only when a sensitivity analysis altered the conclusion (e.g., a statistically significant finding becomes nonsignificant as studies are added to the evidence base). The same sensitivity analyses used to test quantitative robustness were used to test this form of robustness (except for the sufficient precision test, which does not apply to this decision point).

The system allows for several types of conclusions about the direction of the effect:

a) That results favor one treatment over another
b) That the results favor one treatment over another by a clinically significant amount (see definition of clinical significance in question #4 above).
c) That the treatment results are similar enough to exclude the possibility of a clinically significant difference
d) That the treatment results are similar enough to exclude the possibility of a substantial difference (see definition of "substantial" in question #6 above)

For each of these types of conclusions, the robustness test will depend critically on a different threshold. For conclusion **a**, the question is whether the statistical significance of the finding is preserved across all robustness tests. In practical terms, this means that the lower bound of the 95% confidence interval must not overlap with 0 in any of the robustness tests. For conclusion b, the issue is whether the lower bound of the confidence interval stays consistently *above* the level of clinical significance across all robustness tests. For conclusion c, the issue is whether the lower bound of the confidence interval stays consistently *below* the level of clinical significance across all robustness tests. Finally, for conclusion d, the issue is whether the lower bound of the confidence interval stays consistently *below* the level of a substantial difference across all robustness tests.

Note that more than one qualitative conclusion could apply to the same outcome. For example, a treatment could be both statistically and clinically significantly better than an alternative (conclusions a and b). Or, a treatment could be statistically better than an alternative but clearly not clinically better (conclusions a and c). Conclusions b, c, and d, however, are mutually exclusive. Conclusions b and c are opposites; conclusion d only applies when the notion of "clinical significance" is inappropriate (see question #6 for further explanation).

12: Are data consistent in the effect direction?

This question is used only when the evidence base for an outcome consists of two or more studies and meta-analysis is not possible or is considered inappropriate.

Studies are considered consistent in the direct of effect if they lead to the same conclusion. If one study found a significant advantage of one treatment over another, but the other study found a nonsignificant difference, these do not lead to the same conclusion, and therefore they are not consistent.

13: Is it a multicenter study?

Multicenter trials may increase the strength of a one-study evidence base because they demonstrate partial replication of findings; they have shown that different investigators at various centers can obtain similar

results using the same protocol. We defined a multicenter trial as any trial that: (1) used ≥3 centers and (2) at least 3 centers enrolled ≥20 patients/center.

14: Is the magnitude of effect extremely large?

When considering the strength of evidence supporting a qualitative conclusion based on only one or two studies, magnitude of effect becomes very important. If a single study finds a large effect with a narrow confidence interval, then new evidence is unlikely to overturn the qualitative conclusion. To resolve this question, we consulted the effect size and the 95% confidence interval around the effect size for the study (with two studies, we consulted the interval around the random effects summary statistic). If this interval was fully above +0.5 (or if it was fully below -0.5) and the effect size was ≥0.8 (or ≤-0.8), we considered the effect to be large. Otherwise, we considered it to be not large. For example, an interval from +0.6 to +1.1 would be considered a large effect, whereas an interval from +0.4 to +1.3 would not be considered a large effect. Another effect that would be considered large is an interval from -1.1 to -0.6 (large in the negative direction). The choice of 0.5 and 0.8 is based on Cohen,[223] who stated that an effect size of 0.5 was "moderate" and 0.8 was "large"; thus the decision rule required that the effect be statistically significantly larger than "moderate." The use of 0.5 and 0.8 applies to Hedges' d or Hedges' g as measures of effect size. These correspond roughly to odds ratios of 2.5 and 4.5, respectively.

Figure 12. Entry into Strength-of-evidence System

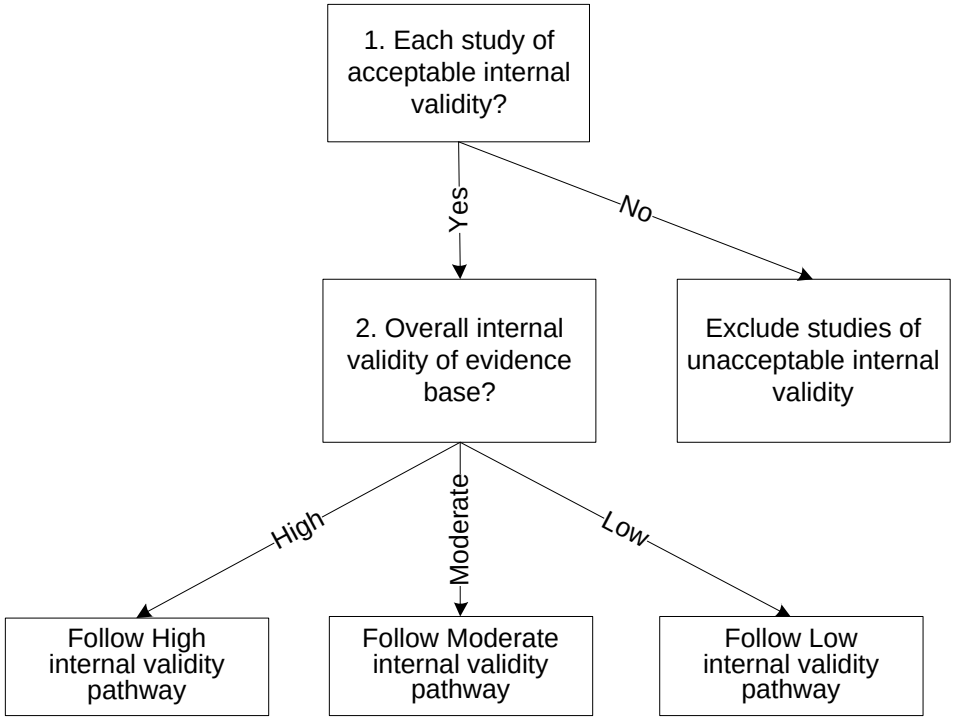


Figure 13. High Internal Validity Pathway of Strength-of-evidence System

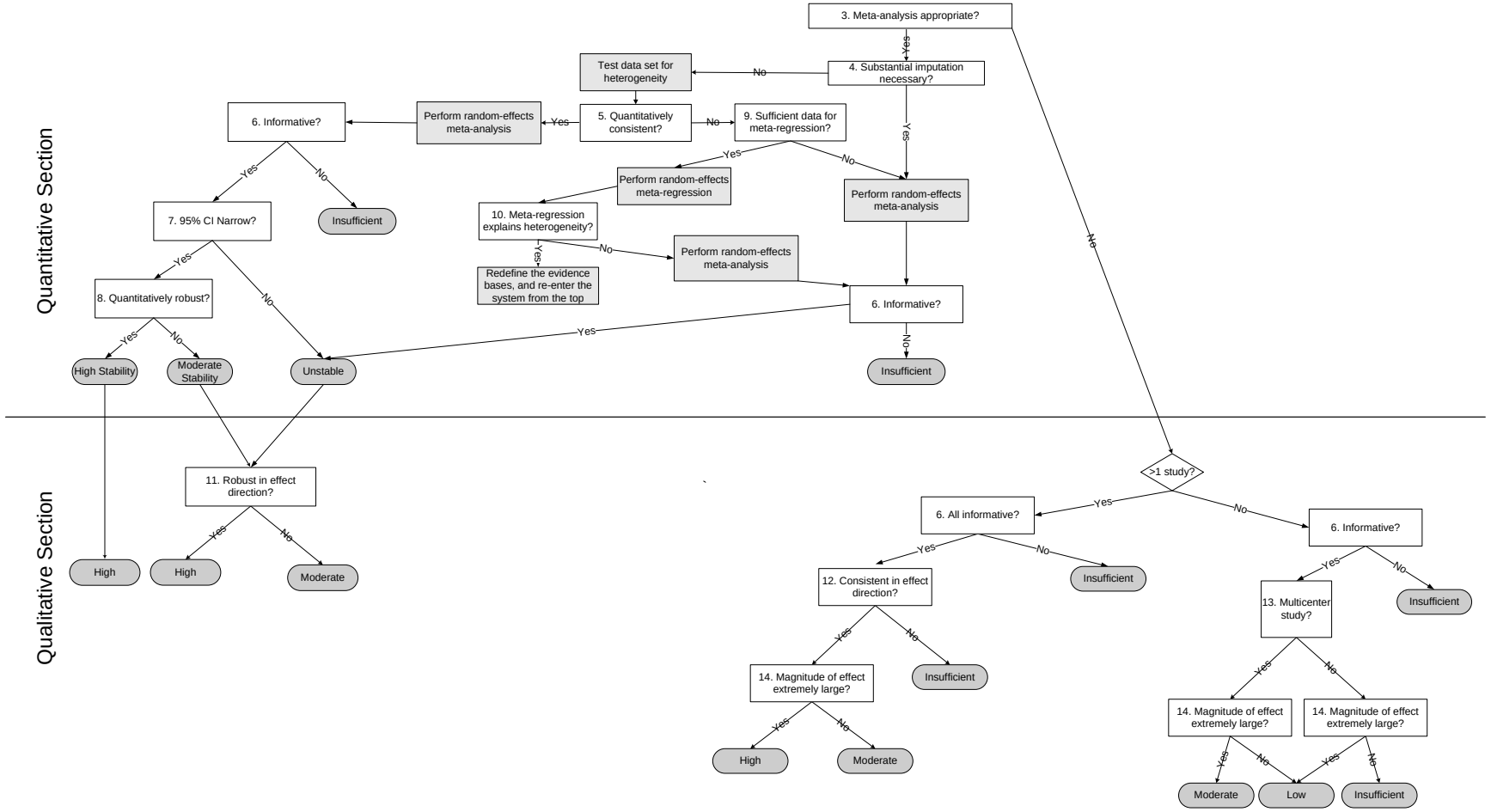


Figure 14. Moderate Internal Validity Pathway of Strength-of-evidence System

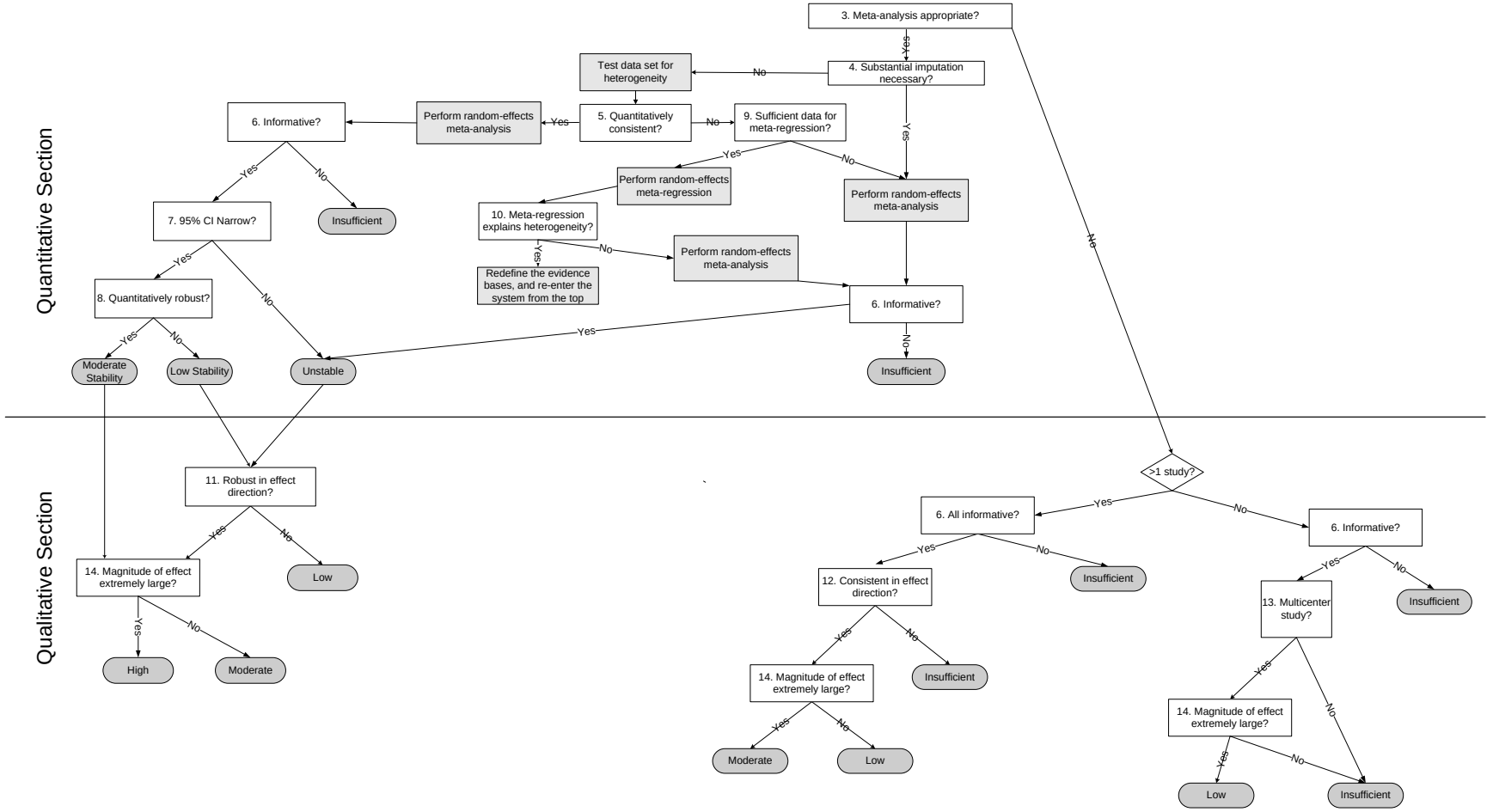
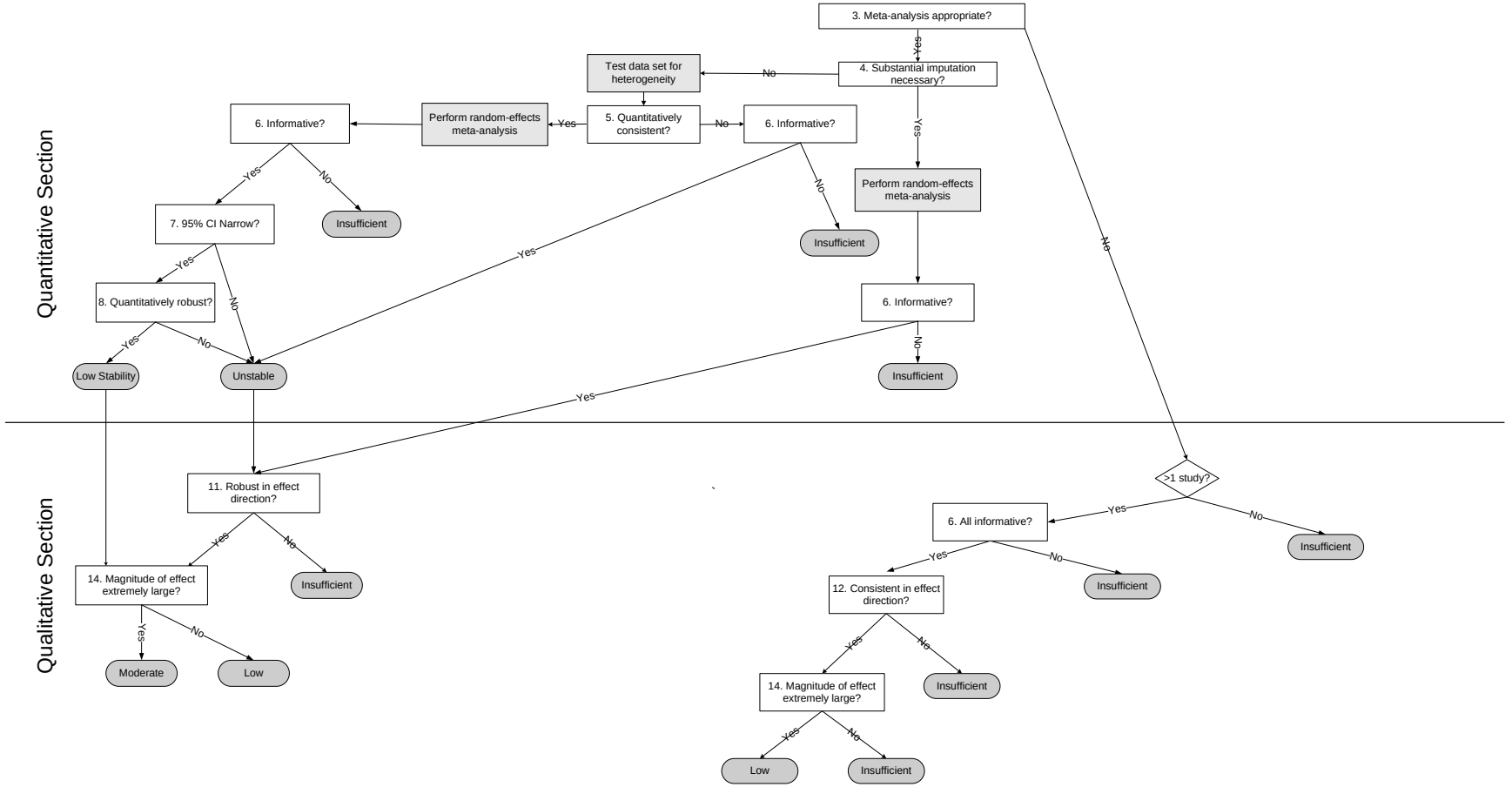


Figure 15. Low Internal Validity Pathway of Strength-of-evidence System



Appendix E. Evidence Tables Key Question 1

Table 15. Key Question 1: Study Enrollment Details

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Pts Considered for Enrollment	Number of Pts Eligible for Enrollment	Number of Pts Randomized	% of Pts Considered Who Were Randomized
Medication versus Medication						
Leombruni et al. 2006[70]	Individuals with a full syndrome diagnosis of BN; no other current Axis I comorbidity; no previous pharmacologic treatment in psychiatric specialty centers; no previous treatment with study medications; and a signed informed consent.	NR	73	37	37	50.7
Medication versus Psychotherapy						
Jacobi et al. 2002[71]	Women age 18-65 who met DSM III R criteria for BN; a minimum of 2 episodes of binge eating and vomiting for at least 6 months prior to beginning the study; BMI between 17.5 and 25; no other concurrent severe psychiatric disturbance (psychosis, depression with suicide risk, alcohol or drug abuse); no other treatment; no concurrent medical condition that would preclude the use of antidepressants.	NR	132	89	89	67.4
Mitchell et al. 2002[72]	Adult BN patients with active bulimia (purging) who failed treatment with CBT. Subjects met DSM-III-R criteria with the additional criteria of purging by self-induced vomiting a least 2 times a week for 3 months.	Patients for whom CBT was successful; substance dependence within the last 6 months; or any history of psychosis.	64	62	62	96.9

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Pts Considered for Enrollment	Number of Pts Eligible for Enrollment	Number of Pts Randomized	% of Pts Considered Who Were Randomized
Mitchell et al. 2001[73]	Females at least 18 years of age who were at least 85% of their ideal body weight, not currently on pharmacotherapy or psychotherapy, who satisfied DSM-III-R criteria for BN with the additional criterion of binge eating coupled with self-induced vomiting three times a week for the last 6 months. Current medical condition that would preclude safe outpatient treatment; a history of hypersensitivity to fluoxetine, prior exposure to fluoxetine in a total amount greater than 140 mg (20 mg a day for one week) or within the preceding 5 weeks before entering the study.	NR	NR	NR	91	Not calculated
Goldbloom et al. 1997[74]	Female, 18-45 years, 85-125% matched population mean weight, DSM-III-R diagnosis of BN on structured interview, binge and vomit frequency of at least twice per week as defined by the EDE, minimum 6-month duration of illness, ability and willingness to provide informed consent.	Ongoing pharmacotherapy or psychotherapy or use of MAO inhibitors within 2 weeks prior to the onset of the study treatment, immediate suicide risk or psychosis, medical contraindications to drug treatment, previous exposure to the research treatments.	300	76	76	25.3
Walsh et al. 1997[75]	Females aged 18 to 45 years with weights between 80% and 120% of ideal; met DMS-III-R criteria for BN for at least one year; self-induced vomiting was primary method of compensating for binge eating	Medically ill, evidence of cardiac conduction disease, pregnant, abused drugs or alcohol within the past year, judged to be acutely suicidal, or had previously had an adverse reaction to either desipramine or fluoxetine	209	149	120	57.4

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Pts Considered for Enrollment	Number of Pts Eligible for Enrollment	Number of Pts Randomized	% of Pts Considered Who Were Randomized
Agras et al. 1992[76]	Female aged 18 to 65 years who met the DSM-III-R criteria for bulimia nervosa, had no concurrent medical condition that would preclude the use of antidepressants, and had no evidence of conduction disturbance on EKG	Current anorexia nervosa, drug or alcohol abuse, psychosis, or depression with suicidal risk of sufficient severity to preclude the use of antidepressants.	100	NR	71	71
Mitchell et al. 1990[77]	Females age 18 to 40 years of age within 80%-120% of their ideal body weight; no current involvement in psychotherapy or pharmacotherapy for BN; meets DSM III criteria for bulimia plus binge eating coupled with self-induced vomiting or laxative abuse a minimum of 3 times a week for the past 6 months; no concurrent medical condition that would preclude safe outpatient therapy with an antidepressant; and abstinent from alcohol/drug abuse for at least 6 months.	NR	254	NR	171	67.3

BN: Bulimia nervosa
CBT: Cognitive behavioral therapy
EDE: Eating disorder examination
MAO: Monoamine oxidase Inhibitors
NR: Not reported

Table 16. Key Question 1: Characteristics of Enrolled Patients

Study	Group (n)	% Females	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episode (SD)	Mean frequency of purging episode (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of drug or alcohol abuse (%)	Number of pts with history of attempted suicide (%)
Medication versus Medication															
Leombruni et al. 2006[70]	Fluoxetine (18)	NR	26.55 (6.27)	17.88 (2.63)	21.32 (4.12)	3.67 (6.17)/wk	NR	3.77 (6.17)/wk	NR	NR	NR	0	NR	NR	NR
	Citalopram (19)	NR	28.68 (8.25)	21.42 (7.15)	20.71 (4.97)	2.84 (3.64)/wk	NR	2.53 (3.79)/wk	NR	NR	NR	0	NR	NR	NR
Medication versus Psychotherapy															
Jacobi et al. 2002[71]	Fluoxetine (16)	100	NR	NR	NR	54.2 (29.9)/ 28 days	NR	31.8 (25.5)/ 28 days	NR	NR	NR	0	NR	NR	NR
	GRP CBT (19)	100	NR	NR	NR	36.5 (25.8)/ 28 days	NR	38.5 (31.7)/ 28 days	NR	NR	NR	0	NR	NR	NR
Mitchell et al. 2002[72]	Fluoxetine (31)	100	27.1 (6.3)	NR	21.9 (2.5)	Median 5.0	NR	NR	NR	36	64	26	NR	16	NR
	IPT (31)	100	28.0 (7.3)	NR	23.2 (3.7)	Median 4.0	NR	NR	NR	29	45	26	NR	13	NR
Mitchell et al. 2001[73]	Fluoxetine 60 mg daily (26)	100	26.6 (7.1)	NR	59.5 (13.9)/kg	11.58 (6.7)/wk	NR	NR	0 days reported	NR	NR	NR	NR	NR	NR
	Self-help manual and a placebo pill (22)		26.8 (6.9)		61.2 (10.5)/kg	11.91 (10.7)/wk	NR	13.86 (10.8)/wk		NR	NR	NR	NR	NR	NR

Study	Group (n)	% Females	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episode (SD)	Mean frequency of purging episode (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of drug or alcohol abuse (%)	Number of pts with history of attempted suicide (%)
Goldbloom et al. 1997[74]	60 mg/day Fluoxetine (23)	100	25.8 (5.5) n = 38	NR	23.0 (2.5) n = 38	Objective: 21.0 (12.2)	NR	24.6 (20.4)	NR	6 (15.7) n = 38	NR	NR	NR	NR	NR
	CBT (24)					Objective: 33.6 (29.5)		41.8 (34.4)							
Walsh et al. 1997[75]	SPT plus Med (22)	100	28.0 (5.3)	9.55 (5.3)	21.7 (2.3)/kg	7.92 (5.6)/wk	NR	10.8 (12)/wk	NR	9 (36)	NR	6 (24)	NR	NR	NR
	CBT alone (25)	100	25.8 (4.4)	8.00 (4.0)	22.1 (2.1)/kg	7.22 (4.0)/wk	NR	11.9 (13)/wk	NR	6 (27)	NR	2 (9.0)	NR	NR	NR
	SPT alone (22)	100	26.9 (4.3)	7.55 (3.7)	21.7 (2.2)/kg	6.18 (3.6)/wk	NR	10.5 (11)/wk	NR	9 (32)	NR	8 (29)	NR	NR	NR
Agras et al. 1992[76]	Med-16 weeks (12)	100	29.6 (8.9)	NR	59.9 (9.1)/kg	5.5 (4.6)/wk	9.7 (9.4)/wk	NR	NR	16 (22)	NR	NR	NR	NR	NR
	Med-24 weeks (12)					5.9 (5.1)/wk	6.3 (4.9)/wk								
	CBT alone (23)					8.7 (7.2)/wk	10.1 (7.7)/wk								

Study	Group (n)	% Females	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episode (SD)	Mean frequency of purging episode (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of drug or alcohol abuse (%)	Number of pts with history of attempted suicide (%)
Mitchell et al. 1990[77]	Imipramine (54)	100	24.1 (4.4) 22.8 (4.3)	6.5 (2.9) 6.2 (4.0)	NR	7.3/wk	NR	8.6/wk	NR	8 (18)	NR	8 (18)	NR	8 (18)	NR
	Intensive group psycho-therapy plus placebo (34)	100	NR	NR	NR	9.2/wk	NR	13.2/wk	NR	10 (30)	NR	5 (15)	NR	2 (6)	NR

BMI: Body mass Index
BN: Bulimia nervosa
CBT: Cognitive behavioral therapy
IPT: Interpersonal psychotherapy therapy
IND: Individual
NR: Not reported
SPT: Supportive psychotherapy

Table 17. Key Question 1: Characteristics of Treatment

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Medication versus Medication								
Leombruni et al. 2006[70]	Fluoxetine (18)	Psychiatrist for outpatient treatment	20 mg of either fluoxetine or citalopram was used; during the course of the study, doses ranging from 20-60 mg fluoxetine and from 20-40 mg citalopram were used.	NR	Monthly visits, approximately 15 minutes in length	12 weeks	3 months	14
	Citalopram (19)	Psychiatrist for outpatient treatment	20 mg of either fluoxetine or citalopram was used; during the course of the study, doses ranging from 20-60 mg fluoxetine and from 20-40 mg citalopram were used.	NR	Monthly visits, approximately 15 minutes in length	12 weeks	3 months	14
Medication versus Psychotherapy								
Jacobi et al. 2002[71]	Fluoxetine (16)	Psychiatrists with 5-10 years of clinical experience provided medication on an outpatient basis. No advice about eating, binge eatingor purging was provided.	Medication administered by a standard protocol in accordance with good clinical practice guidelines.	None	Fluoxetine 20 mg day for 2 weeks increased to 40 mg day for weeks 3 and 4 and was continued at 60 mg day from week 5 to the end of the study. Medication was withdrawn completely after week 16. Sessions were 10 minutes each.	16 weeks	Post-treatment, 6 months and one year	12
	GRP CBT (19)	Two experienced clinical psychologists administer provided CBT in an outpatient setting.	Followed a detailed manual for CBT (based on Fairburn (1985 and Agras 1987) and were supplemented by the authors own adaptations. Eating behavior (dietary restraint and binge eatingand purging), self-esteem and related problems were what were covered in these sessions.	None	20 group sessions over 16 weeks; sessions 120 mins each; twice weekly for the first month and weekly thereafter	16 weeks	Same as above	11

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Mitchell et al. 2002[72]	Fluoxetine (31)	Psychiatrist	Medication administered by a standard protocol in accordance with good clinical practice guidelines.	NR	Fluoxetine 60 mg/day. If patient could not tolerate that dose, it was reduced. If abstinence not achieved after 8 weeks of treatment, fluoxetine was discontinued and desipramine 50 mg per day was initiated, with subsequent increases to a maximum dose of 300 mg/day.	26 weeks	Post-treatment	15
	IPT (31)	IPT was delivered by the same PhD level psychotherapist who delivered the first line treatment, CBT.	IPT method used was that originally developed by Klerman, Weissman, and Rounsaville (1984) and modified by Fairburn (1993) for work with BN patients.	Occupational and physical therapy plus psychological support services	20 sessions	16 weeks	26 weeks	18
Mitchell et al. 2001[73]	Fluoxetine 60 mg daily (26)	Vital signs and weight monitored each week for the first 4 weeks and then every other week for 12 weeks by a research assistant and every other week by the study investigator (MD).	Active medication (60 mg) given as a single dose in the morning.	NR	Single dose of medication	16 weeks	16 weeks	26
	Self-help manual and a placebo pill (22)	Patients followed the manual instructions without therapist guidance (pure self-help approach). Outpatient setting; vital signs and weight monitored.	Patients given a manual developed by first author (Jim Mitchell) that included elements of used in manual-based CBT for BN. The manual incorporated a series of 14 reading and homework assignments.	NR	NR	NR	Same as above	22

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Goldbloom et al. 1997[74]	60 mg/day Fluoxetine (23)	Eating disorders program of Toronto Hospital outpatient	Sessions based on a format described in Clinical Management-Fluoxetine Manual (written for this study and modeled on Clinical Management-Imipramine Manual for the National Institute of Mental Health Collaborative Study on Treatment of Depression treatment manual (Fawcett, Epstein, Feister, Elkin, Autry, 1987).	None	10 sessions, lasting approx 10 minutes or less	16 weeks	18 weeks	12
	CBT (24)	Same as above	Sessions based on manual specific to CBT in BN (Fairburn, Marcus, Wilson, 1993).	None	16 sessions, 1 hour in length, given weekly	16 weeks	18 weeks	14
Walsh et al. 1997[75]	CBT alone (25)	Three therapists (one psychiatrist, one doctoral-level psychologist, and one master's level psychologist)	Manual based (Wilson 1989) modified Fairburn; patients were taught to identify possible triggers to binge eating and purging, how to normalize eating patterns, learn problem solving skills for coping in future, and importance in maintaining improved behaviors.	NR	20 sessions (length NR)	16 weeks	18 weeks	25
	SPT alone (22)	Same as above	Manual based modified Fairburn; patients were asked to identify potential family issues that may be causing BN, express feelings and try to be independent. Termination of therapy was also discussed.	NR	20 sessions (length NR)	16 weeks	18 weeks	22
	Medication alone (28)	Patients met weekly with a psychiatrist who collected data and inquired about side effects	200 to 300 mg/day of desipramine	NR	16 sessions (length NR)	16 weeks	18 weeks	28

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Agras et al. 1992[76]	Desipramine for 16 weeks (12) or 24 weeks (12)	Treatment was administered by one of the study psychiatrists in sessions averaging 15 minutes. No psychotherapeutic treatment was provided.	For the first 3 days, study subjects were given 25 mg, after which the dose was increased to 50 mg a day. The dose was then increased by 50 mg increments every 3-5 days to a maximum of 300 mg, depending on response to treatment and side effects.	NR	Participants were seen weekly for the first 4 weeks and then at weeks 6, 8, 12, and 16 for those withdrawn at 16 weeks of treatment. For those continuing on to 24 weeks of treatment, additional study visits occurred at weeks 18, 20 and 24.	16 weeks or 24 weeks	Immediately post treatment, 6 weeks later and 12 weeks later	24
	Individual CBT (23)	Administered by a PhD level psychologist with at least 5 years of experience treating BN.	Manual-based CBT that focused on self-monitoring of food intake, binge eating and its circumstances and purging. Cognitive restructuring was used to correct distorted cognitions like body image concerns.	NR	15, 50 minute sessions over 16 weeks and followed up to weeks 20, 24, and 28.	16 weeks	Immediately post treatment, 6 and 12 weeks later	22

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Mitchell et al. 1990[77]	Imipramine hydrochloride (54)	Physician, NOS	50 mg by mouth at bedtime, then increased over the next two weeks to 200 mg by mouth at bedtime. Subjects were maintained at that level for the next two weeks. If symptoms persisted, their dose was increased to 300 mg.	None	NR	10 weeks	Post-treatment	31
	Outpatient group psycho-therapy plus placebo (34)	Physician, NOS and NOS therapist	Intensive group treatment included 3 phases. Phase 1 focused on meal planning and CBT techniques. In phase 2, the interruption phase, the expectation was that patients would disrupt their bulimic behaviors and eat regular balanced meals. In phase 3, the stabilization phase, participants were taught how to reintroduce high risk foods and other relapse-prevention techniques. In addition, one placebo tablet by mouth at bedtime was given and increased over time.	None	Sessions were 2 two hour sessions twice a week for the first two weeks, then 5 nights a week for 3 hours for 2 weeks then tapering down to 2 sessions per week for two weeks and finally once a week for 1.5 hours in the last four weeks.	10 weeks	Post-treatment	29

BN: Bulimia nervosa
CBT: Cognitive behavioral therapy
IPT: Interpersonal psychotherapy
NOS: Not otherwise specified
SPT: Supportive psychotherapy

Table 18. Key Question 1: Internal Validity Assessment of Included Studies by Outcome of Interest

Studies	Q1. Were pts randomly assigned to study groups?	Q2. Did the study use appropriate methods of randomization?	Q3. Was there concealment of allocation?	Q4. Were methods other than randomization used to make groups comparable?	Q5. Were pts assigned to groups based on factors other than pt or phy preference?	Q6. Did pts in different study groups have similar scores on all outcome measures at assignment?	Q7. Were characteristics of pts in different groups comparable at assignment?	Q8. Were all suitable pts or consecutive suitable pts enrolled in a time period?	Q9. Was comparison of interest prospectively planned?	Q10. Were all study groups concurrently treated?	Q11. Was there a ≤5 difference between groups in ancillary treatment(s)?	Q12. Was compliance with treatment ≥85% in both groups?	Q13. Were subjects blinded?	Q14. Was the treating phy blinded?	Q15. Were outcome assessors blinded?	Q16. Were tests performed to ensure blinding?	Q17. Was the outcome objective and objectively measured?	Q18. Was the instrument used to measure the outcome standard?	Q19. Was there ≤15% difference in the length of follow-up between groups?	Q20. Did ≥85% of the pts complete the study?	Q21. Was there a ≤ 15% difference in completion rates in the study groups?	Q22. Was funding free of financial interest?	Overall Internal Validity Rating
Outcomes (Frequency of Binge Eating and Purging)																							
Leombruni et al. 2006[70]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	Y	NR	N	N	Y	N	Y	NR	**6.4**
Jacobi et al. 2002[71]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	NR	NR	N	Y	Y	N	N	Y	**6.6**
Mitchell et al. 2002[72]	Y	Y	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	NR	NR	N	Y	Y	N	Y	Y	**7.0**
Mitchell et al. 2001[73]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	NR	NR	NR	N	Y	NR	NR	NR	N	**6.4**
Goldbloom et al. 1997[74]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	NR	N	Y	Y	N	Y	N	**6.6**
Walsh et al. 1997[75]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	Y	NR	NR	Y	N	N	Y	Y	Y	N	**7.7**
Agras et al. 1992[76]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	Y	NR	N	N	Y	Y	Y	Y	**6.8**
Mitchell et al. 1990[77]	Y	N	NR	Y	Y	N	N	Y	Y	Y	Y	NR	NR	Y	N	NR	N	Y	Y	Y	N	Y	**6.6**

Studies	**Q1.** Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled in a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in the length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete the study?	**Q21.** Was there a ≤ 15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Internal Validity Rating**
Outcomes (Remission, Recovery, Quality of Life, Eating Disorder Pathology, Comorbid Psychological Symptoms, Impact on Family Members, Psychosocial Functioning)																							
Leombruni et al. 2006[70]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	Y	NR	N	N	Y	N	Y	NR	**6.4**
Jacobi et al. 2002[71]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	NR	NR	N	Y	Y	N	N	Y	**6.6**
Mitchell et al. 2002[72]	Y	Y	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	NR	NR	N	Y	Y	N	Y	Y	**7.0**
Mitchell et al. 2001[73]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	NR	NR	NR	N	Y	NR	NR	NR	N	**6.4**
Goldbloom et al. 1997[74]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	NR	N	Y	Y	N	Y	N	**6.6**
Walsh et al. 1997[75]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	Y	NR	NR	Y	N	Y	Y	Y	Y	N	**8.0**
Agras et al. 1992[76]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	Y	NR	N	Y	Y	Y	Y	Y	**7.0**
Mitchell et al. 1990[77]	Y	N	NR	Y	Y	N	N	Y	Y	Y	Y	NR	NR	Y	N	NR	N	Y	Y	Y	N	Y	**6.6**

Studies	**Q1.** Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled in a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in the length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete the study?	**Q21.** Was there a ≤ 15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Internal Validity Rating**
Outcomes (Mortality, Dropout)																							
Leombruni et al. 2006[70]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	Y	NR	Y	Y	Y	N	Y	NR	**7.0**
Jacobi et al. 2002[71]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	NR	NR	Y	Y	Y	N	N	Y	**7.0**
Mitchell et al. 2002[72]	Y	Y	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	NR	NR	Y	Y	Y	N	Y	Y	**7.5**
Mitchell et al. 2001[73]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	NR	NR	NR	Y	Y	NR	NR	NR	N	**6.8**
Goldbloom et al. 1997[74]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	NR	Y	Y	Y	N	Y	N	**7.0**
Walsh et al. 1997[75]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	Y	NR	NR	Y	Y	Y	Y	Y	Y	N	**8.4**
Agras et al. 1992[76]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	Y	NR	Y	Y	Y	Y	Y	Y	**7.7**
Mitchell et al. 1990[77]	Y	N	NR	Y	Y	N	N	Y	Y	Y	Y	NR	NR	Y	N	NR	Y	Y	Y	Y	N	Y	**6.8**

N: No
NR: Not reported
Y: Yes

Table 19. Key Question 1: Individual Results of Studies on Medication versus Medication

Study	Outcome Instrument	Group	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value 12 Weeks
Leombruni et al. 2006[70]	Vomiting (per week)	Fluoxetine (14)	4.29 (1.84)	1.57 (0.64)	1.75 (0.89 to 2.60), ≤0.001
		Citalopram (14)	2.75 (0.99)	2.44 (0.99)	
	BDI	Fluoxetine (14)	11.57 (7.03)	10.28 (13.31)	0.52 (-0.21 to 1.25), 0.17
		Citalopram (14)	14.33 (8.00)	7.83 (7.15)	
	EDI-2 drive to thinness	Fluoxetine (14)	12.71 (6.97)	9.00 (6.95)	0.06 (-0.66 to 0.78), 0.87
		Citalopram (14)	14.78 (6.33)	11.51 (7.22)	
	EDI-2 bulimia	Fluoxetine (14)	9.71 (7.01)	6.00 (6.88)	0.26 (-0.46 to 0.99), 0.48
		Citalopram (14)	7.71 (6.61)	5.76 (5.05)	
	EDI-2 body dissatisfaction	Fluoxetine (14)	15.14 (9.14)	10.00 (8.57)	0.28 (-0.44 to 1.00), 0.45
		Citalopram (14)	12.78 (7.76)	10.03 (7.74)	
	EDI-2 inadequacy	Fluoxetine (14)	10.43 (7.23)	7.86 (9.55)	0.25 (-0.47 to 0.97), 0.50
		Citalopram (14)	8.50 (6.89)	3.99 (5.09)	
	EDI-2 perfectionism	Fluoxetine (14)	5.71 (4.60)	5.71 (0.31)	0.07 (-0.65 to 0.79), 0.85
		Citalopram (14)	5.64 (4.80)	5.32 (2.94)	
	EDI-2 interpersonal distrust	Fluoxetine (14)	7.14 (5.24)	4.57 (3.88)	0.55 (-0.18 to 1.29), 0.14
		Citalopram (14)	3.57 (3.23)	3.25 (2.71)	
	EDI-2 enteroceptive awareness	Fluoxetine (14)	10.43 (5.97)	6.86 (7.16)	0.05 (-0.67 to 0.77), 0.90
		Citalopram (14)	8.86 (4.83)	5.01 (3.69)	
	EDI-2 maturity fears	Fluoxetine (14)	5.86 (4.88)	3.57 (3.08)	0.01 (-0.71 to 0.73), 0.97
		Citalopram (14)	6.86 (6.21)	4.64 (3.10)	
	EDI-2 asceticism	Fluoxetine (14)	7.57 (4.89)	6.86 (5.42)	0.20 (-0.52 to 0.93), 0.58
		Citalopram (14)	7.57 (2.87)	5.99 (2.68)	

Study	Outcome Instrument	Group	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value 12 Weeks
	EDI-2 impulsiveness	Fluoxetine (14)	8.43 (7.46)	8.71 (11.74)	0.34 (-0.39 to 1.06), 0.36
		Citalopram (14)	6.64 (6.69)	3.99 (4.76)	
	EDI-2 social insecurity	Fluoxetine (14)	8.57 (3.59)	7.57 (6.81)	0.25 (-0.48 to 0.97), 0.51
		Citalopram (14)	6.21 (3.90)	3.95 (3.85)	
	BSQ	Fluoxetine (14)	114.67 (22.30)	81.86 (43.48)	0.29 (-0.44 to 1.01), 0.44
		Citalopram (14)	113.09 (30.53)	90.21 (26.31)	
	CGI (adverse events)	Fluoxetine (14)	3.71 (1.32)	2.71 (1.07)	0.21 (-0.51 to 0.93), 0.57
		Citalopram (14)	3.64 (0.84)	2.39 (1.21)	

Note: The authors did not specify what instrument was used to measure vomiting frequency.

Note: Analysis based on completer analysis; no intent to treat analysis performed.

BDI: Beck depression inventory
BSQ: Body shape questionnaire
CGI: Clinical global impression scale
EDI: Eating disorder inventory

Table 20. Key Question 1: Dropouts in Studies of Medication versus Medication

Study	Group	Number Randomized	Overall Number of Dropouts (%)	Effect Size Odds Ratio (95% CI), p-Value
Leombruni et al. 2006[70]	Fluoxetine	18	4 (22.2)	0.80 (0.18 to 3.62), 0.77
	Citalopram	19	5 (26.3)	

Table 21. Key Question 1: Individual Results of Studies of Medication versus Psychotherapy

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Final Follow-up	Pre to Final Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
Jacobi et al. 2002[71]					16 weeks		
	Binge eating last 28 days	Fluoxetine (16)	54.2 (29.9)	31.7 (34.6)	0.33 (-0.33 to 1.01), 0.32	NR	NR
		CBT (19)	36.5 (25.8)	23.9 (27.2)			
	Vomit episodes last 28 days	Fluoxetine (16)	31.8 (25.5)	20.1 (27.1)	0.05 (-0.62 to 0.71), 0.89	NR	NR
		CBT (19)	38.5 (31.7)	25.4 (35.0)			
	EDI drive for thinness	Fluoxetine (16)	33.8 (7.1)	29.9 (9.3)	0.12 (-0.54 to 0.79), 0.72	NR	NR
		CBT (19)	31.2 (6.1)	26.3 (8.8)			
	EDI bulimia	Fluoxetine (16)	32.0 (2.6)	28.4 (6.3)	0.42 (-0.25 to 1.09), 0.22	NR	NR
		CBT (19)	30.8 (5.3)	24.5 (8.1)			
	EDI body dissatisfaction	Fluoxetine (16)	39.9 (8.4)	38.2 (11.7)	0.22 (-0.45 to 0.89), 0.52	NR	NR
		CBT (19)	37.6 (10.5)	33.7 (8.5)			
	BDI	Fluoxetine (16)	16.0 (6.7)	1.4 (9.0)	0.96 (0.25 to 1.66), 0.01	NR	NR
		CBT (19)	16.8 (8.9)	10.9 (10.6)			
	SCL-90	Fluoxetine (16)	2.0 (0.6)	1.9 (0.7)	0.33 (-0.34 to 1.00), 0.33	NR	NR
		CBT (19)	1.9 (0.6)	1.6 (0.5)			
	TFEQ – disinhibition subscale	Fluoxetine (16)	12.3 (1.5)	11.2 (3.1)	0.19 (-0.47 to 0.84), 0.58	NR	NR
		CBT (19)	11.4 (3.3)	9.7 (3.7)			
	TFEQ – restrained eating subscale	Fluoxetine (16)	26.4 (4.9)	24.7 (3.3)	0.37 (-0.29 to 1.02), 0.28	NR	NR
		CBT (19)	24.2 (4.8)	20.6 (6.2)			
	TFEQ – hunger subscale	Fluoxetine (16)	10.7 (1.8)	9.3 (3.7)	0.36 (-0.29 to 1.02), 0.28	NR	NR
		CBT (19)	8.9 (3.7)	8.8 (3.8)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Final Follow-up	Pre to Final Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
Mitchell et al. 2001[73]						20 weeks Mean Percent Change	
	Vomiting per week *	Fluoxetine (26)	16.81 (27.72)	NR	NR	52.8 (50.7)	NR
		Placebo and self-help manual (22)	13.86 (10.81)	NR		50.2 (55.0)	NR
	Binge eating per week*	Fluoxetine (26)	11.58 (6.74)	NR	NR	50.3 (52.6)	NR
		Placebo and self-help manual (22)	11.91 (10.70)	NR		59.7 (39.6)	NR
	EDI total score	Fluoxetine (26)	66.79 (16.21)	NR	NR	NR	Author's results: ANOVA for EDI and HAMD showed no evidence of a (p >0.05) treatment effect, manual effect or interaction. (p >0.15
		Placebo and self-help manual (22)	68.74 (18.48)	NR			
	HAM-D	Fluoxetine (26)	8.85 (6.83)	NR	NR	NR	Author's results: ANOVA for EDI and HAMD showed no evidence of a (p >0.05) treatment effect, manual effect or interaction. (p >0.15)
		Placebo and self-help manual (22)	10.14 (7.01)				

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Final Follow-up	Pre to Final Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
Goldbloom et al. 1997[74] **							20 weeks
	Vomiting episodes (unclear if measured by EDE or self- report)	Fluoxetine (12)	24.6 (20.4)	NR	NR	17.3 (27.2)	0.90 (0.11 to 1.68), 0.03
		CBT (14)	41.8 (34.4)			9.0 (16.8)	
	Objective Binge eating(unclear if measured by EDE or self -report)	Fluoxetine (12)	21.0 (12.2)	NR	NR	10.0 (15.9)	0.69 (-0.08 to 1.46), 0.08
		CBT (14)	33.6 (29.5)			7.4 (16.6)	
	EDE shape concern	Fluoxetine (12)	4.1 (1.0)	NR	NR	2.8 (1.8)	0.33 (-0.42 to 1.08), 0.39
		CBT (14)	3.0 (1.8)	NR		2.3 (2.0)	
	EDE weight concern	Fluoxetine (12)	3.4 (1.4)	NR	NR	2.1 (1.4)	0.27 (-0.48 t 1.02), 0.48
		CBT (14)	2.6 (1.9)			1.8 (2.2)	
	BDI	Fluoxetine (12)	16.3 (9.4)	NR	NR	13.6 (15.3)	0.14 (-0.61 to 0.89), 0.72
		CBT (14)	18.4 (11.5)	NR		13.8 (14.2)	
	RSE	Fluoxetine (12)	12	NR	NR	NR	Authors results: No significant differences between groups on RSE.
		CBT (14)	14	NR		NR	
	SAS-SR	Fluoxetine (12)	12	NR	NR	NR	Authors results: No significant differences between groups on SAS-SR.
		CBT (14)	14	NR		NR	

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Final Follow-up	Pre to Final Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
Walsh et al. 1997[75]					16 weeks		
	Binges per week (diary)	Desipramine (28)	8.32 (7.5)	2.59 (3.5)	Med vs. CBT: 0.20 (-0.34 to 0.73), 0.47 Med vs. supportive therapy: 0.52 (-0.04 to 1.07), 0.07	NR	NR
		CBT and placebo (25)	7.22 (4.0)	2.56 (3.3)			
		Supportive therapy and placebo (22)	6.18 (3.6)	3.32 (4.0)			
	Vomiting per week (diary)	Desipramine (28)	10.5 (11.0)	3.7 (5.0)	Med vs. CBT: 0.14 (-0.40 to 0.67), 0.62 Med vs. supportive therapy: 0.22 (-0.33 to 0.78), 0.43	NR	NR
		CBT and placebo (25)	10.8 (12.0)	5.6 (15.0)			
		Supportive therapy and placebo (22)	11.9 (13.0)	7.5 (10.0)			
	BSQ	Desipramine (28)	135 (38)	106 (47)	Med vs. CBT: 0.23 (-0.31 to 0.76), 0.41 Med vs. supportive therapy: 0.15 (-0.40 to 0.70), 0.60	NR	NR
		CBT and placebo (25)	132 (32)	94 (36)			
		Supportive therapy and placebo (22)	127 (31)	104 (39)			
	BDI	Desipramine (28)	14.5 (8)	8.2 (9)	Med vs. CBT: 0.16 (-0.37 to 0.69), 0.56 Med vs. supportive therapy: 0.23 (-0.32 to 0.79), 0.41	NR	NR
		CBT and placebo (25)	11.7 (10.0)	6.8 (7.0)			
		Supportive therapy and placebo (22)	14.3 (9.0)	10.2 (11.0)			
	EDE- global score	Desipramine (28)	3.34 (0.8)	2.01 (0.9)	Med vs. CBT: 0.20 (-0.33 to 0.73), 0.46 Med vs. supportive therapy: 0.28 (-0.27 to 0.84), 0.32	NR	NR
		CBT and placebo (25)	3.15 (0.7)	1.65 (0.9)			
		Supportive therapy and placebo (22)	3.02 (0.7)	1.96 (1.2)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Final Follow-up	Pre to Final Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	SCL-90 global symptom index	Desipramine (28)	1.73 (0.4)	1.41 (0.4)	Med vs. CBT: 0.22 (-0.31 to 0.75), 0.42 Med vs. supportive therapy: 0.40 (-0.15 to 0.96), 0.16	NR	NR
		CBT and placebo (25)	1.69 (0.5)	1.47 (0.5)			
		Supportive therapy and placebo (22)	1.66 (0.3)	1.51 (0.5)			
	SCL-90 anxiety	Desipramine (28)	1.55 (0.5)	1.29 (0.4)	Med vs. CBT: 0.12 (-0.42 to 0.65), 0.67 Med vs. supportive therapy: 0.23 (-0.32 to 0.78), 0.42	NR	NR
		CBT and placebo (25)	1.57 (0.6)	1.37 (0.5)			
		Supportive therapy and placebo (22)	1.56 (0.5)	1.41 (0.5)			
	TFEQ – disinhibition subscale	Desipramine (28)	13.2 (2.6)	9.7 (4.9)	Med vs. CBT: 0.05 (-0.49 to 0.58), 0.86	NR	NR
		CBT and placebo (25)	13.5 (1.6)	10.2 (4.8)			
		Supportive therapy and placebo (22)	12.0 (2.5)	9.6 (3.5)			
	TFEQ – restrained eating subscale	Desipramine (28)	12.6 (4.7)	13.3 (4.3)	Med vs. CBT: 0.18 (-0.35 to 0.71), 0.51	NR	NR
		CBT and placebo (25)	13.7 (4.1)	13.6 (4.5)			
		Supportive therapy and placebo (22)	12.4 (3.5)	11.8 (3.9)			
	TFEQ – hunger subscale	Desipramine (28)	8.61 (3.5)	6.3 (4.2)	Med vs. CBT: 0.06 (-0.48 to 0.59), 0.84	NR	NR
		CBT and placebo (25)	9.6 (3.1)	7.09 (3.4)			
		Supportive therapy and placebo (22)	7.0 (3.8)	6.53 (4.5)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Final Follow-up	Pre to Final Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
Agras et al. 1992[76] Note: Final follow-up is 16 weeks out for 16 week treatment and 8 weeks out for 24 week treatments					16 or 24 weeks		32 weeks
	Binge eating(7 day recall) intent to treat	Desipramine 16 wks (12)	5.5 (4.6)	3.5 (6.1)	Med 16 wks vs. Med 24 wks: 0.23 (-0.54 to 1.01), 0.56 Med 16 wks vs. individual CBT: 0.61 (-0.09 to 1.30), 0.09 Med 24 wks vs. individual CBT: 0.44 (-0.25 to 1.13), 0.21	6.2 (13.7)	Med 16 wks vs. Med 24 wks: 0.35 (-0.43 to 1.13), 0.38 Med 16 wks vs. individual CBT: 0.78 (0.08 to 1.49), 0.03 Med 24 wks vs. individual CBT: 0.61 (-0.09 to 1.30), 0.09
		Desipramine 24 weeks (12)	5.9 (5.1)	2.7 (2.8)		3.3 (3.9)	
		Individual CBT (23)	8.7 (7.2)	2.8 (5.9)		2.5 (3.6)	
	Purging (7 day recall) intent to treat	Desipramine 16 wks (12)	9.7 (9.4)	4.7 (8.6)	Med 16 wks vs. Med 24 wks: 0.22 (-0.56 to 0.99), 0.58 Med 16 wks vs. individual CBT: 0.30 (-0.38 to 0.99), 0.39 Med 24 wks vs. individual CBT: 0.63 (-0.07 to 1.33), 0.08	6.2 (13.7)	Med 16 wks vs. Med 24 wks: 0.06 (-0.71 to 0.84), 0.87 Med 16 wks vs. individual CBT: 0.48 (-0.21 to 1.18), 0.17 Med 24 wks vs. individual CBT: 0.81 (0.10 to 1.52), 0.03
		Desipramine 24 weeks (12)	6.3 (4.9)	2.9 (3.0)		3.4 (4.1)	
		Individual CBT (23)	10.1 (7.7)	2.7 (5.9)		2.2 (3.6)	

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Final Follow-up	Pre to Final Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
Mitchell et al. 1990[77]					12 weeks		
	Self-report binges/week	Imipramine (45)	7.3 (NR)	3.7 (NR)	Author's results: ANCOVA p = 0.0001 for group therapy; p = 0.004 for drug treatment and p = 0.004 for the interaction term.	NR	NR
		Intensive group psychotherapy plus placebo (33)	9.2 (NR)	1.0 (NR)			
	Self-report vomiting episodes/week	Imipramine (45)	8.6 (NR)	4.7 (NR)	Author's results: ANCOVA p = 0.0001 for group therapy; p = 0.04 for drug treatment and p = 0.0003 for the interaction term.	NR	NR
		Intensive group psychotherapy plus placebo (33)	13.2 (NR)	1.3 (NR)			
	HAM-D	Imipramine (45)	11.6 (NR)	7.0 (NR)	Author's results: ANCOVA p = 0.0001 for group therapy; p = 0.004 for drug treatment and p = 0.84 for the interaction term.	NR	NR
		Intensive group psychotherapy plus placebo (33)	9.5 (NR)	4.2 (NR)			
	HAM-A	Imipramine (45)	6.0 (NR)	3.8 (NR)	Author's results: ANCOVA p = 0.0001 for group therapy; p = 0.02 for drug treatment and p = 0.96 for the interaction term.	NR	NR
		Intensive group psychotherapy plus placebo (33)	5.5 (NR)	2.7 (NR)			
	Global severity	Imipramine (45)	4.2 (NR)	3.52 (NR)	Author's results: ANCOVA p = 0.0001 for group therapy; p = 0.07 for drug treatment and p = 0.14 for the interaction term.	NR	NR
		Intensive group psychotherapy plus placebo (33)	4.03 (NR)	2.58 (NR)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Final Follow-up	Pre to Final Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	Global improvement	Imipramine (45)	3.84 (NR)	3.02 (NR)	Author's results: ANCOVA p = 0.0001 for group therapy; p = 0.002 for drug treatment and p = 0.74 for the interaction term.	NR	NR
		Intensive group psychotherapy plus placebo (33)	3.91 (NR)	2.82 (NR)			
	EDI total score	Imipramine (45)	67.4 (NR)	49.6 (NR)	Author's results: ANCOVA p = 0.0001 for group therapy; p = 0.005 for drug treatment and p = 0.19 for the interaction term.	NR	NR
		Intensive group psychotherapy plus placebo (33)	60.9 (NR)	28.5 (NR)			

* Based on patients with at least one post randomization visit.
** Analysis based on data from patients who completed treatment

ANCOVA: Analysis of covariance
BDI: Beck depression inventory
BSQ: Body shape questionnaire
CBT: Cognitive behavioral therapy
EDE: Eating Disorder Examination
EDI: Eating Disorder Inventory
HAM-A: Hamilton anxiety scale
HAM-D: Hamilton depression scale
NR: Not reported
RSE: Rosenberg self-esteem scale
SAS-SR: Social adjustment scale revised
SCL-90: Symptom checklist
SD: Standard deviation
TFEQ: Three factor eating questionnaire

Table 22. Key Question 1: Remission (Past 28 days) Rates Reported in Medication versus Psychotherapy Studies

Study	Group (n)	Number at Post-treatment/ Total Number in Group (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Number at Final Follow-up/ Total Number in Group (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
Jacobi et al. 2002[71] [b]	Fluoxetine (16)	2 (12.5) binge eating	0.40 (0.07 to 2.42), 0.32	NR	NR
	CBT (19)	5 (6.3) binge eating			
	Fluoxetine (16)	1 (0.6) vomiting	0.11 (0.01 to 1.06), 0.06	NR	NR
	CBT (19)	7 (36.8) vomiting			
Mitchell et al. 2002[72] [a]	Fluoxetine (31)	3 (10)	0.56 (0.12 to 2.57), 0.45	3 (10)	0.56 (0.12 to 2.57), 0.45
	IPT (31)	5 (16)		5 (16)	
Mitchell et al. 2001[73] [b]	Fluoxetine	NR	NR	4 (16)	0.62 (0.14 to 2.67), 0.52
	Self-help manual and placebo (22)	NR		5 (24)	
Goldbloom et al. 1997[74] [b]	Fluoxetine (12)	NR	NR	2 (17)	0.27 (0.04 to 1.70), 0.16
	CBT (14)	NR		6 (43)	
Walsh et al. 1997[75]	Desipramine (20)	5 (25)	Med vs. CBT: 1.44 (0.29 to 7.25), 0.66 Med vs. supportive therapy: 2.50 (0.42 to 14.96), 0.32	NR	NR
	CBT and placebo (16)	3 (19)		NR	
	Supportive therapy and placebo (17)	2 (12)		NR	
Mitchell et al. 1990[77] (Author definition of remission: free of bulimic symptoms for the last two weeks; appears % was based on patients with final follow-up visits data)	Imipramine (31)	5 (16)	NR	NR	NR
	Placebo plus intensive group psychotherapy (29)	NR			

[a] Analysis based on intent-to-treat sample
[b] Analysis based on number of patients who completed treatment

CBT: Cognitive behavioral therapy
CI: Confidence interval
NR: Not reported

Table 23. Key Question 1: Dropouts in Studies of Medication versus Psychotherapy

Study	Group	Number Randomized	Overall Number of Dropouts (%)	Effect Size Odds Ratio (95% CI), p-Value
Jacobi et al. 2002[71]	Fluoxetine	16	4 (25)	0.46 (0.11 to 1.96), 0.29
	CBT	19	8 (42.1)	
Mitchell et al. 2002[72]	Fluoxetine	31	16 (51.6)	1.48(0.54 to 4.03), 0.45
	IPT	31	13 (42)	
Mitchell et al. 2001[73]	Fluoxetine	91 (all groups combined)	8 (8.8)	NR
	Placebo and self-help manual			
Goldbloom et al. 1997[74]	Fluoxetine	23	14 (60.9)	0.78 (0.24 to 2.56), 0.68
	CBT	24	16 (66.7)	
Walsh et al. 1997[75]	Desipramine	28	12 (43)	Med vs. CBT: 1.33 (0.44 to 4.04), 0.61
	CBT and placebo	25	9 (36)	
	Supportive therapy and placebo	22	6 (27)	Med vs. supportive therapy: 2.00 (0.60 to 6.64), 0.26
Agras et al. 1992[76]	Desipramine 16 weeks	71 (all study groups combined)	13 (18)	NR
	Individual CBT			
Mitchell et al. 1990[77]	Imipramine	54	23 (43)	4.30 (1.44 to 12.82), 0.01
	Placebo plus intensive group psychotherapy	34	5 (15)	

CBT: Cognitive behavioral therapy
CI: Confidence interval
IPT: Interpersonal psychotherapy
NR: Not reported

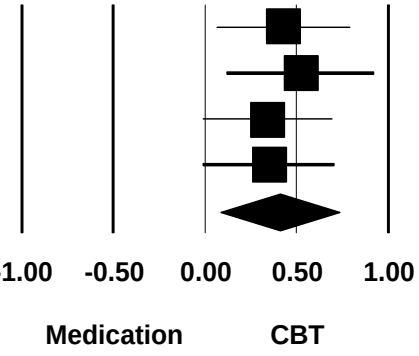
Table 24. Key Question 1: Meta-analyses Findings

Studies Combined	Treatment	Outcome	Summary Effect-size Estimate Hedges' g (95% CI), p-Values	Strength-of-evidence	I^2/tau^2
Agras 1992[76] Walsh 1997[75] Jacob 2002[71] Goldbloom 1997[74]	Desipramine or fluoxetine vs. CBT	Vomit/purge frequency	0.281 (-0.051 to 0.613), 0.097	Insufficient	0.00%/0.00
Walsh 1997[75] Jacobi 2002[71] Goldbloom 1997[74]	Desipramine or fluoxetine vs. CBT	Depression (using the BDI)	0.395 (-0.105 to 0.895), 0.122	Insufficient	67.4%/0.203
Walsh 1997[75] Jacobi 2002[71]	Desipramine or fluoxetine vs. CBT	Three Factor Eating Questionnaire: Disinhibition subscale	0.10 (-0.31 to 0.51), 0.63	Insufficient	0.00%/0.00
Walsh 1997[75] Jacobi 2002[71]	Desipramine or fluoxetine vs. CBT	Three Factor Eating Questionnaire: restrained eating subscale	0.25 (-0.16 to 0.67), 0.23	Insufficient	0.00%/0.00
Walsh 1997[75] Jacobi 2002[71]	Desipramine or fluoxetine vs. CBT	Three Factor Eating Questionnaire: Hunger subscale	0.18 (-0.24 to 0.59), 0.40	Insufficient	0.00%/0.00
Jacobi 2002[71] Goldbloom 1997[74] Walsh 1997[75]	Desipramine or fluoxetine vs. CBT	Dropout	Odds ratio: 0.86 (0.42 to 1.74), 0.67	Insufficient	0.00%/0.00

BDI: Beck depression inventory
CBT: Cognitive behavioral therapy
CI: Confidence interval

Figure 16. Key Question 1: Sensitivity Analysis of Meta-analysis of Binge Eating

Study Name	Point	Lower Limit	Upper Limit	p-Value
2002 Jacobi	0.428	0.057	0.799	0.024
1997 Walsh	0.524	0.118	0.929	0.011
1997 Goldbloom	0.342	-0.013	0.697	0.059
1992 Agras	0.349	-0.016	0.713	0.061
Summary Estimate	0.404	0.081	0.726	0.014



Random effects meta-analysis

Appendix F. Evidence Tables Key Question 2

Table 25. Key Question 2: Study Enrollment Details

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Patients Considered for Enrollment	Number of Pts Eligible for Enrollment	Number of Pts Randomized	% of Pts Considered Who Were Randomized
CBT versus Other Psychotherapy						
Agras et al. 2000[78]	Meets DSM-III-R criteria for BN	Associated physical or psychiatric conditions, current AN, current psychotherapeutic treatment, all psychotropic medication, pregnancy, and previous CBT/IPT treatment.	399	304	220	55
Walsh et al. 1997[75]	Females aged 18 to 45 years with weights between 80% and 120% of ideal; met DSM-III-R criteria for BN for at least one year; self-induced vomiting was primary method of compensating for binge eating	Medically ill, evidence of cardiac conduction disease, pregnant, abused drugs or alcohol within the past year, judged to be acutely suicidal, or had previously had an adverse reaction to either desipramine or fluoxetine	209	149	120	57.4
Cooper and Steere 1995[79]	Meets DSM-III-R criteria for BN	NR	31	31	31	100
Garner et al. 1993[80]	Meets Russell criteria for BN, DSM-III-R criteria for BN with binges not requiring large amounts of food; minimum of 2 episodes of vomiting/week for past month; minimum duration of BN for 1 year; present weight between 85% and 120% of populations mean weight; age between 18 and 35 years; no concurrent treatment for BN; informed consent.	NR	92	60	60	65

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Patients Considered for Enrollment	Number of Pts Eligible for Enrollment	Number of Pts Randomized	% of Pts Considered Who Were Randomized
Wolf and Crowther 1992[81]	Meets DSM-III or III-R criteria for BN	History of previous CBT/BT or currently engaging in any concurrent treatment	65	55	42 of which 30 were assigned to CBT or BT and 11 to waitlist	65
Fairburn et al. 1991[82]	Female age 17 years or older; met diagnostic criteria for BN; not significantly underweight (BMI >17); and gave informed consent	NR	127	83	75	59
Freeman et al. 1988[16]	Female age 18 years or older; met DSM-III criteria for BN, established bulimia, and have binged 3 times the past month. Participants must agree to stay in Edinburgh, Scotland for length of study (4 months) and keep detailed diaries of eating and bulimic behavior.	Psychotic illness	112	112	92 (20 wait list control)	82
Fairburn et al. 1986[83]	Female age 17 years or older; met diagnostic criteria for BN; weight above 79% of the matched population mean weight; and gave informed consent	Coexisting major psychiatric disorder other than depression, anxiety, or obsessional state; current physical dependence on alcohol or drugs, need for hospitalization; on-going treatment from another source; and not being available for full course of treatment and follow-up.	46	35	24	52
Variations in the Delivery of CBT						
Mitchell et al. 2008[6]	Age 18 years or older, met DSM-IV criteria for BN or EDNOS with one of the following: (1) DSM-IV criteria for BN except binge eating/purging at a minimum frequency of once per week; (2) DSM-IV criteria for BN with only subjective binge eating episodes.	Body weight less than 85% ideal weight, received a change in prescribed psychotropic medication in previous 6 weeks, had ever received 8 or more sessions of CBT, abused alcohol or drugs in the previous 6 months or dependent in the previous 1 month, were pregnant, had a significant medical illness, significant risk of suicide, or past diagnosis of schizophrenia or bipolar disorder.	142	142	128	90

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Patients Considered for Enrollment	Number of Pts Eligible for Enrollment	Number of Pts Randomized	% of Pts Considered Who Were Randomized
Ghaderi, A. 2006[84]	Age 18 years or older, met DSM-IV criteria for BN, and BMI >18	Coexisting major psychiatric disorder other than depression, anxiety, or personality disorder; current physical dependence on alcohol or drugs, need for hospitalization; on-going treatment from another source; and not being available for full course of treatment and follow-up.	146	68	50	34
Nevonen and Broberg 2006[85]	Female age 18 to 24 years, met DSM-IV criteria for BN, willing to accept either group or individual treatment, and had a BMI >18 kg/m^2	Current alcohol and/or drug abuse, current psychotic disorder, currently receiving psychopharmacology and/or psychotherapy, and suicidal behavior	137	86	86	63
Chen et al. 2003[86]	Female age 18 years or older; met DSM-IV diagnostic criteria for BN, had a body mass index (BMI) between 19 and 27, and gave informed consent.	Patients currently receiving treatment for BN, suicide risk or medically compromised, met diagnosis for other mental illness, or could not able to be present for study.	153	94	71	46
Mitchell et al. 1993[87]	Female age 18 years or older; minimum of 85% of ideal body weight; not currently receiving pharmacotherapy or psychotherapy for BN or other condition; met DSM-III-R criteria for BN; not diagnosed with another major psychiatric disorder; and not actively abusing drugs or alcohol.	NR	NR	NR	NR	NR

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Patients Considered for Enrollment	Number of Pts Eligible for Enrollment	Number of Pts Randomized	% of Pts Considered Who Were Randomized
Self-help						
Bailer et al. 2004[88]	Met DSM-IV diagnostic criteria for BN	Medically unstable or considered to be at severe suicide risk at the time of enrollment	87	87	81	93
Durand and King 2003[89]	Female age 18 years or older, met DSM-IV criteria for BN, English speaking, and referred by general practitioner	Pregnant, co-occurring medical disorder, current substance abuse problem, and/or evidence of suicidal intent.	209	68	68	32
Thiels et al. 1998[91] Thiels et al. 2003[90 a]	Age 15 years or older, met DSM-III-R, and gave informed consent	NR	NR	NR	62	Unable to calculate

[a] Same patient population

AN: Anorexia nervosa
BMI: Body mass index
BN: Bulimia nervosa
BT: Behavioral therapy
CBT: Cognitive behavioral therapy
IPT: Interpersonal psychotherapy
NR: Not reported

Table 26. Key Question 2: Baseline Characteristics of Enrolled Patients

Study	Group (n)	% Female	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episodes (SD)	Mean frequency of purging episodes (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of drug or alcohol abuse (%)	Number of pts with history of attempted suicide (%)
CBT versus Other Psychotherapy															
Agras et al. 2000[78]	CBT (110)	100	28.3 (7.0)	Binge Eating: 11.5 (7.5) Purging: 10.0 (7.2)	22.7 (4.2)	Median 24.5	Median 33	NR	NR	26 (24)	54 (49)	22 (20)	NR	29 (26)	NR
	IPT (110)		27.9 (7.5)	Binge Eating: 11.4 (7.6) Purging: 9.7 (6.4)	23.2 (5.2)	Median 25.5	Median 49			26 (24)	63 (57)	25 (23)	NR	22 (20)	
Walsh et al. 1997[75]	CBT (25)	100	25.8 (4.4)	8.00 (4.0)	22.1 (2.1)/kg	7.22 (4.0)/wk	NR	11.9 (13)/wk	NR	6 (27)	NR	2 (9.0)	NR	NR	NR
	SPT (22)		26.9 (4.3)	7.55 (3.7)	21.7 (2.2)/kg	6.18 (3.6)/wk		10.5 (11)/wk		9 (32)		8 (29)			
Cooper and Steere 1995[79]	CBT (13)	100	23.8	19.6 (avg)	98.9% MPMW	26.3	NR	36.1 (37.8)	NR	NR	NR	NR	NR	NR	NR
	ERP (14)							79.9 (149.1)							
Garner et al. 1993[80]	CBT (25)	100	23.7 (4.4)	5.9 (3.9)	126.4 (16.4) lbs	26.3 (30.2)/ 28 days	NR	41.4 (38.7)/ 28 days	NR	NR	NR	NR	NR	NR	NR
	SET (25)		24.6 (4.0)	5.9 (3.3)	126.6 (13.1) lbs	31.1 (20.3)/ 28 days		44.1 (30.5)/ 28 days							

Study	Group (n)	% Female	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episodes (SD)	Mean frequency of purging episodes (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of drug or alcohol abuse (%)	Number of pts with history of attempted suicide (%)
Wolf and Crowther 1992[81]	CBT (15)	100	25.1 (8.6)	Binge Eating 6.7 (7.9) Purging: 4.3 (3.5)	NR [b]	9.4 (6.7)/14 days	10.7 (8.9)/14 days	NR	NR	NR	NR	NR	NR	NR	NR
	BT (15)		26.5 (8.1)	Binge Eating: 8.9 (9.6) Purging: 6.4 (3.8)		16.7 (18.9)/14 days	15.7 (20.0)/14 days								
Fairburn et al. 1991[82]	CBT (25)	100	24.2 (95% CI: 22.8 to 25.6)	NR	22.2	18.1 (95% CI: 12.2 to 26.5)/28 days	NR	28.5 (95% CI: 18.1 to 44.6)/28 days	4.7 (95% CI: 1.4 to 12.6)/28 days	27 (34)	NR	NR	NR	11 (14.6)	NR
	IPT (25)					16.4 (95% CI: 12.1 to 22.1)/28 days		16.4 (95% CI: 9.9 to 26.6)/28 days	13.7 (95% CI: 6.4 to 28.2)/28 days						
	BT (25)					14.9 9 (95% CI: 9.6 to 22.7)/28 days		18.5 (95% CI: 10.1 to 33.3)/28 days	13.1 (95% CI: 93.9 to 39.4)/28 days						

Study	Group (n)	% Female	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episodes (SD)	Mean frequency of purging episodes (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of drug or alcohol abuse (%)	Number of pts with history of attempted suicide (%)
Freeman et al. 1988[16]	CBT (32)	100	24.2 (5.6)	18.2 (4.6)	108.2% MPMW (16.1)	6.2 (5.0)/wk	NR	7.4 (10.7)/wk	6.2 (13.3)/wk	NR	NR	NR	8 (7)	4 (3)	4 (3)
	BT (30)					4.6 (3.4)/wk		3.6 (4.3)/wk	5.1 (13.0)/wk						
	Group therapy (30)					6.3 (4.5)/wk		8.9 (9.6)/wk	14.6 (49.8)/wk						
Fairburn et al. 1986[83]	CBT (12)	100	22.9 (4.4)	20.0 (4.2)	96.9% MPMW (9.4)	Median 24	NR	Median 42	NR	9 (37.5)	6 (25)	NR	NR	0	NR
	Short-term therapy (12)					Median 20	NR	Median 33	NR						
Variants of CBT															
Mitchell et al. 2008[6]	FTF-CBT (66)	97.0	29.6 (10.9)	NR	23.3 (5.0)	21.9 (27.3)	NR	31.3 (34.3)	NR	NR	45 (68.2)	13 (19.7)	NR	12 (18.2)	NR
	TV-CBT (62)	100	28.4 (10.4)	NR	23.5 (5.4)	19.1 (24.7)	NR	28.5 (28.3)	NR	NR	45 (76.2)	22 (35.5)	NR	17 (27.4)	NR
Ghaderi, A. 2006[84]	Focused CBT (24)	NR	27.2 (7.8)	9.2 (6.3)	25 (5.1)	12 (7.2) 28 days	NR	12.8 (17.6)/28 days	NR	NR	NR	8 (16)	NR	NR	NR
	Manual based CBT (26)					18 (18.7) 28 days		15.0 (20.4)/ 28 days							

Study	Group (n)	% Female	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episodes (SD)	Mean frequency of purging episodes (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of drug or alcohol abuse (%)	Number of pts with history of attempted suicide (%)
Nevonen and Broberg 2006[85]	ICBT to IPT (42)	100	20.3 (2.0)	4.5 (2.8)	21.9 (2.1)	3.9 (1.9) days/wk	3.6 (2.7) days/wk	NR	NR	NR	NR	NR	NR	NR	NR
	GCBT to IPT (40)		21.1 (2.0)	5.1 (2.9)	21.5 (2.1)	3.7 (1.9) days/wk	2.8 (2.8) days/wk								
Chen et al. 2003[86]	GCBT (30)	100	25.8 (7.24)	NR	22.19 (2.81)	30.12 (24.54)/ 28 days n = 60	NR	36.54 (42.06)/ 28 days n = 55	2.22 (4.72)/ 28 days n = 3	NR	39 (65)	NR	16[a] (30)	19 (32)	See [a]
	ICBT (30)														
Mitchell et al. 1993[87 c]	High/ High CBT (33)	100	25.8 (6.8)	8.8 (5.7)	NR	9.02 (5.4)/wk	NR	9.41 (7.1)/wk	1.20 (2.6)/wk	NR	NR	NR	NR	NR	NR
	High/ Low CBT (41)		25.6 (6.0)	7.8 (5.0)		8.24 (5.8)/wk		10.6 (8.3)/wk	1.54 (6.9)/wk						
	Low/ High CBT (35)		26.4 (5.7)	8.6 (6.1)		10.3 (7.0)/wk		10.8 (9.2)/wk	1.47 (5.0)/wk						
	Low/ Low CBT (34)		25.7 (6.8)	9.1 (7.6)		8.66 (4.8)/wk		9.63 (7.2)/wk	1.56 (4.5)/wk						

Study	Group (n)	% Female	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episodes (SD)	Mean frequency of purging episodes (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of drug or alcohol abuse (%)	Number of pts with history of attempted suicide (%)
Self-help															
Bailer et al. 2004[88]	GCBT (41)	NR	24.2 (4.9)	NR	20.7 (2.4)	27.9 (29.7)/ 4 wks	NR	30.4 (32.8)/ 4 wks	17.6 (9.4)/ 4 wks	17 (41.4)	24 (58.5)	11 (26.8)	10 (24.3)	NR	9 (21.9)
	GSH (40)		23.4 (4.1)		21.7 (3.1)	26.2 (21.5)/ 4 wks		21.2 22.8)/ 4 wks	20.3 (24.8)/ 4 wks	9 (22.4)	12 (30)	2 (5)	15 (37.5)		2 (5)
Durand and King 2003[89]	Clinic	100	24.5 (5.2)	5.9 (3.9)											
	GP-GSH		28.3 (6.5)	7.7 (4.6)											
Thiels et al. 1998[91]	ICBT (31)	NR	28.7 (9.1)	8.5 (9.2)	21.3 (3.1)	NR	NR	NR	NR	14 (45)	12 (39)	0	NR	4 (13)	NR
Thiels et al. 2003[90 d]	GSH (31)		27.5 (6.9)	6.1 (5.6)	22.6 (3.9)					13 (42)	9 (29)	2 (6.4)	NR	1 (3.2)	NR

[a] Includes individuals who attempted suicide.
[b] Authors indicate that overall the study population fell within normal weight ranges according to the norms of the Metropolitan Life Insurance Company.
[c] This study assessed the intensity of dose (measured in hours of delivery) and emphasis on abstinence. The high/high group received more hours of treatment and high emphasis on early abstinence, the high/low group received fewer hours but more emphasis on abstinence, the low/high group received more hours but less emphasis on abstinence, and the low/low group received fewer hours and less emphasis on abstinence.
[d] Same patient population.

BMI: Body mass index
BN: Bulimia nervosa
BT: Behavioral therapy
CBT: Cognitive behavioral therapy
d/m: Days per month
ERP: Event response prevention
FTF-CBT: Face to face-CBT
GCBT: Group cognitive behavioral therapy
GP: General practitioner
GSH: Guided self-help
ICBT: Individual cognitive behavioral therapy
IPT: Interpersonal psychotherapy
IND: Individual
lbs: Pounds
kg: Kilogram
MPMW: Matched population mean weight
NR: Not reported
SD: Standard deviation
SET: Supportive expressive therapy
SPT: Supportive psychotherapy
SET: Self expressive therapy
TV-CBT: Telemedicine-CBT
Wk: Week

Table 27. Key Question 2: Characteristics of Treatment

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
CBT versus Other Psychotherapy								
Agras et al. 2000[78]	CBT (110)	Doctorate level psychologists/ psychiatrist; Outpatient university setting	Manualized treatment consisting of three phases; Focuses on patient education, correcting dysfunctional cognitions and avoidance behaviors; and maintaining new behavior	None	19 individual sessions lasting 50 minutes	20 weeks	Post-treatment 4 mo, 8 mo, 12 mo	76 at 4 mo; 77 at 8- and 12-mo
		Same as above						
	IPT (110)	Same as above	Klerman-modified manualized treatment administered over three phases; two phases focusing on analyzing the development and maintenance of BN, last phase focuses on progress and means to handle future setbacks.	None	Same as above	Same as above	Same as above	77 at 4 mo; 74 at 8- and 12-mo
Walsh et al. 1997[75]	CBT (25)	Three therapists (one psychiatrist, one doctorate-level psychologist, and one master's level psychologist)	Manual based (Wilson 1989) modified Fairburn; patients were taught to identify possible triggers to binge eating and purging, how to normalize eating patterns, learn problem solving skills for coping in future, and importance in maintaining improved behaviors	NR	20 sessions (length NR)	16 weeks	18 weeks	25
	SPT (22)	Same as above	Manual based modified Fairburn; patients were asked to identify potential family issues that may be causing BN, express feelings and be independent. Termination of therapy was also discussed.		Same as above	Same as above	Same as above	22

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Cooper and Steere 1995[79]	CBT (13)	Authors as therapists; University setting	First phase instructed patients on importance of monitoring their eating habits and incorporating several behavioral techniques to gain better control of eating. Second phase followed Fairburn's program except no behavioral instructions or assignments were given to reduce dietary restraint. Third phase (Fairburn) focused on maintenance.	NR	19 individual sessions lasting 50 minutes	18 weeks	Week 9, week 18, 12 mo	15 at 9 weeks; 13 at 18 weeks; 12 at 12 mo
	ERP (14)	Same as above	First phase (same as CBT). Second phase (modified Rosen and Leitenberg) included a dual focus on prevention of binge eatingand vomiting. Third phase (same as CBT).	NR	Same as above	Same as above	Same as above	16 at 9 weeks; 14 at 18 weeks; 13 at 12 mo
Garner et al. 1993[80]	CBT (30)	Clinicians (5 MDs & 5 PhDs); Outpatient hospital setting	Fairburn-manual based treatment supplemented by Beck et al. techniques; involved self-monitoring	NR	19 individual sessions lasting 45-60 minutes	16 weeks	Post-treatment 3 mo, 6 mo, 12 mo	Study reported on 25 patients immediately following treatment
	SET (30)	Same as above	Luborsky-manual based treatment supplemented by psychodynamic writings on eating disorders; approach assumes that the BN symptoms have underlying interpersonal problems; involves self-monitoring and avoidance of specific advice	NR	Same as above	Same as above	Same as above	Same as above

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Wolf and Crowther et al. 1992[81]	CBT (15)	1 therapist, a doctoral student with 4 years clinical experience, provided both therapies; outpatient university setting	Treatment focused on both techniques to modify eating habits and to address concerns about shape and weight.	None	10 group sessions lasting 2 hours	8 weeks	Post-treatment 1 mo, 3 mo	15
	BT (15)	Same as above	Treatment focused exclusively on techniques to modify eating habits, including self-monitoring, nutrition management, and goal setting.	None	Same as above			15
Fairburn et al. 1991[82]	CBT (25)	6 therapists- 4 psychiatrists and 2 psychologist trained in each treatment condition and treated equal amount of patients in each treatment group all within an outpatient setting	Followed manual developed by Fairburn and colleagues that was specifically designed to treat patients with bulimia (CBT-BN). Treatment focused on behavioral and cognitive techniques to modify eating habits and concerns about shape and weight.	None	19 individual sessions lasting 50 minutes	18 weeks	4.2 mo	21
	IPT (25)	Same as above	Based on treatment model developed by Klerman and colleagues for depression. It is a psychodynamically oriented therapy that focuses on the patient current circumstances and relationships.	None	Same as above	Same as above	Same as above	21
	BT (25)	Same as above	Dismantled version of CBT-BN that focused exclusively on techniques to modify eating habits.	None	Same as above	Same as above	Same as above	18

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Freeman et al. 1988[16]	CBT (32)	Two trained female therapists in hospital setting	Focus on identifying dysfunctional behavior and respond with more positive behavior.	None	15 sessions lasting 60 minutes	15 weeks	3 mo, 6 mo, 9 mo, 12 mo	55 at 3 mo, 38 at 6 mo, 28 at 9 mo, 24 at 12 mo
	BT (30)	Same as above	Treatment focused on helping to reestablish normal eating patterns and to teach coping strategies.	None	Same as above	Same as above	Same as above	Same as above
	Group Therapy (30)	Same as above	Focus on education and mutual support. Therapist's role non-directive.	None	Same as above	Same as above	Same as above	Same as above
Fairbun et al. 1986[83]	CBT (12)	Trained therapist in outpatient setting	Followed manual developed by Fairburn and colleagues that was specifically designed to treat patients with bulimia (CBT-BN). Treatment focused on behavioral and cognitive techniques to modify eating habits and concerns about shape and weight.	None	19 individual sessions lasting 50 minutes	18 weeks	Post-treatment 4 mo, 8 mo, 12 mo	11
	Short-term therapy (12)	Same as above	Based on Rosen's method of structured brief psychotherapy and Stunkard's psychotherapeutic approach to treating overweight people who binge eat. Primary aim was to help patients understand how eating problems are maladaptive responses to underlying problems.	None	Same as above	Same as above	Same as above	11

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Variants of CBT								
Mitchell et al. 2008[6]	FTF-CBT	6 doctoral level psychologists with training and prior experience in delivering CBT based on Fairburn's manual. All therapists delivered both treatment conditions	Face to face CBT was based on manual developed by Fairburn and colleagues.	NR	20 sessions	16 weeks	Post-treatment 3 mo, 12 mo	39 at post-treatment 35 at 3 mo 25 at 12 mo
	TV-CBT	Same as above	Telemedicine CBT was based on manual developed by Fairburn and colleagues and was delivered using a telemedicine system linking a regional healthcare system facility using T1 lines. Units were placed to mimic the interpersonal distance and height equality used in FTF therapy.	NR	Same as above	Same as above	Same as above	41 at post-treatment, 37 at 3 mo, 27 at 12 mo
Ghaderi, A. 2006[84]	Focused CBT (24)	Single therapist delivered both treatments on a outpatient basis	Followed an individualized form of CBT based on logical functional analysis for each individual patient. The content of each session was defined according to what the analysis indicated was perpetuating the BN (e.g., trauma, abuse, interpersonal relationships)	None	19 weekly, individual sessions lasting 50 minutes	19 weeks	Post-treatment 6 mo	48 at both post-treatment and follow-up Number who dropped in each group NR
	Manual based CBT (26)	Same as above	Followed manual developed by Fairburn and colleagues that focuses on the specific psychopathology of BN	None	Same as above	Same as above	Same as above	

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Nevonen and Broberg 2006[85]	ICBT to IPT (42)	Four senior psychotherapist authorized to treat individuals with eating disorders were randomly assigned to either and then rotated. Treatment provided in outpatient setting.	Adapted treatment manual followed in the GRP group, which was based on published manuals for CBT and IPT, for individual treatment.	11 received antidepressant	23 individual sessions lasting 50 to 60 minutes	23 weeks	Post-treatment 12 mo, 2.5 years	40 at post-treatment 38 at 12 mo 38 at 2.5 years
	GCBT to IPT (40)	Same as above	Followed a detailed treatment manual based on published manuals for CBT and IPT.	5 received antidepressant	20 group sessions (2x/week first 3 weeks and once/week for 17 weeks) lasting 2 hours	20 weeks	Same as above	34 at post-treatment, 36 at 12 mo, 31 at 2.5 years
Chen et al. 2003[86]	ICBT (30)	Lead author, a clinical psychology graduate student with 2 yrs experience in GCBT and ICBT. Treatment provided in outpatient setting.	Followed manual developed by Fairburn and colleagues that was specifically designed to treat patients with bulimia (CBT-BN). Treatment focused on behavioral and cognitive techniques to modify eating habits and concerns about shape and weight.	None	19 individual sessions lasting 50 minutes	18 weeks	6 mo	n at 6 mo not reported; 22 completed 18 weeks treatment
	GCBT (30)	Same as above	Modified Fairburn and colleagues manualized CBT-BN to fit a group format	None	19 group sessions lasting 50 minutes	Same as above	Same as above	Same as above

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Mitchell et al. 1993[87 a]	High/ High CBT (33)	Overall three therapist provided treatment, each one rotated among treatment conditions. Treatment provided in outpatient setting.	Treatment used two treatment manuals: *The Healthy Eating Meal Planning System* and *Bulimia Nervosa Group Treatment Manual* (University of Minnesota). This condition emphasized early abstinence of disorder eating by clustering treatment sessions during the first 6 weeks of therapy and then distributing them evenly (1 per week) the last 6 weeks.	None	12 group sessions for a total of 45 hours of treatment	12 weeks	Post-treatment (12 weeks)	29
	High/ Low CBT (41)	Same as above	Treatment used two treatment manuals: *The Healthy Eating Meal Planning System* and *Bulimia Nervosa Group Treatment Manual* (University of Minnesota). This condition emphasized early abstinence of disorder eating by clustering treatment sessions during the first 6 weeks of therapy and then distributing them evenly (1 per week) the last 6 weeks.	None	12 group sessions for a total of 22 hours of treatment	12 weeks	Same as above	36
	Low/ High CBT (35)	Same as above	Treatment used two treatment manuals: *The Healthy Eating Meal Planning System* and *Bulimia Nervosa Group Treatment Manual* (University of Minnesota). Therapy sessions were distributed evenly throughout the course of treatment (1X/week)	None	12 group sessions for a total of 45 hours of treatment	12 weeks	Same as above	30
	Low/ Low CBT (34)	Same as above	Treatment used two treatment manuals: *The Healthy Eating Meal Planning System* and *Bulimia Nervosa Group Treatment Manual* (University of Minnesota). Therapy sessions were distributed evenly throughout the course of treatment (1X/week)	None	12 group sessions for a total of 22 hours of treatment	12 weeks	Same as above	29

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Self-help								
Bailer et al. 2004[88]	GCBT (41)	Delivered by two experienced female therapist and a co-therapist in a outpatient clinic	Followed the principles outlined in the treatment manual by Jacobi, et al., which is based on the manual by Fairburn.	14 received antidepressant	18 weekly, group sessions lasting 90 minutes	18 weeks	Post-treatment (18 weeks) 12 mo	26 at post-treatment 30 at 12 mo
	GSH (40)	An experienced therapist provided brief individual guidance sessions	Patients followed the German version of Schmidt and Treasure's self-help manual and asked to complete the exercises at their own pace.	6 received antidepressant	18 weekly, individual sessions lasting 20 minutes	18 weeks	Same as above	30 at post-treatment, 25 at 12 mo
Durand and King 2003[89]	Outpatient clinic treatment (34)	Staff of psychiatrists, psychologists, nurse specialists, and dieticians	Each clinic offered similar forms of therapy, including a combination of cognitive behavior and interpersonal psychotherapy.	9 (27%) antidepressants	Weekly or biweekly sessions. Time of sessions NR	24 weeks	Post-treatment (6 mo) 9 mo	28 at 6 mo, 28 at 9 mo
	GSH (34)	Guided by patients own general practitioner	Patients received a copy of *Bulimia Nervosa: a guide to recovery* and were told to work through it while keeping regular contact with their general practitioner. The manual follows the principles of CBT and is structured around the following 6 steps: monitoring eating, instituting a meal plan, learning to intervene to prevent binge eating, problem solving, eliminating dieting, and challenging beliefs about weight and shape.	7 (21%) antidepressants	NR	Same as above	Same as above	22 at 6 mo, 26 at 9 mo

Study	Treatment Group (n)	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Thiels et al. 1998[91] Thiels et al. 2003[90 b]	ICBT (31)	Three female part-time therapists; all trained in several approaches of psychotherapy. Each therapist treated an equal number of patients from the two conditions. Treatment provided in outpatient setting.	Followed principles outlined by Fairburn et al., Freeman et al., and Schmidt and Treasure. The cognitive aspect of therapy focused on overvalued ideas regarding weight and shape and emphasized problem-solving skills. Psychoeducation was used to correct faulty ideas about dieting, vomiting, etc. and behavioral therapy focused on a healthy diet and eliminating disordered eating habits.	One patient (group not specified) was already in psychotherapy when she entered the study. 5 patients reported seeking additional psychotherapy at 4 years follow-up	16 weekly individual sessions lasting 50 to 60 minutes	16 weeks	Post-treatment 10.7 mo (43 wks), 4 years (54.2 mo)	27 at post-treatment, 23 at 10.7 mo 13 at 4 years
	GSH (31)	Same as above	Patients followed the German version of Schmidt and Treasure's self-help manual. Therapy sessions were used to encourage use of the book and tackle any obstacles or barriers to treatment.	7 patients reported seeking additional psychotherapy at 4 years follow-up.	8 individual sessions provided every other week and lasting 50 to 60 minutes	16 weeks	Same as above	22 at post-treatment, 25 at 10.7 mo, 13 at 4 years

[a] This study assessed the intensity of dose (measured in hours of delivery) and emphasis on abstinence. The high/high group received more hours of treatment and high emphasis on early abstinence, the high/low group received fewer hours but more emphasis on abstinence, the low/high group received more hours but less emphasis on abstinence, and the low/low group received fewer hours and less emphasis on abstinence.

[b] Same patient population

BT: Behavioral therapy
CBT: Cognitive behavioral therapy
FTF-CBT: Face-to-face CBT
GCBT: Group cognitive behavioral therapy
GSH: Guided self-help
ICBT: Individual cognitive behavioral therapy
IPT: Interpersonal psychotherapy
NR: Not reported
SET: Self-expressive therapy
TV-CBT: Telemedicine-CBT

Table 28. Key Question 2: Internal Validity Assessment of Included Studies by Outcome of Interest

	Q1. Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled within a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete study?	**Q21.** Was there a ≤15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Score**
Outcomes (Frequency of Binge Eating and Purging)																							
Mitchell et al. 2008[6]	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	NR	N	N	Y	NR	N	Y	Y	N	Y	Y	7.3
Nevonen et al. 2006[85]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	N	NR	N	N	NR	NR	N	Y	Y	Y	Y	Y	7.0
Ghaderi 2005[84]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	N	N	N	Y	Y	Y	Y	Y	6.8
Bailer et al. 2004[88]	Y	NR	NR	Y	Y	Y	N	Y	Y	Y	N	NR	N	N	NR	NR	N	N	Y	N	Y	Y	5.7
Chen et al. 2003[86]	Y	Y	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	N	N	Y	Y	N	NR	Y	6.6
Durand and King 2003[89]	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	N	N	Y	Y	N	Y	Y	6.6

	Q1. Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled within a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete study?	**Q21.** Was there a ≤15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Score**
Agras et al. 2000[78]	Y	Y	Y	Y	Y	N	NR	NR	Y	Y	Y	NR	N	N	Y	Y	N	Y	Y	N	Y	Y	7.0
Thiels et al. 1998[91] Thiels et al. 2003[90]	Y	N	N	Y	Y	Y	N	Y	Y	Y	NR	NR	N	N	N	N	N	Y	Y	N	Y	Y	5.5
Cooper and Steere 1995[79]	Y	NR	NR	Y	Y	N	Y	Y	Y	Y	Y	NR	N	N	Y	NR	N	Y	Y	Y	Y	Y	7.3
Garner et al. 1993[226]	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	N	N	N	Y	Y	N	Y	Y	6.4
Mitchell et al. 1993[87]	Y	NR	Y	Y	Y	NR	NR	Y	Y	Y	NR	NR	N	N	NR	NR	N	N	Y	Y	Y	Y	6.6
Wolf and Crowther 1992[81]	Y	NR	NR	Y	Y	Y	Y	Y	Y	N	NR	NR	N	N	NR	NR	N	Y	Y	Y	Y	Y	6.8

	Q1. Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled within a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete study?	**Q21.** Was there a ≤15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Score**
Fairburn et al. 1991[82]	Y	NR	NR	Y	Y	N	N	Y	Y	Y	Y	NR	N	N	Y	NR	N	Y	Y	N	Y	Y	6.4
Freeman et al. 1991[16]	Y	NR	NR	Y	Y	Y	Y	Y	Y	N	NR	NR	N	N	NR	NR	N	Y	Y	N	NR	Y	6.1
Fairburn et al. 1986[83]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	Y	Y	N	Y	Y	Y	Y	N	7.5
Outcomes (Remission, Recovery, Quality of Life, Eating Disorder Pathology, Do-morbid Psychological Symptoms, Impact on Family Members, Psychosocial Functioning)																							
Mitchell et al. 2008[6]	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	NR	N	N	Y	NR	N	Y	Y	N	Y	Y	7.3
Nevonen et al. 2006[85]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	N	NR	N	N	NR	NR	N	Y	Y	Y	Y	Y	7.0
Ghaderi 2005[84]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	N	N	N	Y	Y	Y	Y	Y	6.8
Bailer et al. 2004[88]	Y	NR	NR	Y	Y	Y	N	Y	Y	Y	N	NR	N	N	NR	NR	N	Y	Y	N	Y	Y	6.1

	Q1. Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled within a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete study?	**Q21.** Was there a ≤15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Score**
Chen et al. 2003[86]	Y	Y	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	N	N	Y	Y	N	NR	Y	6.6
Durand and King 2003[89]	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	N	N	Y	Y	N	Y	Y	6.6
Agras et al. 2000[78]	Y	Y	Y	Y	Y	N	NR	NR	Y	Y	Y	NR	N	N	Y	Y	N	Y	Y	N	Y	Y	7.0
Thiels et al. 1998[91] Thiels et al. 2003[90]	Y	N	N	Y	Y	Y	N	Y	Y	Y	NR	NR	N	N	N	N	N	Y	Y	N	Y	Y	5.5
Cooper and Steere 1995[79]	Y	NR	NR	Y	Y	N	Y	Y	Y	Y	Y	NR	N	N	Y	NR	N	Y	Y	Y	Y	Y	7.3
Garner et al. 1993[226]	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	N	N	N	Y	Y	N	Y	Y	6.4
Mitchell et al. 1993[87]	Y	NR	Y	Y	Y	NR	NR	Y	Y	Y	NR	NR	N	N	NR	NR	N	Y	Y	Y	Y	Y	7.0

	Q1. Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled within a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete study?	**Q21.** Was there a ≤15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Score**
Wolf and Crowther 1992[81]	Y	NR	NR	Y	Y	Y	Y	Y	Y	N	NR	NR	N	N	NR	NR	N	Y	Y	Y	Y	Y	6.8
Fairburn et al. 1991[82]	Y	NR	NR	Y	Y	N	N	Y	Y	Y	Y	NR	N	N	Y	NR	N	Y	Y	N	Y	Y	6.4
Freeman et al. 1991[16]	Y	NR	NR	Y	Y	Y	Y	Y	Y	N	NR	NR	N	N	NR	NR	N	Y	Y	N	NR	Y	6.1
Fairburn et al. 1986[83]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	Y	Y	N	Y	Y	Y	Y	N	7.5
Outcomes (Mortality, Dropout)																							
Mitchell et al. 2008[6]	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	NR	N	N	Y	NR	Y	Y	Y	N	Y	Y	7.7
Nevonen et al. 2006[85]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	N	NR	N	N	NR	NR	Y	Y	Y	Y	Y	Y	7.5
Ghaderi 2005[84]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	N	N	Y	Y	Y	Y	Y	Y	7.3

	Q1. Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled within a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete study?	**Q21.** Was there a ≤15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Score**
Bailer et al. 2004[88]	Y	NR	NR	Y	Y	Y	N	Y	Y	Y	N	NR	N	N	NR	NR	Y	Y	Y	N	Y	Y	6.6
Chen et al. 2003[86]	Y	Y	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	N	Y	Y	Y	N	NR	Y	7.0
Durand and King 2003[89]	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	N	Y	Y	Y	N	Y	Y	7.0
Agras et al. 2000[78]	Y	Y	Y	Y	Y	N	NR	NR	Y	Y	Y	NR	N	N	Y	Y	Y	Y	Y	N	Y	Y	7.5
Thiels et al. 1998[91] Thiels et al. 2003[90]	Y	N	N	Y	Y	Y	N	Y	Y	Y	NR	NR	N	N	N	N	Y	Y	Y	N	Y	Y	5.9
Cooper and Steere 1995[79]	Y	NR	NR	Y	Y	N	Y	Y	Y	Y	Y	NR	N	N	Y	NR	Y	Y	Y	Y	Y	Y	7.7
Garner et al. 1993[226]	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	N	N	N	Y	Y	Y	N	Y	Y	6.8

	Q1. Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled within a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete study?	**Q21.** Was there a ≤15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Score**
Mitchell et al. 1993[87]	Y	NR	Y	Y	Y	NR	NR	Y	Y	Y	NR	NR	N	N	NR	NR	Y	Y	Y	Y	Y	Y	7.5
Wolf and Crowther 1992[81]	Y	NR	NR	Y	Y	Y	Y	Y	Y	N	NR	NR	N	N	NR	NR	Y	Y	Y	Y	Y	Y	7.3
Fairburn et al. 1991[82]	Y	NR	NR	Y	Y	N	N	Y	Y	Y	Y	NR	N	N	Y	NR	Y	Y	Y	N	Y	Y	6.8
Freeman et al. 1991[16]	Y	NR	NR	Y	Y	Y	Y	Y	Y	N	NR	NR	N	N	NR	NR	Y	Y	Y	N	NR	Y	6.6
Fairburn et al. 1986[83]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	Y	Y	Y	Y	Y	Y	Y	N	8.0

N: No
NR: Not reported
Y: Yes

Table 29. Key Question 2: Individual Results of Studies on CBT versus Other Psychotherapy

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
CBT versus Interpersonal Psychotherapy (IPT)									
						4 mo		**8 and 12 mo**	
Agras et al. 2000[78]	Binge eating episodes/ 28 days	CBT (110)	20.0 (32)	0 (5)	0.054 (-0.209 to 0.317), 0.688	0 (5)	0.092 (-0.172 to 0.355), 0.495	0 (10)	0.057 (-0.206 to 0.321), 0.671
		IPT (110)	23.5 (27)	5 (23.5)		6 (20)		2 (17.5)	
	Purging episodes/ 28 days	CBT (110)	30.0 (32)	1.0 (8)	0.013 (-0.251 to 0.276), 0.924	1.0 (8.5)	0.089 (-0.175 to 0.352), 0.508	3.0 (14.5)	0.207 (-0.057 to 0.471), 0.124
		IPT (110)	42.0 (54)	13.5 (32.25)		9.5 (35)		7.0 (27.5)	
	EDE Global	CBT (110)	3.0 (0.9)	1.4 (0.9)	0.322 (0.057 to 0.587), 0.017	1.3 (0.9)	0.416 (0.149 to 0.682), 0.002	1.4 (1.1)	0.101 (-0.162 to 0.365), 0.452
		IPT (110)	3.1 (0.9)	1.8 (1.0)		1.8 (1.1)		1.6 (1.0)	
	IIP	CBT (110)	1.6 (0.6)	1.1 (0.6)	0.180 (-0.083 to 0.444), 0.180	1.0 (0.7)	0.164 (-0.100 to 0.428), 0.224	1.1 (0.7)	0.00 (-0.263 to 0.263), 1.00
		IPT (110)	1.5 (0.5)	1.1 (0.5)		1.0 (0.6)		1.0 (0.6)	
	RSE	CBT (110)	25.6 (5.9)	19.6 (6.6)	0.034 (-0.230 to 0.297), 0.802	20.1 (6.9)	0.031 (-0.232 to 0.295), 0.815	19.9 (6.5)	0.033 (-0.230 to 0.296), 0.806
		IPT (110)	25.3 (5.2)	19.1 (5.8)		20.0 (6.9)		19.4 (6.3)	
	SAS	CBT (110)	2.2 (0.4)	1.9 (0.4)	0.00 (-0.263 – 0.263), 1.000	1.8 (0.5)	0.208 (-0.056 to 0.472), 0.123	1.8 (0.5)	0.00 (-0.263 to 0.263), 1.00
		IPT (110)	2.3 (0.5)	2.0 (0.4)		2.0 (0.5)		1.9 (0.5)	

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
CBT versus Supportive Psychotherapy (SPT)									
Walsh et al. 1997[75]	Binge eating episodes/ month	CBT (25)	7.22 (4.0)	2.56 (3.3)	0.471 (-1.043 to 0.10), 0.106	NR	NR	NR	NR
		SPT (22)	6.18 (3.6)	3.32 (4.0)					
	Self-induced vomiting/ month	CBT (25)	10.8 (12.0)	5.6 (15.0)	0.061 (-0.625 to 0.502), 0.832	NR	NR		NR
		SPT (22)	11.9 (13.0)	7.5 (10.0)					
	Body shape questionnaire	CBT (25)	132 (32)	94 (36)	0.423 (-0.993 to 0.147), 0.146	NR	NR	NR	NR
		SPT (22)	127 (31)	104 (39)					
	EDE – global	CBT (25)	3.15 (0.7)	1.65 (0.9)	0.465 (-1.036 to 0.106), 0.111	NR	NR	NR	NR
		SPT (22)	3.02 (0.8)	1.96 (1.2)					
	BDI	CBT (25)	11.7 (10.0)	6.8 (7.0)	0.083 (-0.646 to 0.481), 0.773	NR	NR	NR	NR
		SPT (22)	14.3 (9.0)	10.2 (11.0)					
	EAT Total	CBT (25)	42.3 (16)	24.5 (17)	0.352 (-0.920 to 0.216), 0.225	NR	NR	NR	NR
		SPT (22)	39.9 (16)	28.7 (23)					
	SCL-90 global index	CBT (25)	1.69 (0.5)	1.47 (0.5)	0.146 (-0.710 to 0.418), 0.612	NR	NR	NR	NR
		SPT (22)	1.66 (0.3)	1.51 (0.5)					
	SCL-90 anxiety	CBT (25)	1.57 (0.6)	1.37 (0.5)	0.093 (-0.656 to 0.471), 0.748	NR	NR	NR	NR
		SPT (22)	1.56 (0.5)	1.41 (0.5)					

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
CBT versus Exposure Plus Response Prevention (ERP)									
								12 mo	
Cooper and Steere 1995[79]	Binge eating episodes/ month	CBT (15)	21.9 (12.3)	4.5 (7.6)	0.376 (-0.317 to 1.068), 0.288	NR	NR	3.5 (6.3)	0.283 (-0.407 to 0.973), 0.421
		ERP (16)	30.4 (19.4)	7.4 (13.9)				16.5 (18.4)	
	Self-induced vomiting/ month	CBT (15)	36.1 (37.8)	4.5 (7.9)	0.375 (-0.317 to 1.068), 0.288	NR	NR	4.3 (7.1)	0.235 (-0.453 to 0.924), 0.503
		ERP (16)	79.9 (149.1)	7.6 (13.2)				23.4 (25.8)	
	Eating Disorders Examination Subscale								
	Dietary restraint	CBT (15)	3.4 (1.6)	1.2 (1.4)	0.141 (-0.546 to 0.828), 0.688	NR	NR	1.0 (1.1)	0.551 (-0.149 to 1.251), 0.123
		ERP (16)	3.2 (1.3)	0.8 (1.2)				1.6 (1.5)	
	Shape concern	CBT (15)	4.4 (1.2)	2.7 (1.8)	0.249 (-0.440 to 0.938), 0.478	NR	NR	2.6 (1.4)	0.438 (-0.256 to 1.133), 0.216
		ERP (16)	4.3 (1.3)	2.2 (1.7)				3.1 (1.4)	
	Weight concern	CBT (15)	4.4 (1.3)	2.6 (1.9)	0.235 (-0.454 to 0.923), 0.504	NR	NR	2.3 (1.3)	0.447 (-0.248 to 1.142), 0.207`
		ERP (16)	3.8 (1.8)	1.6 (1.4)				2.4 (1.6)	
	BDI	CBT (15)	21.8 (8.3)	10.2 (9.4)	0.374 (-0.318 to 1.067), 0.289	NR	NR	8.0 (9.4)	0.855 (0.137 to 1.573), 0.020
		ERP (16)	17.9 (11.5)	10.4 (12.6)				13.0 (10.8)	
	STAI-State	CBT (15)	54.2 (8.4)	38.8 (10.3)	1.164 (0.420 to 1.909), 0.002	NR	NR	41.8 (11.0)	0.953 (0.227 to 1.679), 0.010
		ERP (16)	43.1 (13.0)	42.3 (15.3)				42.0 (12.7)	

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	STAI-Trait	CBT (15)	55.8 (11.0)	44.8 (13.9)	0.264 (-0.425 to 0.954), 0.452	NR	NR	44.3 (12.5)	0.708 (-0.001 to 1.416), 0.050
		ERP (16)	52.0 (10.6)	44.5 (14.6)				49.3 (13.6)	
	RSE	CBT (15)	22.0 (5.2)	26.1 (6.2)	0.108 (-0.579 to 0.794), 0.759	NR	NR	27.3 (7.1)	0.557 (-0.143 to 1.256), 0.119
		ERP (16)	22.4 (4.9)	27.2 (7.8)				24.3 (6.0)	
CBT versus Supportive Expressive Therapy (SET)									
Garner et al. 1993[80]	Binge eating episodes/ last 28 days	CBT (25)	26.3 (30.2)	7.1 (14.1)	0.102 (-0.445 to 0.648), 0.716	NR	NR	NR	NR
		SET (25)	31.1 (20.3)	9.6 (11.0)					
	Vomiting episodes/last 28 days	CBT (25)	41.4 (38.7)	7.5 (13.5)	0.209 (-0.338 to 0.757), 0.453	NR	NR	NR	NR
		SET (25)	44.1 (30.5)	16.7 (18.5)					
	Eating Disorder Inventory								
	Drive for thinness	CBT (25)	14.3 (4.4)	5.9 (6.3)	0.619 (0.060 to 1.178), 0.030	NR	NR	NR	NR
		SET (25)	14.1 (5.2)	9.4 (6.8)					
	Bulimia	CBT (25)	11.6 (4.9)	2.2 (3.9)	0.563 (0.006 to 1.119), 0.048	NR	NR	NR	NR
		SET (25)	10.2 (6.2)	4.8 (4.5)					
	Body dissatisfaction	CBT (25)	15.5 (8.4)	11.7 (9.0)	0.095 (-0.451 to 0.641), 0.732	NR	NR	NR	NR
		SET (25)	16.7 (8.0)	13.7 (7.5)					

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	Ineffectiveness	CBT (25)	8.6 (6.3)	4.9 (7.00)	0.208 (-0.339 to 0.755), 0.456	NR	NR	NR	NR
		SET (25)	10.0 (6.9)	7.7 (6.2)					
	Perfectionism	CBT (25)	6.8 (4.5)	4.4 (3.7)	0.171 (-0.376 to 0.718), 0.540	NR	NR	NR	NR
		SET (25)	8.0 (3.5)	6.3 (4.2)					
	Interpersonal distrust	CBT (25)	5.0 (4.1)	3.0 (3.1)	0.080 (-0.465 to 0.626), 0.773	NR	NR	NR	NR
		SET (25)	5.0 (4.0)	3.3 (3.1)					
	Interoceptive awareness	CBT (25)	8.7 (6.1)	2.9 (4.7)	0.138 (-0.409 to 0.684), 0.621	NR	NR	NR	NR
		SET (25)	9.9 (4.6)	4.8 (4.2)					
	Maturity fears	CBT (25)	2.6 (2.5)	1.3 (1.5)	0.141 (-0.405 to 0.688), 0.612	NR	NR	NR	NR
		SET (25)	5.0 (4.6)	3.2 (4.2)					
	Eating Disorder Examination								
	Dietary Restraint	CBT (25)	3.7 (1.3)	1.5 (1.7)	0.955 (0.378 to 1.532), 0.001	NR	NR	NR	NR
		SET (25)	3.2 (1.5)	2.5 (1.6)					
	Shape concerns	CBT (25)	3.3 (1.4)	2.0 (1.3)	0.487 (-0.067 to 1.041), 0.085	NR	NR	NR	NR
		SET (25)	3.6 (1.0)	2.9 (1.1)					
	Weight concerns	CBT (25)	2.4 (1.4)	1.6 (1.2)	0.244 (-0.304 to 0.792), 0.383	NR	NR	NR	NR
		SET (25)	2.9 (1.1)	2.4 (1.1)					
	EAT Total	CBT (25)	34.7 (12.7)	10.4 (9.1)	0.790 (0.223 to 1.357), 0.006	NR	NR	NR	NR
		SET (25)	33.2 (11.6)	18.7 (14.1)					

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	BDI	CBT (25)	16.8 (9.9)	7.5 (10.6)	0.399 (-0.152 to 0.950), 0.156	NR	NR	NR	NR
		SET (25)	18.7 (9.4)	13.4 (9.5)					
	RSE	CBT (25)	25.0 (5.7)	29.4 (6.2)	0.438 (-0.114 to 0.990), 0.120	NR	NR	NR	NR
		SET (25)	23.7 (5.3)	25.6 (5.2)					
	SAS	CBT (25)	2.2 (0.5)	1.9 (0.5)	0.394 (-0.157 to 0.945), 0.161	NR	NR	NR	NR
		SET (25)	2.2 (0.5)	2.1 (0.5)					
CBT vs. Behavioral Therapy (BT)									
						1 mo		**3 mo**	
Wolf and Crowther 1992[81]	Binge eating episodes/ biweekly	CBT (15)	9.4 (6.7)	5.3 (5.1)	0.292 (-0.408 to 0.992), 0.414	8.3 (7.7)	0.692 (-0.026 to 1.410), 0.059	6.3 (5.4)	0.642 (-0.073 to 1.357), 0.078
		BT (15)	16.7 (18.9)	8.8 (13.5)		6.5 (6.8)		5.3 (6.2)	
	Extreme weight control measures/ biweekly	CBT (15)	10.7 (8.9)	6.1 (5.7)	0.192 (-0.506 to 0.890), 0.591	7.9 (7.6)	0.393 (-0.310 to 1.097), 0.273	6.3 (6.3)	0.324 (-0.377 to 1.025), 0.365
		BT (15)	15.7 (20.0)	8.4 (13.9)		7.4 (9.2)		6.8 (8.7)	
	Eating Disorder Inventory								
	Drive for Thinness	CBT (15)	16.6 (3.2)	11.7 (6.3)	0.525 (-0.184 to 1.234), 0.147	14.1 (5.7)	0.135 (-0.562 to 0.832), 0.704	11.7 (6.6)	0.495 (-0.212 to 1.203), 0.170
		BT (15)	15.3 (4.0)	13.3 (6.0)		13.5 (5.8)		13.3 (6.5)	
	Bulimia	CBT (15)	12.9 (4.5)	6.7 (4.3)	0.371 (-0.331 to 1.074), 0.300	8.5 (5.6)	0.206 (-0.493 to 0.904), 0.564	5.6 (5.0)	0.166 (-0.531 to 0.864), 0.640
		BT (15)	13.8 (5.0)	9.6 (6.6)		8.3 (5.5)		5.7 (4.0)	

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	Body Dissatisfaction	CBT (15)	19.6 (7.8)	15.5 (9.9)	0.021 (-0.676 to 0.717), 0.954	14.1 (9.4)	0.425 (-0.280 to 1.129), 0.237	13.2 (8.9)	0.432 (-0.273 to 1.137), 0.230
		BT (15)	19.0 (9.1)	14.7 (10.4)		17.4 (9.2)		16.6 (10.0)	
	Ineffectiveness	CBT (15)	11.4 (8.5)	5.7 (6.6)	0.415 (-0.289 to 1.120), 0.248	5.7 (4.1)	0.610 (-0.103 to 1.323), 0.094	5.6 (5.3)	0.376 (-0.327 to 1.078), 0.295
		BT (15)	9.6 (5.4)	6.7 (4.8)		7.9 (5.0)		6.3 (5.3)	
	Perfectionism	CBT (15)	10.0 (5.2)	7.8 (4.2)	0.400 (-0.303 to 1.104), 0.265	9.0 (3.5)	0.089 (-0.608 to 0.786), 0.803	7.4 (3.8)	0.542 (-0.167 to 1.252), 0.134
		BT (15)	8.1 (4.3)	7.9 (5.4)		7.5 (4.0)		8.0 (4.3)	
	Interoceptive Awareness	CBT (15)	14.1 (7.8)	8.9 (5.6)	0.601 (-0.112 to 1.314), 0.098	9.3 (5.3)	0.279 (-0.421 to 0.978), 0.435	6.4 (5.4)	0.604 (-0.109 to 1.317), 0.097
		BT (15)	13.3 (6.2)	12.8 (9.3)		10.5 (7.7)		9.6 (5.6)	
	SCL-90-R *	CBT (15)	1.5 (0.6)	1.2 (0.6)	NR	1.1 (0.5)	NR	0.9 (0.5)	NR
		BT (15)	NR	NR		NR		NR	
CBT versus BT versus IPT									
Fairburn et al. 1991[82] **	Objective bulimic episodes/28 days	CBT (25)	18.1 (17.3)	0.6 (1.5)	CBT vs. BT 0.248 (-0.300 to 0.795), 0.376	NR	NR	NR	NR
		BT (25)	14.9 (15.8)	1.3 (3.7)					
		IPT (25)	16.4 (12.1)	1.8 (4.7)	CBT vs. IPT 0.205 (-0.342 to 0.752), 0.462				

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	Self-induced vomiting/28 days	CBT (25)	28.5 (32.0)	1.5 (3.1)	CBT vs. BT 0.323 (-0.226 to 0.873), 0.249	NR	NR	NR	NR
		BT (25)	18.5 (28.1)	0.9 (3.5)					
		IPT (25)	16.4 (19.7)	5.5 (16.1)	CBT vs. IPT 0.630 (0.071 to 1.190), 0.027				
	Eating Disorder Examination								
	Dietary restraint	CBT (25)	3.7 (1.4)	1.3 (1.4)	CBT vs. BT 0.917 (0.342 to 1.491), 0.002	NR	NR	NR	NR
		BT (25)	3.3 (1.6)	2.3 (1.6)					
		IPT (25)	3.3 (1.0)	2.1 (1.4)	CBT vs. IPT 0.890 (0.317 to 1.463), 0.002				
	Attitudes to shape	CBT (25)	4.1 (1.3)	2.1 (1.3)	CBT vs. BT 0.855 (0.284 to 1.426), 0.003	NR	NR	NR	NR
		BT (25)	4.0 (1.5)	3.3 (1.8)					
		IPT (25)	3.6 (1.4)	2.6 (1.3)	CBT vs. IPT 0.742 (0.177 TO 1.307), 0.010				

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	Attitudes to weight	CBT (25)	4.3 (1.3)	1.7 (1.3)	CBT vs. BT 1.169 (0.577 to 1.760), 0.000	NR	NR	NR	NR
		BT (25)	3.8 (1.5)	2.9 (1.6)	CBT vs. IPT 0.882 (0.310 TO 1.454), 0.003				
		IPT (25)	3.7 (1.8)	2.4 (1.2)					
	EAT	CBT (25)	45.4 (15.7)	15.5 (15.2)	CBT vs. BT 0.433 (-0.119 to 0.985), 0.124	NR	NR	NR	NR
		BT (25)	50.2 (15.7)	27.8 (20.4)	CBT vs. IPT 0.697 (0.135 to 1.260), 0.015				
		IPT (25)	46.1 (17.8)	29.0 (22.2)					
	SCL-90-R	CBT (25)	1.35 (0.7)	0.6 (0.6)	CBT vs. BT 0.246 (-0.302 to 0.793), 0.380	NR	NR	NR	NR
		BT (25)	1.26 (0.8)	0.7 (0.9)					
		IPT (25)	1.33 (0.6)	0.7 (0.6)	CBT vs. IPT 0.188 (-0.359 to 0.735), 0.501				

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	BDI	CBT (25)	24.1 (9.6)	10.1 (11.7)	CBT vs. BT 0.406 (-0.146 to 0.957), 0.149	NR	NR	NR	NR
		BT (25)	22.3 (14.0)	13.6 (14.4)					
					CBT vs. IPT 0.174 (-0.373 to 0.720), 0.534				
		IPT (25)	24.3 (13.8)	12.5 (11.8)					
	SAS-modified	CBT (25)	2.5 (0.4)	2.1 (0.4)	CBT vs. BT 0.116 (-0.430 to 0.663), 0.676	NR	NR	NR	NR
		BT (25)	2.5 (1.3)	2.2 (0.6)					
					CBT vs. IPT 0.258 (-0.290 to 0.806), 0.355				
		IPT (25)	2.5 (0.4)	2.2 (0.3)					
CBT vs. BT vs. Group Therapy (GRP)									
						3 mo		**12 mo**	
Freeman et al. 1988[16]	Binges/weekly	CBT (32)	6.2 (5.0)	1.3 (3.4)	CBT vs. BT 0.235 (-0.259 to 0.728), 0.351	0.7	NR	0.3	NR
		BT (30)	4.6 (3.4)	0.6 (2.0)		0.3		0.9	
					CBT vs. GRP 0.141 (-0.352 to 0.633), 0.575				
		GRP (30)	6.3 (4.5)	0.8 (1.5)		0.8		0.0	

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	Self-induced vomiting/weekly	CBT (32)	7.4 (10.7)	1.0 (2.5)	CBT vs. BT 0.409 (-0.089 to 0.906), 0.107 CBT vs. GRP 0.199 (-0.295 to 0.692), 0.430	NR	NR	NR	NR
		BT (30)	3.6 (4.3)	0.3 (0.8)					
		GRP (30)	8.9 (9.6)	0.6 (0.9)					
	Eating Disorder Inventory								
	Desire for thinness	CBT (32)	Median of differences between pre- and post-treatment		6.0 (2.5 to 10.0)	NR	NR	NR	NR
		BT (30)			9.0 (6.0 to 12.0)				
		GRP (30)			5.5 (2.0 to 9.0)				
	Bulimia	CBT (32)	Median of differences betweenn pre- and post-treatment		8.0 (95.5 to 10.5)	NR	NR	NR	NR
		BT (30)			8.0 (6.0 to 10.0)				
		GRP (30)			7.5 (6.0 to 10.0)				

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	Body dissatisfaction	CBT (32)	Median of differences betweenn pre- and post-treatment		4.0 (1.0 to 7.0)	NR	NR	NR	NR
		BT (30)			6.0 (2.0 to 9.0)				
		GRP (30)			1.5 (-1.0 to 8.0)				
	Ineffectiveness	CBT (32)	Median of differences between pre- and post-treatment		4.5 (1.5 to 8.5)	NR	NR	NR	NR
		BT (30)			8.5 (5.5 to 11.0)				
		GRP (30)			3.0 (0 to 6.0)				
	Perfectionism	CBT (32)	Median of differences between pre- and post-treatment		1.5 (0 to 3.5)	NR	NR	NR	NR
		BT (30)			1.5 (0.5 to 3.0)				
		GRP (30)			2.0 (0 to 4.0)				
	Interpersonal distrust	CBT (32)	Median of differences between pre- and post-treatment		1.5 (-0.5 to 3.5)	NR	NR	NR	NR
		BT (30)			3.0 (1.5 to 4.0)				
		GRP (30)			0 (-1.0 to 2.5)				

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	Interoceptive awareness	CBT (32)	Median of differences between pre- and post-treatment		6.5 (4.0 to 9.5)	NR	NR	NR	NR
		BT (30)			7.0 (5.0 to 10.5)				
		GRP (30)			6.5 (3.0 to 10.0)				
	Maturity fears	CBT (32)	Median of differences between pre- and post-treatment		1.0 (0 to 2.5)	NR	NR	NR	NR
		BT (30)			1.5 (0 to 3.0)				
		GRP (30)			1.5 (0.5 to 3.5)				
	EAT Total	CBT (32)	Median of differences between pre- and post-treatment		18.5 (13.5 to 24.0)	NR	NR	NR	NR
		BT (30)			22.0 (15.5 to 29.0)				
		GRP (30)			19.5 (13.5 to 26.5)				
	RSE	CBT (32)	Median of differences between pre- and post-treatment		1.5 (0.5 to 3.0)	NR	NR	NR	NR
		BT (30)			2.5 (1.5 to 3.5)				
		GRP (30)			1.5 (0.5 to 3.0)				

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	MADRS	CBT (32)	Median of differences between pre- and post-treatment		6.0 (2.5 to 9.5)	NR	NR	NR	NR
		BT (30)			9.0 (5.5 to 12.5)				
		GRP (30)			4.5 (0 to 8.5)				
	SNAITH anxiety scale	CBT (32)	Median of differences between pre- and post-treatment		3.0 (2.0 to 4.0)	NR	NR	NR	NR
		BT (30)			4.0 (2.5 to 5.0)				
		GRP (30)			2.5 (1.0 to 5.0)				
CBT versus Short-term Focal Psychotherapy (STP)									
						4 mo		**12 mo**	
Fairburn et al. 1986[83]	Bulimic episodes/ median over last 28 days	CBT (11)	24	3	NR	1	NR	0	NR
		Short-term therapy (11)	20	4		1		0	
	Vomiting median/ over last 28 days	CBT (11)	42	3	NR	0	NR	0	NR
		Brief psycho-therapy (11)	33	4		3		3	
						4 mo		**12 mo**	
	EAT total	CBT (11)	44.0 (13.5)	16.9 (9.9)	0.576 (-0.246 to 1.397), 0.170	15.0 (7.0)	0.288 (-0.520 to 1.097), 0.485	12.7 (7.8)	0.275 (-0.533 to 1.083), 0.504
		Short-term therapy (11)	46.7 (18.3)	28.7 (17.2)		22.2 (17.1)		19.5 (13.8)	

Study	Outcome/Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
	PSE total	CBT (11)	21.2 (9.0)	6.9 (6.7)	0.486 (-0.331 to 1.303), 0.244	5.5 (3.3)	0.519 (-0.300 to 1.337), 0.214	4.8 (4.3)	0.420 (-0.394 to 1.233), 0.312
		Short-term therapy (11)	22.8 (9.6)	12.8 (8.0)		11.9 (10.0)		11.2 (15.4)	
	MADRS total	CBT (11)	25.8 (8.1)	11.5 (5.9)	0.584 (-0.238 to 1.407), 0.164	9.6 (3.7)	0.512 (-0.307 to 1.330), 0.220	9.2 (7.2)	0.986 (0.131 to 1.841), 0.024
		Short-term therapy (11)	26.2 (8.6)	16.7 (8.4)		14.5 (10.5)		17.6 (7.0)	
	SAS-M overall	CBT (11)	2.5 (0.5)	1.9 (0.3)	0.367 (-0.444 to 1.178), 0.375	1.8 (0.2)	0.385 (-0.427 to 1.197), 0.353	1.9 (0.5)	0.348 (-0.462 to 1.159), 0.400
		Short-term therapy (11)	2.5 (0.6)	2.1 (0.6)		2.0 (0.5)		2.1 (0.6)	

* SCL-90-R scores only reported for CBT arm

** Standard deviation calculated from 95% Confidence Intervals

BDI: Beck depression inventory
BT: Behavioral therapy
CBT: Cognitive behavioral therapy
EAT: Eating attitudes test
EDE: Eating disorder examination
EDI: Eating disorders inventory
ERP: Exposure plus response prevention
GRP: Group therapy
IIP: Inventory of interpersonal problems
IPT: Interpersonal psychotherapy
MADRS: Montgomery Asberg Depression Rating Scale
PSE: Present state examination
RSE: Rosenberg self-esteem scale
SAS: Social adjustment scale
SAS-M: Social adjustment scale-modified
SCL-90-R: Symptom Checklist 90
SD: Standard deviation
SET: Supportive expressive therapy
SPT: Supportive psychotherapy
STAI: State trait anxiety inventory

Table 30. Key Question 2: Remission and Recovery Rates Reported in Studies of CBT versus Other Psychotherapy

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Mid Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Last Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
CBT versus Interpersonal Psychotherapy (IPT)								
					4 mo		**8 and 12 mo**	
Agras et al. 2000[78] [a]	Remission (binge eating and purging less than twice per week over the previous 28 days)	CBT (110)	53 (48)	2.370 (1.355 to 4.144), 0.002	51 (46)	2.017 (1.159 to 3.509), 0.013	46 (42)	1.418 (0.820 to 2.452), 0.211
		IPT (110)	31 (28)		33 (30)		37 (34)	
	Recovery (no binge eating or purging during the previous 28 days)	CBT (110)	32 (29)	6.037 (2.531 to 14.396), 0.000	26 (24)	1.960 (0.973 to 3.948), 0.059	31 (28)	1.879 (0.985 to 3.585), 0.055
		IPT (110)	7 (6)		15 (14)		19 (17)	
CBT versus Exposure plus Response Prevention (ERP)								
Cooper and Steere 1995[79]	Remission from binge eating	CBT (15)	6 (40)	0.857 (0.205 to 3.579), 0.833	NR	NR	NR	NR
		ERP (16)	7 (44)		NR		NR	
	Remission from purging	CBT (15)	7 (47)	1.458 (0.348 to 6.112), 0.606	NR	NR	NR	NR
		ERP (16)	6 (37)		NR		NR	
	Relapse from binge eating	CBT (15)	NR	NR	NR	NR	NR	0.067 (0.003 to 1.346), 0.078
		ERP (16)	NR		NR		5 (71% of remitted)	
	Relapse from purging	CBT (15)	NR	NR	NR	NR	1 (14% of remitted)	0.157 (0.016 to 1.548), 0.113
		ERP (16)	NR		NR		5 (83% of remitted)	

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Mid Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Last Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
CBT versus Supportive Psychotherapy (SPT)								
Walsh et al. 1997[75]	Remission from binge eating (past 28 days)	CBT (16)	6 (38)	1.440 (0.337 to 6.161), 0.623	NR	NR	NR	NR
		SPT (17)	5 (29)					
	Remission from vomiting (past 28 days)	CBT (16)	5 (31)	3.409 (0.555 to 20.936), 0.185	NR	NR	NR	NR
		SPT (17)	2 (12)					
CBT versus Supportive Expressive Therapy (SET)								
Garner et al. 1993[80]	Remission (abstinent from vomiting post 28 days)	CBT (25)	9 (36)	4.125 (0.961 to 17.704), 0.057	NR	NR	NR	NR
		SET (25)	3 (12)					
CBT versus BT versus IPT								
Fairburn et al. 1991[82]	Remission from objective bulimic episodes	CBT (25)	15 (71%) based on n = 21	CBT vs. BT 1.591 (0.417 to 6.073), 0.497	NR	NR	NR	NR
		BT (25)	11 (62%) based on n = 18					
		IPT (25)	13 (62%) based on n = 21	CBT vs. IPT 1.538 (0.422 to 5.606), 0.514				

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Mid Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Last Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
	Remission from purging	CBT (25)	8 (47%) based on n = 17	CBT vs. BT 0.533 (0.133 to 2.141), 0.375	NR	NR	NR	NR
		BT (25)	10 (63%) based on n = 16					
				CBT vs. IPT 1.524 (0.402 to 5.777), 0.536	NR	NR		NR
		IPT (25)	7 (37%) based on n = 19					

[a] Based on intent-to-treat analysis with baseline observation carried forward (BOCF)

BT: Behavioral therapy
CBT: Cognitive behavioral therapy
ERP: Exposure plus response prevention
GRP: Group therapy
IPT: Interpersonal psychotherapy
NR: Not reported
SET: Supportive expressive therapy
SPT: Supportive psychotherapy

Table 31. Key Question 2: Dropouts in Studies of CBT versus Other Psychotherapy

Study	Group	Number Randomized	Overall Number of Dropouts (%)	Effect Size Odds Ratio (95% CI), p-Value
Agras et al. 2000[78]	CBT	110	31 (28)	1.268 (0.692 to 2.322), 0.442
	IPT	110	26 (24)	
Walsh et al. 1997[75]	CBT	25	9 (36)	1.500 (0.432 to 5.204), 0.523
	SPT	22	6 (27)	
Cooper and Steere 1995[79]	CBT	15	2 (13)	1.077 (0.132 to 8.797), 0.945
	ERP	16	2 (10)	
Garner et al. 1993[80]	CBT	30	5 (17)	1.000 (0.229 to 4.373), 1.000
	SET	30	5 (17)	
Wolf and Crowther 1992[81]	CBT	15	0	
	BT	15	0	
Fairburn et al. 1991[82]	CBT	25	7 (28)	CBT vs. BT 2.042 (0.513 to 8.119), 0.311
	BT	25	4 (16)	CBT vs. IPT 2.042 (0.513 to 8.119), 0.311
	IPT	25	4 (16)	
Freeman et al. 1988[16]	CBT	32	11 (34)	CBT vs. BT 2.619 (0.784 to 8.747), 0.118
	BT	30	5 (16)	CBT vs. GRP 0.905 (0.319 to 2.562), 0.851
	GRP	30	11 (37)	
Fairburn et al. 1986[83]	CBT	11	1 (1)	1.000 (0.055 to 18.304), 1.000
	Brief psychotherapy	11	1 (1)	

BT: Behavioral therapy
CBT: Cognitive behavioral therapy
ERP: Exposure plus response prevention
GRP: Group therapy
IPT: Interpersonal psychotherapy
NR: Not reported
SET: Supportive expressive therapy
SPT: Supportive psychotherapy

Table 32. Key Question 2: Meta-analytic Findings for Other Outcomes of CBT versus Other Psychotherapy

Studies Combined	Treatment	Outcome	Summary Effect Size Hedges' g (95% CI), p-Values	I-squared (I^2)/ Tau squared (T^2)	Strength of Evidence
Agras et al. 2000[78] Fairburn et al. 1991[82]	CBT vs. IPT	Binge eating episodes (post-treatment)	0.082 (-0.155 to 0.320), 0.496	0.000 / 0.000	Insufficient
Agras et al. 2000[78] Fairburn et al. 1991[82]	CBT vs. IPT	Dropout	1.369 (0.787 to 2.383), 0.267	0.000 / 0.000	Insufficient
Walsh et al. 1997[75] Garner et al. 1993[80]	CBT vs. SET or SPT	Binge eating episodes (post-treatment)	0.278 (-0.117 to 0.673), 0.167	12.580 / 0.110	Insufficient
Walsh et al. 1997[75] Garner et al. 1993[80]	CBT vs SET or SPT	Vomiting episodes (post-treatment)	0.137 (-0.255 to 0.530), 0.492	0.000 / 0.000	Insufficient
Walsh et al. 1997[75] Garner et al. 1993[80]	CBT vs. SET or SPT	Beck Depression Inventory (BDI)	0.244 (-0.150 to 0.638), 0.224	0.000 / 0.000	Insufficient
Walsh et al. 1997[75] Garner et al. 1993[80]	CBT vs. SET or SPT	Dropout	1.267 (0.490 to 3.281), 0.625	0.000 / 0.000	Insufficient
Wolf and Crowther 1992[81] Fairburn et al. 1991[82] Freeman et al. 1988[16]	CBT vs. BT	Binge eating (post-treatment)	0.250 (-0.089 to 0.590), 0.149	0.000 / 0.000	Insufficient
Wolf and Crowther 1992[81] Fairburn et al. 1991[82] Freeman et al. 1988[16]	CBT vs. BT	Dropout	2.351 (0.948 to 5.831), 0.065	0.000 / 0.000	Insufficient

BT: Behavioral therapy
CBT: Cognitive behavioral therapy
ERP: Exposure plus response prevention
GRP: Group therapy
IPT: Interpersonal psychotherapy
SET: Supportive expressive therapy
SPT: Supportive psychotherapy

Table 33. Key Question 2: Individual Results of Studies on Variants of CBT

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
CBT Delivered via Telemedicine (TV-CBT) versus CBT Delivered Face-to-face (FTF-CBT)									
						3 mo		**12 mo**	
Mitchell et al. 2008[6] [a]	Binge eating episodes/28 days	FTF-CBT (66)	21.9 (27.3)	3.7 (11.2)	0.233 (-0.113 to 0.578), 0.187	5.1 (11.5)	0.184 (-0.161 to 0.530), 0.295	6.6 (14.9)	0.338 (-0.009 to 0.685), 0.056
		TV-CBT (62)	19.1 (24.7)	6.2 (12.3)		6.5 (12.3)		11.8 (21.8)	
	Purging episodes/ 28 days	FTF-CBT (66)	35.6 (34.1)	5.6 (12.5)	0.143 (-0.202 to 0.488), 0.418	8.7 (16.5)	0.027 (-0.318 to 0.371), 0.879	8.2 (17.8)	0.311 (-0.036 to 0.658), 0.079
		TV-CBT (62)	36.8 (34.7)	11.1 (19.0)		10.7 (17.9)		19.4 (34.0)	
	EDE								
	Restraint	FTF-CBT (66)	3.5 (1.2)	1.5 (1.5)	0.211 (-0.134 to 0.557), 0.231	1.5 (1.4)	0.211 (-0.134 to 0.557), 0.231	1.6 (1.5)	0.211 (-0.134 to 0.557), 0.231
		TV-CBT (62)	3.4 (1.4)	1.7 (1.5)		1.7 (1.6)		1.8 (1.5)	
	Eating concerns	FTF-CBT (66)	2.1 (1.4)	0.7 (1.0)	0.409 (0.061 to 0.757), 0.021	0.4 (0.5)	0.721 (0.365 to 1.077), 0.001	0.6 (1.0)	0.546 (0.195 to 0.897), 0.002
		TV-CBT (62)	1.7 (1.3)	0.8 (1.0)		0.9 (1.2)		0.9 (1.3)	
	Shape concerns	FTF-CBT (66)	3.8 (1.3)	2.3 (1.5)	0.208 (-0.137 to 0.554), 0.237	2.1 (1.3)	0.289 (-0.057 to 0.635), 0.012	1.8 (1.2)	0.431 (0.083 to 0.780), 0.015
		TV-CBT (62)	3.5 (1.4)	2.3 (1.5)		2.2 (1.5)		2.1 (1.6)	
	Weight concerns	FTF-CBT (66)	3.5 (1.3)	2.1 (1.6)	0.071 (-0.273 to 0.416), 0.685	2.1 (1.3)	0.150 (-0.195 to 0.495), 0.394	1.8 (1.2)	0.299 (-0.048 to 0.645), 0.0911
		TV-CBT (62)	3.4 (1.3)	1.9 (1.3)		2.2 (1.4)		2.1 (1.5)	
	Ham-D	FTF-CBT (66)	15.7 (9.2)	7.0 (7.4)	0.552 (0.201 to 0.903), 0.002	8.6 (8.1)	0.228 (-0.117 to 0.574), 0.196	9.1 (9.3)	0.089 (-0.255 to 0.434), 0.611
		TV-CBT (62)	14.5 (9.0)	10.6 (8.7)		9.4 (8.4)		8.7 (7.9)	
	RSE	FTF-CBT (66)	3.6 (2.0)	2.0 (1.9)	0.102 (-0.243 to 0.447), 0.563	2.1 (2.0)	0.201 (-0.144 to 0.547), 0.254	2.0 (2.0)	0.101 (-0.244 to 0.445), 0.568
		TV-CBT (62)	3.6 (1.9)	2.2 (2.0)		1.7 (2.0)		1.8 (2.0)	
	SF-36 physical component	FTF-CBT (66)	54.6 (8.0)	56.2 (5.7)	0.114 (-0.231 to 0.459), 0.518	57.1 (4.9)	0.395 (0.047 to 0.743), 0.026	55.4 (5.3)	0.073 (-0.272 to 0.418), 0.678
		TV-CBT (62)	53.4 (9.1)	54.1 (7.9)		52.7 (9.0)		53.6 (9.3)	
	SPF-36 mental component	FTF-CBT (66)	34.2 (12.7)	45.5 (11.9)	0.293 (-0.053 to 0.639), 0.097	43.9 (13.6)	0.081 (-0.264 to 0.426), 0.646	42.7 (12.8)	0.029 (-0.315 to 0.374), 0.867
		TV-CBT (62)	35.4 (14.2)	42.9 (12.6)		44.0 (13.6)		43.5 (14.4)	

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
Individual (IND) CBT versus Group (GRP) CBT									
						12 mo		**2.5 yrs**	
Nevonen and Broberg, 2006[85 a]	Frequency of binge eating days/week	IND (42)	3.9 (1.9)	1.2 (1.5)	0.311 (-0.111 to 0.733), 0.148	1.4 (1.9)	0.386 (-0.037 to 0.809), 0.074	1.3 (2.1)	0.479 (0.054 to 0.904), 0.027
		GRP (44)	3.7 (1.9)	1.6 (2.2)		2.0 (2.4)		2.1 (2.3)	
	Frequency of compensation days/week	IND (42)	3.6 (2.7)	1.3 (1.8)	0.509 (0.084 to 0.935), 0.019	1.2 (2.0)	0.539 (0.112 to 0.966), 0.013	1.0 (1.7)	0.629 (0.199 to 1.058), 0.004
		GRP (44)	2.8 (2.8)	1.8 (2.5)		1.8 (2.6)		1.8 (2.5)	
	EDI-2 subscales 1 to 3	IND (42)	43 (11.8)	26 (15.8)	0.000 (-0.419 to 0.419), 1.000	19 (17.1)	0.346 (-0.076 to 0.768), 0.108	22 (18.9)	0.170 (-0.250 to 0.590), 0.428
		GRP (44)	44 (15.6)	27 (22.0)		26 (21.1)		26 (20.3)	
	EDI-2 subscales 4 to 11	IND (42)	61 (24.5)	42 (29.7)	0.000 (-0.419 to 0.419), 1.000	35 (26.4)	0.474 (0.049 to 0.899), 0.029	22 (18.9)	0.042 (-0.377 to 0.461), 0.843
		GRP (44)	64 (27.2)	45 (36.3)		26 (21.1)		26 (20.3)	
	Interpersonal problems inventory (IPP)	IND (42)	1.2 (0.5)	1.0 (0.5)	0.000 (-0.419 to 0.419), 1.000	1.0 (0.5)	0.187 (-0.233 to 0.607), 0.383	1.1 (0.6)	0.178 (-0.242 to 0.598), 0.406
		GRP (44)	1.2 (0.5)	1.0 (0.6)		0.9 (0.6)		1.0 (0.6)	
	BDI	IND (42)	21 (9.3)	13 (11.6)	0.332 (-0.090 to 0.754)	14.0 (11.1)	0.171 (-0.249 to 0.591), 0.424	13 (10.5)	0.173 (-0.247 to 0.593), 0.420
		GRP (44)	21 (10.9)	17 (14.5)		16 (13.9)		15 (14.0)	

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
						3 mo		6 mo	
Chen et al. 2002[86 b]	Binge eating episodes/28 days	IND (30)	32.07 (23.85)	7.77 (12.88)	0.305 (-0.197 to 0.807), 0.234	8.80 (14.22)	0.112 (-0.388 to 0.612), 0.662	10.47 (14.24)	0.139 (-0.361 to 0.639), 0.585
		GRP (30)	28.17 (25.47)	10.57 (17.84)		7.33 (10.62)		9.60 (14.60)	
	Vomiting episodes/28 days	IND (30)	41.70 (48.79)	8.73 (16.39)	0.450 (-0.056 to 0.956), 0.081	10.57 (16.89)	0.284 (-0.218 to 0.786), 0.267	12.80 (17.86)	0.236 (-0.265 to 0.737), 0.356
		GRP (30)	31.29 (34.08)	18.83 (53.49)		10.77 (15.66)		11.20 (20.74)	
	EDE-12 Total	IND (30)	5.19 (1.36)	3.73 (2.05)	0.118 (-0.382 to 0.618), 0.642	3.52 (2.17)	0.156 (-0.345 to 0.656), 0.542	3.81 (2.21)	0.060 (-0.440 to 0.559), 0.815
		GRP (30)	5.23 (1.26)	3.97 (1.68)		3.87 (2.34)		3.74 (1.94)	
	Eating Disorder Inventory								
	Drive for thinness	IND (30)	14.37 (4.06)	10.63 (5.58)	0.002 (-0.498 to 0.501), 0.994	9.90 (6.13)	0.043 (-0.456 to 0.543), 0.865	9.67 (6.77)	0.116 (-0.384 to 0.616), 0.648
		GRP (30)	14.93 (5.16)	11.20 (6.00)		10.70 (5.86)		9.53 (6.54)	
	Bulimia	IND (30)	13.77 (4.11)	8.07 (6.23)	0.269 (-0.233 to 0/771), 0.293	8.33 (6.15)	0.152 (-0.348 to 0.653), 0.551	6.26 (4.45)	0.007 (-0.493 to 0.506), 0.979
		GRP (30)	12.87 (4.49)	8.70 (6.45)		8.30 (6.60)		5.33 (4.73)	
	Body dissatisfaction	IND (30)	18.57 (7.75)	15.87 (8.25)	0.101 (-0.399 to 0.600), 0.693	15.90 (8.89)	0.039 (-0.460 to 0.539), 0.878	14.97 (8.99)	0.064 (-0.435 to 0.564), 0.801
		GRP (30)	16.57 (8.42)	14.70 (8.12)		14.23 (8.03)		12.43 (7.85)	
	Perfectionism	IND (30)	7.47 (4.56)	6.47 (4.16)	0.077 (-0.423 to 0.576), 0.764	6.50 (4.58)	0.199 (-0.301 to 0.700), 0.435	6.73 (5.11)	0.229 (-0.272 to 0.730), 0.370
		GRP (30)	7.23 (4.14)	6.57 (4.58)		5.37 (4.33)		5.40 (4.84)	
	Interpersonal distrust	IND (30)	5.77 (4.37)	4.93 (4.82)	0.068 (-0.431 to 0.568), 0.789	4.20 (4.29)	0.078 (-0.421 to 0.578), 0.758	4.30 (4.48)	0.063 (-0.436 to 0.563), 0.804
		GRP (30)	5.17 (3.90)	4.03 (4.15)		3.93 (4.03)		3.43 (4.03)	
	Interceptive awareness	IND (30)	14.00 (11.53)	9.03 (6.62)	0.136 (-0.364 to 0.636), 0.595	9.37 (6.83)	0.133 (-0.367 to 0.633), 0.603	9.13 (6.75)	0.008 (-0.491 to 0.508), 0.975
		GRP (30)	12.77 (7.30)	8.97 (5.72)		9.30 (6.53)		7.97 (6.09)	

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
	Impulse regulation	IND (30)	6.70 (5.24)	5.80 (5.61)	0.242 (-0.259 to 0.743), 0.344	5.03 (4.56)	0.030 (-0.470 to 0.529), 0.908	5.93 (5.74)	0.373 (-0.131 to 0.877), 0.147
		GRP (30)	6.83 (5.60)	4.57 (5.72)		5.00 (5.84)		4.00 (5.19)	
	STAI state anxiety	IND (30)	50.8 (10.38)	45.23 (11.60)	0.067 (-0.432 to 0.567), 0.791	45.77 (11.21)	0.189 (-0.312 to 0.690), 0.460	48.60 (10.67)	0.368 (-0.136 to 0.872), 0.152
		GRP (30)	48.70 (11.22)	43.87 (9.87)		45.70 (9.30)		42.43 (11.37)	
	STAI Trait anxiety	IND (30)	55.33 (9.11)	51.87 (9.09)	0.101 (-03.99 to 0.600), 0.693	52.60 (8.50)	0.030 (-0.469 to 0.530), 0.906	52.53 (8.24)	0.286 (-0.216 to 0.788), 0.264
		GRP (30)	55.33 (8.15)	50.97 (8.90)		52.33 (9.48)		49.93 (10.02)	
	BDI	IND (30)	22.0 (9.69)	15.37 (11.91)	0.159 (-0.341 to 0.660), 0.533	16.73 (11.93)	0.301 (-0.201 to 0.804), 0.240	16.70 (12.74)	0.359 (-0.145 to 0.863), 0.162
		GRP (30)	22.70 (10.57)	14.33 (10.36)		14.17 (10.18)		13.37 (10.68)	
	RSE	IND (30)	27.47 (4.94)	24.53 (5.93)	0.125 (-0.375 to 0.625), 0.624	24.5 (5.81)	0.190 (-0.311 to 0.690), 0.458	23.57 (6.24)	0.053 (-0.447 to 0.553), 0.835
		GRP (30)	27.47 (4.07)	23.97 (4.63)		23.63 (4.48)		23.37 (4.38)	
	SAS-M	IND (30)	1.61 (0.46)	1.30 (0.48)	0.336 (-0.167 to 0.839), 0.191	1.37 (0.49)	0.113 (-0.387 to 0.613), 0.657	1.35 (0.53)	0.331 (-0.172 to 0.834), 0.197
		GRP (30)	1.52 (0.51)	1.40 (0.71)		1.22 (0.61)		1.08 (0.62)	

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
Manual-based CBT versus Individualized (IND) CBT									
								6 mo	
Ghaderi et al. 2006[84]	Binge eating/ 28 days	Manual-based (26)	12 (7.2)	1.5 (2.3)	0.514 (-0.042 to 1.609), 0.070	NR	NR	1.5 (2.3)	0.468 (-0.086 to 1.022), 0.098
		IND (24)	18.0 (18.7)	0.6 (1.7)		NR	NR	1.3 (2.4)	
	Vomiting/28 days	Manual-based (26)	12.8 (17.6)	2.9 (4.7)	0.152 (-0.395 to 0.699), 0.586	NR	NR	3.1 (5.6)	0.082 (-0.464 to 0.628), 0.768
		IND (24)	15.0 (20.4)	2.5 (7.0)		NR	NR	6.8 (20.2)	
	Number of weeks abstinent from binge eating	Manual-based (26)	1.3 (0.7)	6.2 (3.9)	1.391 (0.781 to 2,001), 0.001	NR	NR	7.6 (3.9)	0.509 (-0.046 to 1.064), 0.072
		IND (24)	0.9 (0.9)	10.2 (2.8)		NR	NR	9.0 (3.7)	
	Number of weeks abstinent from compensation	Manual-based (26)	0.7 (0.8)	5.1 (4.3)	0.465 (-0.089 to 1.018), 0.100	NR	NR	6.5 (4.1)	0.333 (-0.217 to 0.883), 0.235
		IND (24)	1.2 (0.9)	7.6 (4.9)		NR	NR	8.3 (4.3)	
	BDI	Manual-based (26)	16.2 (7.8)	7.0 (5.8)	0.046 (-0.500 to 0.592), 0.869	NR	NR	9.3 (9.7)	0.587 (0.029 to 1.146), 0.039
		IND (24)	19.9 (10.8)	11.1 (8.8)		NR	NR	7.5 (7.3)	
	RSE	Manual-based (26)	3.6 (1.3)	2.2 (1.9)	0.056 (-0.490 to 0.602), 0.841	NR	NR	2.4 (2.2)	0.312 (-0.238 to 0.861), 0.266
		IND (24)	3.3 (2.0)	1.8 (1.6)		NR	NR	1.5 (1.7)	
	BSQ	Manual-based (26)	125.8 (32.7)	92.3 (32.3)	0.531 (-0.025 to 1.087), 0.061	NR	NR	94.8 (36.7)	0.612 (0.053 to 1.171), 0.032
		IND (24)	135.8 (33.7)	85.4 (33.7)		NR	NR	85.4 (24.0)	
	Perceived social support	Manual-based (26)	69.4 (7.6)	76.1 (12.5)	0.249 (-0.299 to 0.797), 0.373	NR	NR	73.9 (16.3)	0.319 (-0.230 to 0.869), 0.255
		IND (24)	70.7 (12.8)	74.3 (14.2)		NR	NR	79.5 (11.6)	

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
	EDE-Q total score	Manual-based (26)	3.4 (1.0)	1.8 (1.2)	0.348 (-0.203 to 0.898), 0.216	NR	NR	2.3 (1.8)	0.660 (0.099 to 1.221), 0.021
		IND (24)	3.7 (1.1)	1.7 (1.2)		NR	NR	1.7 (1.0)	
	EDI total score	Manual-based (26)	8.8 (3.2)	4.9 (3.0)	0.029 (-0.517 to 0.575), 0.916	NR	NR	5.5 (4.1)	0.439 (-0.114 to 0.992), 0.120
		IND (24)	9.7 (3.9)	5.7 (3.2)		NR	NR	4.8 (2.5)	
High Intensity CBT versus Low Intensity									
				Post-treatment Only					
Mitchell et al. 1993[87 b]	Binge eating episodes/week	High/high (33)	9.02 (5.43)	2.10 (4.40)	1.353 (0.886 to 1.819), 0.001	NR	NR	NR	NR
		High/low (41)	8.24 (5.84)	1.82 (3.58)	1.235 (0.833 to 1.637), 0.001	NR		NR	
		Low/high (35)	10.3 (6.97)	1.29 (4.97)	1.417 (0.953 to 1.881), 0.001	NR		NR	
		Low/low (34)	8.66 (4.76)	3.31 (3.70)	1.208 (0.772 to 1.644), 0.001	NR		NR	
	Vomiting episodes/week	High/high (33)	9.41 (7.06)	2.13 (4.33)	1.153 (0.719 to 1.587), 0.001	NR	NR	NR	NR
		High/low (41)	10.6 (8.34)	1.91 (4.38)	1.180 (0.786 to 1.574), 0.001	NR		NR	
		Low/high (35)	10.8 (9.19)	2.44 (8.35)	0.929 (0.539 to 1.319), 0.001	NR		NR	
		Low/low (34)	9.63 (7.15)	4.22 (4.66)	0.841 (0.456 to 1.225), 0.001	NR		NR	

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Mid-Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
	Abstinent days/week	High/high (33)	1.34 (1.55)	5.83 (2.14)	2.290 (1.645 to 2.935), 0.001	NR	NR	NR	NR
		High/low (41)	1.63 (1.54)	5.62 (2.15)	2.040 (1.506 to 2.574), 0.001	NR		NR	
		Low/high (35)	0.98 (1.28)	5.86 (2.24)	2.451 (1.792 to 3.111), 0.001	NR		NR	
		Low/low (34)	1.25 (1.37)	3.88 (2.32)	1.272 (0.826 to 1.718), 0.001	NR		NR	
	HAM-A	High/high (33)	5.61 (4.53)	3.14 (4.21)	0.551 (0.192 to 0.909), 0.003	NR	NR	NR	NR
		High/low (41)	5.27 (4.49)	2.07 (2.98)	0.793 (0.447 to 1.139), 0.001	NR		NR	
		Low/high (35)	5.60 (4.59)	2.28 (2.90)	0.807 (0.432 to 1.182), 0.001	NR		NR	
		Low/low (34)	5.76 (4.42)	2.06 (2.95)	0.927 (0.532 to 1.323), 0.001	NR		NR	
	BDI	High/high (33)	17.6 (7.59)	9.11 (9.73)	0.936 (0.534 to 1.338), 0.001	NR	NR	NR	NR
		High/low (41)	14.4 (7.98)	6.48 (5.81)	1.087 (0.706 to 1.469), 0.001	NR		NR	
		Low/high (35)	17.6 (9.04)	5.77 (7.32)	1.391 (0.932 to 1.851), 0.001	NR		NR	
		Low/low (34)	16.6 (9.16)	9.82 (9.55)	0.708 (0.339 to 1.077), 0.001	NR		NR	

[a] Analysis based on intent-to-treat with baseline observation carried forward (BOCF).
[b] Analysis based on intent-to-treat with last observation carried forward (LOCF).

BDI: Beck depression inventory
BN: Bulimia nervosa
BSQ: Body shape questionnaire
EDE: Eating disorder examination
EDI: Eating disorders inventory
GRP: Group therapy
HAM-A: Hamilton anxiety
HAM-D: Hamilton depression
IND: Individual therapy
IPP: Interpersonal problems
RSE: Rosenberg self-esteem scale
SAS-M: Social adjustment scale-modified
SF-36: Medical outcomes study short-form
STAI: State trait anxiety inventory

Table 34. Key Question 2: Remission Rates Reported in Studies of Variants of CBT

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Number at Mid Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Number at Last Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
CBT Delivered via Telemedicine (TV-CBT) versus CBT Delivered Face-to-face (FTF-CBT)								
					3 mo		**12 mo**	
Mitchell et al. 2008[6 a]	Remission of binge eating (no behaviors reported previous 28 days)	FTF-CBT (66)	33 (50.0)	1.000 (0.500 to 2.00), 1.00	29 (43.9)	0.952 (0.474 to 1.912), 0.889	26 (39.4)	0.900 (0.444 to 1.823), 0.770
		TV-CBT (62)	31 (50.0)		28 (45.2)		26 (41.9)	
	Remission of purging (no behaviors reported previous 28 days)	FTF-CBT (66)	24 (36.4)	1.293 (0.619 to 2.702), 0.494	19 (28.8)	1.386 (0.623 to 3.081), 0.423	17 (25.8)	0.997 (0.452 to 2.203), 0.995
		TV-CBT (62)	19 (30.6)		14 (22.6)		16 (25.8)	
	Remission of binge eating and purging (no behaviors reported previous 28 days)	FTF-CBT (66)	19 (28.8)	1.070 (0.495 to 2.315), 0.863	14 (21.2)	1.015 (0.434 to 2.374), 0.973	13 (19.7)	0.925 (0.391 to 2.188), 0.858
		TV-CBT (62)	17 (27.4)		13 (21.0)		13 (21.0)	
Individual (IND) CBT versus Group (GRP) CBT								
					12 mo		**2.5 yrs**	
Nevonen and Broberg 2006[85 a,b]	Remission (no binge eating and purging during last month before post-assessment and 3 months before follow-up assessments)	IND (42)	13 (31)	0.648 (0.266 to 1.574), 0.338	14 (33)	1.333 (0.530 to 3.355), 0.541	16 (38)	1.641 (0.661 to 4.077), 0.286
		GRP (44)	18 (41)		12 (27)		12 (27)	
	Partial remission (no longer meeting DSM criteria for BN, includes patients in full remission)	IND (42)	35 (83)	2.097 (0.742 to 5.922), 0.162	31 (74)	2.142 (0.862 to 5.324), 0.101	33 (79)	3.056 (1.186 to 7.871), 0.021
		GRP (44)	31 (71)		25 (57)		24 (55)	
						3 mo		**6 mo**
Chen et al. 2003[86 a]	Remission (no objective or subjective binge eating and vomiting reported previous 28 days)	IND (30)	6 (20)	NR	5 (17)	5.800 (0.635 to 53.012), 0.119	4 (13)	1.385 (0.282 to 6.796), 0.688
		GRP (30)	0		1 (3.3)		3 (10)	

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Number at Mid Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Number at Last Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
Manualized CBT versus Individualized CBT								
								6 mo
Ghaderi et al. 2006[84 c]	Treatment responders (no binge eating or compensatory behaviors at post-treatment or no more than one episode during the previous 4 weeks)	Manual (26)	18 (69)	0.205 (0.039 to 1.087), 0.063	NR	NR	NR	NR
		IND (24)	22 (92)		NR		NR	
High Intensity CBT versus Low Intensity CBT								
Mitchell et al. 1993[87]	Abstinent from binge eating at post-treatment (duration not specified)	High/high (33)	23 (69.7)	NR	NR	NR	NR	NR
		High/low (41)	30 (73.2)	NR	NR	NR	NR	NR
		Low/high (35)	25 (70.6)	NR	NR	NR	NR	NR
		Low/low (34)	11 (32.4)	NR	NR	NR	NR	NR
	Abstinent from purging at post-treatment (duration not specified)	High/high (33)	24 (72.7)	NR	NR	NR	NR	NR
		High/low (41)	29 (70.7)	NR	NR	NR	NR	NR
		Low/high (35)	27 (76.5)	NR	NR	NR	NR	NR
		Low/low (34)	10 (29.4)	NR	NR	NR	NR	NR

[a] Based on intent-to-treat analysis with baseline observation carried forward (BOCF)
[b] Authors defined what we are considering full remission in this report (abstinent for 28 to 30 days prior to assessment) as recovery.
[c] Based on intent-to-treat analysis with last observation carried forward (LOCF).

FTF-CBT: Face-to-face cognitive behavioral therapy
GRP: Group therapy
IND: Individual therapy
NR: Not reported

Table 35. Key Question 2: Dropouts in Studies of Variants of CBT

Study	Group	Number Randomized	Overall Number of Dropouts (%)	Effect Size Odds Ratio (95% CI), p-Value
Mitchell et al. 2008[6]	FTF-CBT	66	41 (62)	1.265 (0.624 to 2.565), 0.514
	TV-CBT	62	35 (56)	
Ghaderi et al. 2006[84]	Manual	26	2 (04.0)	NR
	IND	24		
Nevonen and Broberg 2006[85]	IND	42	4 (9.5)	0.251 (0.074 to 0.848), 0.026
	GRP	44	13 (30)	
Chen et al. 2002[86]	IND	30	23 (38.3) Does not report number per group	NR
	GRP	30		
Mitchell et al. 1993[87]	High/high	33	4 (12)	NR
	High/low	41	5 (12)	
	Low/high	35	5 (14)	
	Low/low	34	6 (18)	

FTF-CBT: Face-to-face cognitive behavioral therapy
GRP: Group therapy
IND: Individual therapy
NR: Not reported

Table 36. Key Question 2: Individual Results of Studies on Self-help

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
Self Help Using Cognitive Behavioral Therapy (CBT) Principles in General Practice (GP) versus Specialist Therapy (CBT and Interpersonal Psycho Therapy)									
						6 months		**9 months**	
Durand and King 2003[89] [a]	Objective Bulimic Episodes/28 days	GP-CBT (34)	19.0 (15.2)	NR	—	16.4 (17.4)	0.303 (-0.170 to 0.775), p = 0.209	15.4 (17.4)	0.105 (-0.365 to 0.575), p = 0.662
		Specialist-CBT (34)	20.4 (19.6)	NR		12.6 (14.2)		14.9 (18.9)	
	Episodes of Vomiting/28 days	GP-CBT (34)	35.1 (31.0)	NR	—	25.0 (25.6)	0.244 (-0.252 to 0.739), p = 0.336	16.5 (18.7)	0.045 (-0.425 to 0.515), p = 0.852
		Specialist-CBT (34)	37.8 (33.9)	NR		20.3 (27.0)		20.5 (23.9)	
	EDE								
	Global Score	GP-CBT (34)	3.0 (1.0)	NR	—	2.6 (1.2)	0.097 (-0.373 to 0.567), p = 0.686	2.4 (1.2)	0.097 (-0.373 to 0.567), p = 0.686
		Specialist-CBT (34)	3.3 (0.8)	NR		2.8 (1.0)		2.6 (1.0)	
	Restraint	GP-CBT (34)	3.3 (1.0)	NR	—	2.8 (1.3)	0.248 (-0.224 to 0.719), p = 0.304	2.4 (1.4)	0.645 (-0.208 to 0.736), p = 0.274
		Specialist-CBT (34)	3.4 (0.8)	NR		2.6 (1.4)		2.8 (1.1)	
	Eating concerns	GP-CBT (34)	2.4 (1.2)	NR	—	2.0 (1.3)	0.000 (-0.470 to 0.470), p = 1.000	1.8 (1.3)	0.000 (-4.70 to 0.470), p = 1.000
		Specialist-CBT (34)	2.5 (1.0)	NR		2.1 (1.3)		1.9 (1.2)	
	Shape concerns	GP-CBT (34)	3.4 (1.2)	NR	—	2.9 (1.3)	0.082 (-0.388 to 0.552), p = 0.732	2.9 (1.3)	0.328 (-0.145 to 0.801), p = 0.174
		Specialist-CBT (34)	3.9 (1.1)	NR		3.3 (1.2)		3.0 (1.3)	
	Weight concerns	GP-CBT (34)	3.1 (1.3)	NR	—	2.6 (1.4)	0.076 (-0.394 to 0.546), p = 0.752	2.5 (1.5)	0.073 (-0.397 to 0.543), p = 0.761
		Specialist-CBT (34)	3.4 (1.3)	NR		3.0 (1.2)		2.9 (1.3)	
	Bulimic Investigatory Test Edinburgh (BITE)	GP-CBT (34)	34.1 (6.3)	NR	—	28.9 (11.3)	0.032 (-0.438 to 0.502), p = 0.893	26.2 (12.4)	0.077 (-0.393 to 0.547), p = 0.747
		Specialist-CBT (34)	33.7 (5.9)	NR		28.2 (9.9)		26.6 (11.4)	
	Beck depression inventory (BDI)	GP-CBT (34)	21.7 (9.7)	NR	—	17.8 (11.7)	2.429 (1.806 to 3.051), p = 0.000	16.2 (9.9)	0.999 (0.500 to 1.499), p = 0.000
		Specialist-CBT (34)	21.4 (10.7)	NR		18.1 (10.6)		15.5 (10.8)	

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
	Social Adjustment Scale (SAS, using Work Leisure and Family Life questionnaire, WLFL)	GP-CBT (34)	2.4 (0.4)	NR	—	2.3 (0.5)	0.206 (-0.265 to 0.677), p = 0.391	2.2 (0.4)	0.204 (-0.267 to 0.675), p = 0.396
		Specialist-CBT (34)	2.5 (0.5)	NR		2.3 (0.5)		2.2 (0.6)	
Guided Self Help (GSH) versus Cognitive Behavior Therapy (CBT)									
								1 year	
Bailer et al. 2004[88 b]	Frequency of binge eating/4 weeks	CBT (41)	27.95 (29.66)	16.31 (23.65)	0.290 (-0.144 to 0.724), p = 0.190	NR	—	13.11 (21.76)	0.162 (-0.270 to 0.594), p = 0.463
		Self Help (40)	26.15 (21.51)	7.67 (9.06)		NR		7.54 (13.15)	
	Frequency of vomiting/4 weeks	CBT (41)	30.38 (32.85)	15.50 (23.99)	0.012 (-0.420 to 0.443), p = 0.957	NR	—	11.89 (22.24)	0.077 (-0.355 to 0.508), p = 0.728
		Self Help (40)	21.18 (22.79)	6.00 (7.07)		NR		4.62 (13.15)	
	Eating Disorders Inventory (EDI)								
	EDI - Drive for Thinness	CBT (41)	14.43 (5.16)	10.87 (6.69)	0.467 (0.029 to 0.904), p = 0.036	NR	—	5.21 (5.64)	0.293 (-0.141 to 0.727), p=0.185
		Self Help (40)	14.0 (5.9)	7.67 (6.53)		NR		6.59 (5.97)	
	EDI - Bulimia	CBT (41)	10.25 (5.51)	6.57 (5.32)	0.691 (0.246 to 1.135), p = 0.002	NR	—	4.50 (5.06)	0.246 (-0.187 to 0.679), p = 0.265
		Self Help (40)	10.38 (5.29)	3.10 (4.34)		NR		3.32 (5.18)	
	EDI - Body Dissatisfaction	CBT (41)	15.45 (7.6)	14.87 (8.07)	0.619 (0.177 to 1.060), p = 0.006	NR	—	9.29 (9.42)	0.097 (-0.335 to 0.528), p = 0.661
		Self Help (40)	15.55 (8.47)	9.97 (7.45)		NR		10.18 (8.66)	
	EDI - Ineffectiveness	CBT (41)	8.32 (5.81)	6.52 (6.72)	0.611 (0.169 to 1.053), p = 0.007	NR	—	5.00 (7.42)	0.388 (-0.047 to 0.824), p = 0.081
		Self Help (40)	8.43 (5.81)	3.10 (3.24)		NR		2.77 (2.98)	
	EDI - Perfectionism	CBT (41)	7.8 (4.19)	7.61 (3.6)	0.515 (0.076 to 0.954), p = 0.021	NR	—	6.38 (3.88)	0.337 (-0.097 to 0.772), p = 0.128
		Self Help (40)	6.83 (4.33)	4.53 (4.03)		NR		4.05 (3.39)	

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
	EDI - Interpersonal Distrust	CBT (41)	4.45 (4.03)	3.74 (4.31)	0.315 (-0.119 to 0.749), p = 0.155	NR	—	3.09 (4.18)	0.469 (0.032 to 0.907), p = 0.036
		Self Help (40)	4.80 (3.52)	2.87 (3.37)		NR		1.68 (2.93)	
	EDI - Interoceptive Awareness	CBT (41)	10.62 (6.32)	7.65 (5.31)	0.353 (-0.081 to 0.788), p = 0.111	NR	—	4.62 (5.59)	0.049 (-0.382 to 0.481), p = 0.824
		Self Help (40)	9.05 (5.04)	4.13 (4.96)		NR		3.32 (4.59)	
	EDI - Maturity Fears	CBT (41)	3.75 (3.73)	2.52 (2.09)	0.503 (0.065 to 0.941), p = 0.024)	NR	—	2.21 (1.79)	0.498 (0.059 to 0.936), p = 0.026
		Self Help (40)	5.4 (3.99)	2.47 (2.01)		NR		2.18 (2.06)	
	EDI - Asceticism	CBT (41)	5.92 (3.07)	4.52 (2.27)	0.326 (-0.108 to 6.76), p = 0.141	NR	—	3.50 (2.69)	0.228 (-0.205 to 0.661), p = 0.302
		Self Help (40)	4.97 (2.88	2.67 (2.50)		NR		3.23 (3.13)	
	EDI - Impulse Regulation	CBT (41)	6.62 (6.43)	5.48 (6.16)	0.355 (-0.080 to 0.790), p = 0.110	NR	—	4.17 (5.18)	0.242 (-0.191 to 0.675), p = 0.274
		Self Help (40)	5.85 (5.32)	2.70 (4.01)		NR		2.09 (3.83)	
	EDI - Social Insecurity	CBT (41)	6.25 (4.31)	5.91 (4.73)	0.716 (0.271 to 1.162), p = 0.002	NR	—	4.67 (4.42)	0.617 (0.175 to 1.059), p = 0.006
		Self Help (40)	6.88 (3.71)	3.63 (3.03)		NR		2.86 (2.96)	
	Beck depression inventory (BDI)	CBT (41)	17.75 (11.41)	13.83 (11.48)	0.319 (-0.115 to 0.753), p = 0.150	NR	—	11.70 (12.99)	0.174 (-0.258 to 0.606), p = 0.430
		Self Help (40)	15.55 (9.98)	8.27 (8.33)		NR		7.61 (6.30)	

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
CBT versus Guided Self-Change									
								>10 months [c]	
Thiels et al. 1998[91 d,e]	***Eating Disorder Examination (EDE) Subscale***								
	Overeating	CBT (24)	2.95 (0.82)	1.53 (1.55)	0.524 (-0.048 to 1.097), p = 0.073	NR	—	1.07 (1.61)	0.023 (-0.539 to 0.585), p = 0.936
		Guided Self-Change (23)	3.02 (1.10)	2.27 (1.21)		NR		1.17 (1.23)	
	Vomiting	CBT (24)	3.79 (1.71)	2.06 (2.30)	0.333 (-0.234 to 0.899), p = 0.250	NR	—	1.38 (2.00)	0.190 (-0.373 to 0.754), p = 0.508
		Guided Self-Change (23)	3.65 (1.65)	2.57 (1.84)		NR		1.59 (1.82)	
	Dietary Restraint	CBT (24)	2.98 (1.47)	1.83 (1.45)	0.119 (-0.444 to 0.682), p = 0.678	NR	—	1.56 (1.80)	0.245 (-0.319 to 0.810), p = 0.395
		Guided Self-Change (23)	3.3 (1.82)	2.34 (1.46)		NR		1.46 (1.57)	
	Shape Concern	CBT (24)	3.53 (1.40)	2.37 (1.34)	0.318 (-0.248 to 0.884), p = 0.271	NR	—	2.32 (1.68)	0.207 (-0.356 to 0.771), p = 0.471
		Guided Self-Change (23)	3.20 (1.42)	2.50 (1.53)		NR		1.68 (1.43)	
	Weight Concern	CBT (24)	3.79 (1.62)	2.21 (1.63)	0.210 (-0.353 to 0.774), p = 0.464	NR	—	1.92 (1.57)	1.417 (0.786 to 2.048), p = 0.000
		Guided Self-Change (23)	3.63 (1.68)	2.42 (1.95)		NR		1.83 (1.57)	
	BITE	CBT (25)	30.1 (5.0)	17.0 (13.1)	0.548 (-0.019 to 1.116), p = 0.058	NR	—	15.4 (14.2)	0.074 (-0.483 to 0.631), p = 0.794
		Guided Self-Change (23)	33.8 (9.4)	27.0 (12.3)		NR		18.2 (12.5)	
	BDI	CBT (25)	21.0 (8.3)	9.9 (8.8)	0.670 (0.097 to 1.243), p = 0.022	NR	—	11.4 (10.5)	0.031 (-0.526 to 0.588), p = 0.912
		Guided Self-Change (23)	19.5 (8.4)	14.8 (11.4)		NR		10.2 (9.9)	

Study	Outcome/ Instrument	Group (n)	Pre-treatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Mid-Follow-up Score (SD)	Pre- to Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre- to Last Follow-up Between Group Effect-size Estimate Hedges' g (95% CI), p-Value
	Self-Concept Questionnaire	CBT (25)	95.9 (19.9)	119.4 (22.9)	0.376 (-0.186 to 0.938), p = 0.190	NR	—	121.6 (31.3)	0.321 (-0.240 to 0.882), p = 0.262
		Guided Self-Change (23)	104.3 (22.7)	118.6 (29.2)		NR		139.3 (33.5)	
	Eating Disorders Awareness Test	CBT (25)	21.5 (6.9)	29.6 (8.3)	0.429 (-0.141 to 0.999), p = 0.140	NR	—	32.5 (8.0)	0.243 (-0.322 to 0808), p = 0.400
		Guided Self-Change (22)	22.5 (7.8)	34.3 (10.3)		NR		35.5 (9.4)	

[a] Analyses based on intent-to-treat with last observation carried forward (LOCF), trial flow diagram provided by authors indicate that number of patients at followed up varied—6 months, n = 22 and n = 26 for Self Help GP group and Specialist therapy group, respectively; at 9 months, n = 26 and n = 28 for Self Help GP group and Specialist therapy group, respectively.
[b] Analysis based on intent-to-treat with baseline observation carried forward (BOCF). Pre-treatment (n = 81), Post-treatment (n = 56), Follow-up (n = 55). Data for groups at various timepoints not reported separately.
[c] Actual time presented by authors: Mean (SD) 43 (25), Median (range), 40 (23-123) weeks
[d] Authors included information on remission for patients that met their criteria, however length of recovery/remission not defined. Initial number of patients included 62, randomized to CBT (n = 31) and Guided Self-change (n = 31)
[e] Follow up study data (Thiels et al. 2003[90]) omitted from table and analysis. Data indicates attrition rate(s) greater than 50% of total included study subjects.

BDI: Beck depression inventory
BITE: Bulimic Investigatory Test Edinburgh
BN: Bulimia nervosa
BSQ: Body shape questionnaire
EDE: Eating disorder examination
EDI: Eating disorders inventory
HAM-A: Hamilton anxiety
Ham-D: Hamilton depression
IND: Individual therapy
IPP: Interpersonal problems
NR: Not reported
RSE: Rosenberg self-esteem scale
SAS-M: Social adjustment scale-modified
SF-36: Medical outcomes study short-form
STAI: State trait anxiety inventory
WLFL: Work Leisure and Family Life questionnaire, a self report version of the Social Adjustment Scale (SAS)

Table 37. Key Question 2: Remission and Recovery Rates Reported in Studies CBT versus Self-help

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Mid-Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Number at Last Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
Guided Self Help (GSH) versus Cognitive Behavior Therapy (CBT)								
							1 year	
Bailer et al. 2004[88] [a]	Recovery (abstinent from binge eating or purging during the preceding month)	CBT (41)	5 (12.2)	1.713 (0.381 to 7.701), p = 0.483	NR	—	6 (14.6)	0.590 (0.189 to 1.847), p = 0.365
		Self Help (40)	3 (7.5)		NR		9 (22.5)	
	Partial remission (no longer met the DSM-IV frequency criterion for BN)	CBT (41)	12 (29.3)	0.621 (0.247 to 1.563), p = 0.311	NR	—	15 (36.6)	0.606 (-0.251 to 1.464), p = 0.266
		Self Help (40)	16 (40)		NR		20 (50.0)	
CBT versus Guided Self Change								
							>10 months [b]	
Theils et al. 1998[91]	Remission (abstinence from binge eating, vomiting during week preceding follow up)	CBT (31)	17 (54.8)	8.196 (2.311 to 29.073), p = 0.001	NR	—	17 (70.8)	1.474 (0.542 to 4.010), p = 0.447
		Guided Self Change (31)	4 (12.9)		NR		14 (60.9)	

[a] Analysis based on intent-to-treat with baseline observation carried forward (BOCF)
[b] Actual time presented by authors: Mean (SD) 43 (25), Median (range), 40 (23-123) weeks

CI: Confidence interval
NR: Not reported

Table 38. Key Question 2: Dropouts in Studies of CBT versus Self-help

Study	Group	Number Randomized	Overall Number of Dropouts (%)	Effect Size Odds Ratio (95% CI), p-Value
Durand and King 2003[89] [a]	GP-CBT	34	8 (23.5)	0.696 (0.213 to 2.279), p = 0.550
	Specialist-CBT	34	6 (17.6)	
Bailer et al. 2004[88]	CBT	41	11 (26.8)	0.538 (0.206 to 1.401), p = 0.204
	Self Help	40	15 (37.5)	
Thiels et al. 1998[91] [b]	CBT	31	4 (12.9)	0.632 (0.276 to 1.007), p = 0.052
	Guided Self-Change	31	9 (29.0)	

[a] Analyses based on intent-to-treat with baseline observation carried forward (BOCF), trial flow diagram provided by authors indicate that number of patients at followed up varied—6 months, n = 22 and n = 26 for Self Help GP group and Specialist therapy group, respectively; at 9 months, n = 26 and n = 28 for Self Help GP group and Specialist therapy group, respectively.

[b] Author(s) included information on remission for patients that met their criteria, however length of recovery/remission not defined. Initial number of patients included 62, randomized to CBT (n = 31) and Guided Self-change (n = 31). Follow up study data (Thiels et al. 2003[90]) omitted from table and analysis. Data indicates attrition rate(s) greater than 50% of total included study subjects.

CBT: Cognitive behavioral therapy
CI: Confidence interval

Appendix G. Evidence Tables Key Question 3

Table 39. Key Question 3: Study Enrollment Details

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Patients Considered for Enrollment	Number of Patients Eligible for Enrollment	Number of Patients Randomized	% of Patients Considered Who Were Randomized
Family Therapy versus Nonpharmacological Therapy						
Le Grange et al. 2010[92]	Male and female adolescents (aged 12 to 19 years) still living with adult caregivers who met DSM-IV criteria for BN. Study did include patients with partial BN (24 episodes of bulimic symptoms over the past 6 months). Participants and their parents/caregivers had to be willing to participate.	Patients with associated physical or psychiatric disorder needing hospitalization; insufficient knowledge of English; current physical dependence on drugs or alcohol; current low body weight; current treatment for eating or taking medication known to affect weight or eating; and physical conditions or treatments known to influence eating or weight.	140	86	80	57
Schmidt et al. 2007[93]	Male and female adolescents (aged 13 to 19 years) who had at least one adult caregiver and met the DSM-IV criteria for BN or EDNOS BN subtype (binge eating and/or purging less than twice a week for less than 3 months).	Patients with a BMI below the 10th percentile for age and sex; insufficient knowledge of English; and with learning disabilities, severe mental illness, or substance dependence.	148	85	85	57

BMI: Body mass index
BN: Bulimia nervosa
NR: Not reported

Table 40. Key Question 3: Baseline Characteristics of Enrolled Patients

Study	Group (n)	% Females	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episodes (SD)	Mean frequency of purging episodes (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of drug or alcohol abuse (%)	Number of pts with history of attempted suicide (%)
Family Therapy versus Nonpharmacological Therapy															
Le Grange et al. 2010[92]	FBT (41)	98	16 (1.7)	1.8 (1.7)	21.8 (2.5)	18.4 (28.1)/ 28 days	49.5 (36.9)/ 28 days)	34.5 (31.0)/ 28 days	NR	NR	NR	21 (51)	NR	NR	NR
	SPT (39)	97	16 (1.6)	1.7 (2.0)	22.4 (3.4)	18.9 (22.3)/ 28 days	50.2 (42.3)/ 28 days	33.2 (33.5)/ 28 days	NR	NR	NR	17 (44)	NR	NR	NR
Schmidt et al. 2007[93]	FBT (41)	100	17.9 (1.6)	2.6 (1.7)	21.1 (2.8)	5.9 (6.7)/ 28 days	NR	9.9 (17.9)/ 28 days	NR	14 (34)	18 (46)	3 (7.6)	NR	18 (20)	NR
	GSH (44)	95.5	17.4 (1.8)	2.5 (2.1)	21.1 (2.4)	5.2 (6.4)/ 28 days	NR	9.5 (11.7)/ 28 days	NR	15 (34)	17 (40.5)	3 (7.1)	NR	7 (16)	NR

CBT: Cognitive behavioral therapy
GSH: Guided self help
FBT: Family based therapy
NR: Not reported
SD: Standard deviation
SPT: Supportive psychotherapy

Table 41. Key Question 3: Characteristics of Treatment

Study	Treatment Group	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Family Therapy versus Other Nonpharmacological Therapy								
Le Grange et al. 2010[92]	FBT (41)	8 therapists (5 doctoral level and 3 child psychiatry level) delivered the therapies in an outpatient setting	Adapted family based treatment manual for AN developed by Lock et al., which shares many characteristics with the original Maudsley approach.	16 (39%) on antidepressant medication	20 sessions	24 weeks	6 mo	Post-treatment: 36 6 mo: 34
	SPT (39)	Same as above	Adapted manual based treatment developed by Walsh et al. for adults with BN, which was based on earlier work by Fairburn, for use with adolescents.	10 (26%) on antidepressant medication	Same as above	Same as above	Same as above	Post-treatment: 35 6 mo: 34
Schmidt et al. 2007[93]	FBT (41)	23 therapists trained in both therapies. Therapies delivered in outpatient setting	Therapy model adapted from the Maudsley model of family therapy for AN. Treatment is problem oriented, emphasizing the role of the family in restoration of normal eating and providing education about the effects of BN.	14 (34%) on antidepressant medication	15 sessions: 13 with a caregiver and 2 individual sessions	24 weeks	6 mo 12 mo	39 at 6 and 12 mo
	GSH (44)	Same as above	Modified manual developed by Schmidt and Treasure, *Getting Better Bite by Bite*, for use with adolescents. The therapist's role was to motivate patients and guide them through the workbook.	15 (34%) on antidepressant medication	15 sessions: 10 weekly, 3 monthly, and 2 optional	Same as above	6 mo 12 mo	37 at 6 and 12 mo

AN: Anorexia nervosa
BN: Bulimia nervosa
GSH: Guided self help
Mo: months
NR: Not reported
SPT: Supportive psychotherapy

Table 42. Key Question 3: Internal Validity Assessment of Included Studies by Outcome of Interest

Studies	**Q1.** Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled in a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in the length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete the study?	**Q21.** Was there a ≤ 15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Quality Score**
Outcomes (Frequency of Binge Eating and Purging)																								
Le Grange et al. 2007[92]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	NR	N	Y	Y	Y	Y	Y	7.7
Schmidt et al. 2007[93]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	Y	NR	N	N	Y	Y	Y	Y	7.7
Outcomes (Remission, Recovery, Quality of Life, Eating Disorder Pathology, Comorbid Psychological Symptoms, Impact on Family Members, Psychosocial Functioning)																								
Le Grange et al. 2007[92]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	NR	N	Y	Y	Y	Y	Y	7.7
Schmidt et al. 2007[93]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	Y	NR	N	Y	Y	Y	Y	Y	8.2

Studies	**Q1.** Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled in a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in the length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete the study?	**Q21.** Was there a ≤ 15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Quality Score**
Outcomes (Mortality, Dropout)																							
Le Grange et al. 2007[92]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	NR	Y	Y	Y	Y	Y	Y	8.2
Schmidt et al. 2007[93]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	Y	NR	Y	N	Y	Y	Y	Y	8.2

N: No
NR: Not reported,
Y: Yes

Table 43. Key Question 3: Individual Study Results

Study	Outcome/Test	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge' g (95% CI) p-value	Follow-up Score (SD)	Pre-Follow-up Between Group Effect-size Estimate Hedge' g (95% CI, p-value)[b]
						6 mo	
Le Grange et al. 2007[92 a]	BDI	FBT (41)	25.8 (12.2)	12.4 (12.6)	0.200 (-0.236 to 0.635), 0.368	12.6 (12.1)	0.017 (-0.417 to 0.451), 0.939
		SPT (39)	24.6 (11.8)	13.7 (12.9)		11.6 (10.6)	
	RSE	FBT (41)	27.6 (6.8)	22.0 (7.7)	0.239 (-0.197 to 0.675), 0.283	21.4 (7.3)	0.235 (-0.201 to 0.670), 0.291
		SPT (39)	27.2 (5.1)	23.2 (6.4)		22.6 (7.2)	
	EDE (Mean of Preceding 4 Weeks)						
	OBE	FBT (41)	18.4 (28.1)	4.1 (14.8)	0.062 (-0.372 to 0.496), 0.780	2.5 (6.8)	0.105 (-0.330 to 0.539), 0.637
		SPT (39)	18.9 (22.3)	3.2 (5.1)		5.4 (13.7)	
	Vomiting	FBT (41)	34.5 (31.0)	4.8 (9.4)	0.475 (0.034 to 0.915), 0.035	10.1 (21.8)	0.193 (-0.240 to 0.628), 0.386
		SPT (39)	33.2 (33.5)	17.4 (26.0)		14.5 (27.7)	
	All compensatory behavior	FBT (41)	49.5 (36.9)	6.9 (10.2)	0.414 (-0.025 to 0.852),0.065	12.4 (21.6)	0.137 (-0.298 to 0.572), 0.537
		SPT (39)	50.2 (42.3)	22.3 (28.6)		17.9 (28.0)	
	Restraint	FBT (41)	3.8 (1.3)	1.3 (1.5)	0.581 (0.138 to 1.025), 0.010	1.3 (1.5)	0.452 (0.012 to 0.892), 0.044
		SPT (39)	3.7 (1.7)	2.1 (1.6)		1.9 (1.6)	
	Weight concern	FBT (41)	3.7 (1.4)	1.8 (1.6)	0.260 (-0.176 to 0.696), 0.243	1.6 (1.5)	0.207 (-0.228 to 0.643), 0.350
		SPT (39)	4.1 (1.3)	2.6 (1.7)		2.3 (1.5)	
	Shape concern	FBT (41)	4.0 (1.4)	1.8 (1.6)	0.462 (0.002 to 0.902), 0.040	1.7 (1.5)	0.510 (0.069 to 0.951), 0.023
		SPT (39)	4.2 (1.1)	2.7 (1.7)		2.7 (1.9)	
	Eating concern	FBT (41)	2.9 (1.4)	1.0 (1.5)	0.357 (-0.080 to 0.795), p = 0.110	0.8 (1.2)	0.369 (-0.069 to 0.807), 0.099
		SPT (39)	2.9 (1.2)	1.5 (1.4)		1.3 (1.5)	
	Global	FBT (41)	3.6 (1.1)	1.5 (1.4)	0.465 (0.025 to 0.906)	1.4 (1.2)	0.326 (-0.111 to 0.763), 0.144
		SPT (39)	3.7 (1.1)	2.2 (1.4)		1.9 (1.4)	

Study	Outcome/Test	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge' g (95% CI) p-value	Follow-up Score (SD)	Pre-Follow-up Between Group Effect-size Estimate Hedge' g (95% CI, p-value)[b]
						12 mo	
Schmidt et al. 2007[93] [a,b]	Episodes of binge eating per week over 28 days	FBT (41)	5.2	2.0	Not calculated	1.5	Not calculated
		GSH (44)	6.0	3.2		2.8	
	Episodes of vomiting per week over 28 days	FBT (41)	9.8	3.3	Not calculated	2.9	Not calculated
		GSH (44)	9.5	3.7		3.2	
	Weight and shape concern	FBT (41)	4.1 (1.2)	4.0 (1.3)	0.492 (0.064 to 0.920), 0.024	3.4 (1.5)	0.069 (-0.352 to 0.491), 0.747
		GSH (44)	4.2 (1.3)	3.4 (1.7)		3.4 (1.6)	

[a] Analysis based on intent to treat with baseline observation carried forward (BOCF).
[b] Data abstracted from a figure on page 597 of Schmidt et al. 2007.[93] No measure of dispersion provided, thus no individual effect size estimates could be calculated.

BDI: Beck's depression inventory
BN: Bulimia nervosa
EDE: Eating disorder examination
FBT: Family-based therapy
GSH: Guided self-help
OBE: Objective eating disorder
SPT: Supportive psychotherapy
SBE: Subjective eating disorder
RSE: Rosenberg self-esteem scale

Table 44. Key Question 3: Remission and Recovery

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Groups Effect Size Odds Ratio (95% CI), p-Value	Number at Follow-up (%)	Between Groups Effect Size Odds Ratio (95% CI), p-Value
					6 mo	
Le Grange et al. 2007[92 a]	Remission of binge eating or purging (no behaviors reported previous 28 days)	FBT (41)	16 (39.0)	2.926 (1.044 to 8.202), 0.041	12(29.0)	3.621 (1.054 to 12.43), 0.041
		SPT (39)	7(18.0)		4 (10.0)	
	Partial remission (no longer meeting DSM-IV criteria)	FBT (41)	17 (41.0)	2.745 (1.015 to 7.424), 0.047	20 (49.0)	1.525 (0.626 to 3.709), 0.353
		SPT (39)	8 (21.0)		15 (38.0)	
					12 mo	
Schmidt et al. 2007[93 a]	Remission of binge eating (no behaviors reported previous 28 days)	FBT (41)	8 (19.5)	0.578 (0.211 to 1.584), 0.287	15 (36.5)	1.376 (0.555 to 3.409), 0.491
		GSH (44)	13 (29.5)		13 (29.5)	
	Remission of vomiting (no behaviors reported previous 28 days)	FBT (41)	9 (21.9)	0.956 (0.344 to 2.657), 0.932	15 (36.5)	1.236 (0.504 to 3.034), 0.643
		GSH (44)	10 (22.7)		14 (31.8)	
	Remission of binge eatingand purging (no behaviors reported previous 28 days)	FBT (41)	4 (9.75)	0.685 (0.179 to 2.625), 0.581	12 (29.2)	1.609 (0.595 to 4.351), 0.348
		GSH (44)	6 (13.6)		9 (20.4)	
	Partial remission of binge eating (behavior present less than twice a week during previous 28 days)	FBT (41)	8 (19.5)	0.646 (0.234 to 1.790), 0.401	8 (19.5)	2.424 (0.670 to 8.769), 0.177
		GSH (44)	12 (27.2)		5 (11.3)	
	Partial remission of vomiting (behavior present less than twice a week during previous 28 days)	FBT (41)	10 (24.3)	0.968 (0.361 to 2.596), 0.948	7 (17.0)	2.814 (0.675 to 11.721), 0.155
		GSH (44)	11 (25.0)		3 (6.81)	
	Partial remission of binge eatingand purging (behavior present less than twice a week during previous 28 days)	FBT (41)	11 (26.8)	0.978 (0.375 to 2.548), 0.963	9 (21.9)	1.781 (0.573 to 5.542), 0.319
		GSH (44)	12 (27.2)		6 (13.6)	
	No remission of binge eating (behavior present during previous 28 days two or more times per week)	FBT (41)	16 (39.0)	4.053 (1.397 to 11.763), 0.010	5 (12.1)	0.734 (0.213 to 2.527), 0.624
		GSH (44)	6 (13.6)		7 (19.9)	

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Groups Effect Size Odds Ratio (95% CI), p-Value	Number at Follow-up (%)	Between Groups Effect Size Odds Ratio (95% CI), p-Value
	No remission of vomiting (behavior present during previous 28 days two or more times per week)	FBT (41)	13 (31.7)	1.579 (0.602 to 4.140), 0.353	7 (17.0)	0.926 (0.303 to 2.832), 0.893
		GSH (44)	10 (22.7)		8 (18.2)	
	No remission of binge eatingand purging (behavior present during previous 28 days two or more times per week)	FBT (41)	17 (41.4)	1.689 (0.688 to 4.144), 0.252	8 (19.5)	0.824 (0.290 to 2.346), 0.717
		GSH (44)	13 (29.5)		10 (22.7)	

[a] Analysis based on intent to treat with baseline observation carried forward (BOCF).

BN: Bulimia nervosa
FBT: Family-based therapy
GSH: Guided self-help

Table 45. Key Question 3: Dropouts

Study	Group	Number Randomized	Overall Number Dropouts (%)	Between Groups Effect Size Odds ratio (95% CI), p-Value
Le Grange et al. 2007[92]	FBT	41	12 (29)	1.379 (0.506 to 3.763), 0.530
	SPT	39	9 (23)	
Schmidt et al. 2007[93]	FBT	41	12 (31)	0.544 (0.222 to 1.338), 0.185
	GSH	44	19 (43)	

BN: Bulimia nervosa
FBT: Family-based therapy
GSH: Guided self-help

Appendix H. Evidence Tables Key Question 4

Table 46. Key Question 4: Study Enrollment Details

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Patients Considered for Enrollment	Number of Patients Eligible for Enrollment	Number of Patients Randomized	% of Patients Considered Who Were Randomized
CBT (or Variants of CBT) Alone versus CBT Plus Other Forms of Psychotherapy						
Schmidt et al. 2006[94]	DSM-IV for BN, EDNOS – clinically relevant eating disorder where patient met all criteria for BN except that the binge eating and/or inappropriate compensatory mechanisms occurred at a frequency of less than twice a week or for a duration of 3 months).	Severe mental illness, such as psychosis, acute suicidality, substance dependence, severe physical comorbidity such as diabetes, pregnancy, learning disability, inability to understand English to a level that precluded working with feedback.	151	128	61	40.4
Hsu et al. 2001[95]	Female, DSM-III-R for BN, bodyweight within 85-125% ideal bodyweight, 17-45 years, binge eating and vomiting on average at least 3 times per week in previous 6 months, no alcohol or substance abuse in previous 12 months, absence of psychotic features, absence of suicide attempt within last 6 months, not currently receiving psychotropic medication.	NR	NR	NR	100	NR
Agras et al. 1989[98]	DSM-III-R for BN	≤18 years or >65 years; concurrent psychological or pharmacological treatment for BN; concurrent DSM-III-R diagnosis of anorexia nervosa, schizophrenia, unipolar or bipolar affective disorder, drug abuse, alcoholism; or significant hepatic disease, renal disease, major cardiac disease, pregnancy, or abnormal values of serum potassium	119	77	77	64.7

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Patients Considered for Enrollment	Number of Patients Eligible for Enrollment	Number of Patients Randomized	% of Patients Considered Who Were Randomized
Leitenberg et al. 1988[97]	Females age 18 to 45 within 80 to 120% of their normal weight who met the DSM-III and/or Russell's criteria for BN	Current alcohol and/or drug abuse, current psychotic disorder, currently receiving psychopharmacology and/or psychotherapy, and suicidal behavior	90	59	47 (12 wait list control)	52
CBT or Other Psychotherapies Alone versus CBT or Other Psychotherapies Plus Medication						
Mitchell et al. 2001[73]	Female, at least 18 years of age, at 85% of ideal body weight, not currently receiving pharmacotherapy or psychotherapy, satisfies DSM-III-R criteria for BN with the additional criterion of binge eating and vomiting three times per week for 6 months, no current medical condition, no history of hypersensitivity to fluoxetine, and no prior exposure to fluoxetine in total amount greater than 140 mg within preceding 5 weeks.	NR	NR	NR	91	NR
Goldbloom et al. 1997[74]	Female, 18-45 years, 85-125% matched population mean weight, DSM-III-R diagnosis of BN on structured interview, binge and vomit frequency of at least twice per week as defined by the EDE, minimum 6-month duration of illness, ability and willingness to provide informed consent.	Ongoing pharmacotherapy or psychotherapy or use of MAO inhibitors within 2 weeks prior to the onset of the study treatment, immediate suicide risk or psychosis, medical contraindications to drug treatment, previous exposure to the research treatments.	300	76	76	25.3
Walsh et al. 1997[75]	Females aged 18 to 45 years with weights between 80% and 120% of ideal; met DMS-III-R criteria for BN for at least one year; self-induced vomiting was primary method of compensating for binge eating	Medically ill, evidence of cardiac conduction disease, pregnant, abused drugs or alcohol within the past year, judged to be acutely suicidal, or had previously had an adverse reaction to either desipramine or fluoxetine	209	149	120	57.4

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Patients Considered for Enrollment	Number of Patients Eligible for Enrollment	Number of Patients Randomized	% of Patients Considered Who Were Randomized
Agras et al. 1992[76]	Female aged 18 to 65 years who met the DSM-III-R criteria for bulimia nervosa, had no concurrent medical condition that would preclude the use of antidepressants, and had no evidence of conduction disturbance on EKG.	Current anorexia nervosa, drug or alcohol abuse, psychosis, or depression with suicidal risk of sufficient severity to preclude the use of antidepressants.	100	NR	71	71
Mitchell et al. 1990[77]	Females age 18 to 40 years of age within 80%–120% of their ideal body weight; no current involvement in psychotherapy or pharmacotherapy for BN; meets DSM III criteria for bulimia plus binge eating coupled with self-induced vomiting or laxative abuse a minimum of 3 times a week for the past 6 months; no concurrent medical condition that would preclude safe outpatient therapy with an antidepressant; and abstinent from alcohol/drug abuse for at least 6 months.	NR	254	NR	171	67.3

BN: Bulimia nervosa
EDE: Eating Disorder Examination
EDNOS: Eating disorder not otherwise specified
MAO: Monoamine oxidases

Table 47. Key Question 4: Characteristics of Enrolled Patients

Study	Group (n)	% Females	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episodes (SD)	Mean frequency of purging episodes (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of substance abuse (%)	Number of pts with history of attempted suicide (%)
CBT (or Variants of CBT) Alone versus CBT Plus Other Forms of Psychotherapy															
Schmidt et al. 2006[94]	CBT/GSH plus feedback (32)	NR	29.5 (9.2) n = 32	4 (NR) n = 32	23.5 (4) n = 32	3.4 (1.1)/wk n = 30	NR	3.1 (1.5)/wk n = 30	1.5 (1.0)/wk n = 29	NR	NR	NR	NR	NR	NR
	CBT/GSH (29)		28.1 (7.4) n = 28	4 (NR) n = 27	21.3 (2.2) n = 28	3.3 (1.3)/wk n = 28		2.7 (1.5)/wk n = 29	1.9 (1.4)/wk n = 27						
Hsu et al. 2001[95]	CT plus NT (27)	NR	24.1 (5.3)	5.9 (3.7)	NR	12.1 (7.0)/wk	NR	13.4 (9.2)/wk	NR	11 (41)	NR	NR	NR	NR	NR
	CT (26)		23.3 (5.0)	5.5 (3.2)		7.2 (4.3)/wk		7.7 (5.0)/wk		10 (38)					
	NT (23)		24.2 (5.6)	5.0 (4.4)		12.3 (10.8)/wk		13.3 (11.2)/wk		9 (39)					
	SG (24)		26.5 (9.1)	6.4 (6.3)		12.2 (13.4)/wk		14.5 (13.6)/wk		11 (46)					
Agras et al. 1989[98 a]	CBT plus ERP (16)	100	29.2 (8.6)	8.8 (6.6)	NR	NR	12.2 (8.3)	NR	NR	NR	NR	NR	NR	NR	NR
	CBT (17)						11.1 (6.0)								
	SM (16)						12.3 (8.3)								

Study	Group (n)	% Females	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episodes (SD)	Mean frequency of purging episodes (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of substance abuse (%)	Number of pts with history of attempted suicide (%)
Leitenberg et al. 1988[97]	CBT plus ERP-MS (12)	100	27 (5.7)	7.7 (4.8)	NR	NR	NR	10.21 (8.4)/wk	NR	NR	NR	NR	NR	NR	NR
	CBT plus ERP-SS (11)		28 (10.1)	10 (9.6)				13.81 (8.1)/wk							
	CBT alone (12)		25 (3.4)	5.6 (4.2)				8.57 (4.5)/wk							
CBT or Other Psychotherapies Alone versus CBT or Other Psychotherapies Plus Medication															
Mitchell et al. 2001[73]	Self-help plus fluoxetine (21)	100	29.3 (7.8)	NR	56. 4 6.8)/kg	11.29 (5.87)/wk	NR	12.43 (6.92)/wk	0 days reported		NR	NR	NR	NR	NR
	Fluoxetine 60 mg daily (26)		26.6 (7.1)		59.5 (13.9)/kg	11.58 (6.7)/wk		16.81 (27.7)/wk							
	Self-help manual (22)		26.8 (6.9)		61.2 (10.5)/kg	11.91 (10.70)/wk		13.86 (10.81)/wk							
Goldbloom et al. 1997[74]	CBT plus 60 mg/day Fluoxetine (29)	100	25.8 (5.5) n = 38	NR	23.0 (2.5) n = 38	Objective: 29.6 (16.5)	NR	30.9 (29.7)	NR	6 (15.7) n = 38	NR	NR	NR	NR	NR
	60 mg/day Fluoxetine (23)					Objective: 21.0 (12.2)		24.6 (20.4)							
	CBT (24)					Objective: 33.6 (29.5)		41.8 (34.4)							

Study	Group (n)	% Females	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episodes (SD)	Mean frequency of purging episodes (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of substance abuse (%)	Number of pts with history of attempted suicide (%)
Walsh et al. 1997[75]	CBT plus Med (23)	100	26.1 (5.7)	7.26 (5.8)	21.6 (2.2)/kg	7.29 (4.8)/wk	NR	10.8 (13)/wk	NR	4 (17)	NR	4 (17)	NR	NR	NR
	SPT plus Med (22)		28.0 (5.3)	9.55 (5.3)	21.7 (2.3)/kg	7.92 (5.6)/wk		10.6 (9)/wk		7 (32)		5 (23)			
	CBT alone (25)		25.8 (4.4)	8.00 (4.0)	22.1 (2.1)/kg	7.22 (4.0)/wk		10.8 (12)/wk		9 (36)		6 (24)			
	SPT alone (22)		26.9 (4.3)	7.55 (3.7)	21.7 (2.2)/kg	6.18 (3.6)/wk		11.9 (13)/wk		6 (27)		2 (9.0)			
	Med alone (28)		24.3 (4.5)	7.36 (4.3)	22.3 (2.1)/kg	8.32 (7.5)/wk		10.5 (11)/wk		9 (32)		8 (29)			
Agras et al. 1992[76]	CBT + Med-16 weeks (12)	100	29.6 (8.9)	NR	59.9 (9.1)/kg	7.5 (3.4)/wk	8.3 (4.3)/wk	NR	NR	16 (22)	NR	NR	NR	NR	NR
	CBT + Med 24 weeks (12)					9.3 (5.8)/wk	11.7 (5.9)/wk								
	Med-16 weeks (12)					5.5 (4.6)/wk	9.7 (9.4)/wk								
	Med-24 weeks (12)					5.9 (5.1)/wk	6.3 (4.9)/wk								
	CBT alone (23)					8.7 (7.2)/wk	10.1 (7.7)/wk								

Study	Group (n)	% Females	Mean Age of Pts (SD)	Mean Years of BN (SD)	Mean BMI (SD)	Mean frequency of binge-eating episodes (SD)	Mean frequency of purging episodes (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of substance abuse (%)	Number of pts with history of attempted suicide (%)
Mitchell et al. 1990[77]	GRP plus Imiprimine (52)	100	24.3 (5.7)	7.0 (4.9)	NR	8.5/wk	NR	9.7/wk	NR	5 (10)	NR	9 (19)	NR	5 (10)	NR
	Imiprimine (54)		24.1 (4.4)	6.5 (2.9)		7.3/wk		8.6/wk		8 (18)		8 (18)		8 (18)	
	GRP alone (34)		22.8 (4.3)	6.2 (4.0)		9.2/wk		13.2/wk		10 (30)		5 (15)		2 (6)	

[a] Agras et al. 1989[98] provided data completer data only.

Note: Jacobi et al. 2002[71] has been included for analysis in key question 1. For key question 4 it did not meet the inclusion criteria for at least 10 patients at follow-up in each group. The combination group had less than 10 patients.

BN: Bulimia nervosa
CBT: Cognitive behavioral therapy
CT: Cognitive therapy alone
GRP: Group therapy
GSH: Guided self-help
ERP: Exposure response prevention
ERP-MS: Exposure response prevention multiple settings
ERP-SS: Exposure response prevention single setting
NT: Nutritional therapy
NR: Not reported
PE: Psychoeducation
SG: Support group
SM: Self-monitoring
SPT Supportive psychotherapy

Table 48. Key Question 4: Characteristics of Treatment

Study	Treatment Group	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
CBT (or Variants of CBT) Alone versus CBT Plus Other Forms of Psychotherapy								
Schmidt et al. 2006[94]	CBT/GSH (29)	Area-specialist Eating Disorders Unit outpatient	Guided self-care using self-help manual Getting Better Bite by Bite and workbooks from Associated Clinicians Guide. Computerized assessments, self-monitoring.	None	10 once-weekly individual sessions and 4 once-monthly follow-up/booster sessions. All sessions 50 minutes	6 months	6 months	19
	CBT/GSH plus feedback (32)		Same as above and, personalized feedback letter, specific symptom feedback: based on the 'BASIC ID' by Lazarus (1981) as adapted by Van Bilsen (personal communication), end-of-treatment feedback letter from therapists, or normative and repeated ipsatve computerized feedback.		Same as above along with feedback			22
Hsu et al. 2001[95]	CT alone (26)	New England Medical Center, Tufts School of Medicine, and Western Psychiatric Institute Clinic	Cognitive therapy alone, which includes exposure and response prevention according to Rosen and Leitenberg (1982) and Leitenberg et al. (1984)	None	16 sessions, each 1 hour in length	14 weeks	14 week post assessment	22

Study	Treatment Group	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
	NT (23)		Nutritional counseling alone (Hsu et al. 1992);		16 sessions, each 1 hour in length			14
	CT plus NT (27)		Combination of CT and NT techniques (or CBT)		16 sessions, 1 hour CT and 1 hour NT			24
	SG (24)		Based on self-help principles, conducted by recovered patients and mother of recovered patient; sometimes experimental and psychodrama techniques were used.		14 sessions, each 90 minutes in length			13
Agras et al. 1989[98]	CBT plus ERP (17)	Stanford University outpatient	Manualized CBT and response prevention	None	14 one hour individual sessions	4 months	6 months (post treatment)	16
	CBT alone (22)	Stanford University outpatient	Manualized CBT; Final sessions, relapse prevention	None	14 one hour individual sessions	4 months	6 months (post treatment)	17
	SM (19)	Stanford University outpatient	Subjects taught to monitor eating behavior, binge eating, and purging, and these records were examined in detail by the patient and therapist at each session.	None	14 one hour individual sessions	4 months	6 months (post treatment)	16

Study	Treatment Group	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Leitenberg et al. 1988[97]	CBT plus ERP-MS (12)	Four therapists, two with 6 years of experience and 2 with two years were counterbalanced across the treatment conditions. The location of the sessions altered from week to week between the clinic, patient's home, and a restaurant.	CBT based on manual by Fairburn and colleagues plus exposure to frightening foods that patients were instructed to eat to the point of wanting to vomit. Patients were then not allowed to vomit during the remainder of the session.	NR	24 small group sessions: 3 sessions/week lasting 2 hours the first 6 weeks and 1 session/week lasting 1 hour for four weeks, and 2 biweekly sessions last 1 hour.	14 weeks	Post-treatment and 6 months	12
	CBT plus ERP-SS (11)	Outpatient clinical setting	Same as above	NR	Same as above	Same as above	Same as above	11
	CBT alone (12)	Outpatient clinical setting	CBT alone based on manual by Fairburn and colleagues.	NR	Same as above	Same as above	Same as above	12
CBT or Other Psychotherapies Alone versus CBT or Other Psychotherapies Plus Medication								
Mitchell et al. 2001[73]	Fluoxetine only 60 mg daily (26)	Vital signs and weight monitored each week for the first 4 weeks and then every other week for 12 weeks by a research assistant and every other week by the study investigator (MD).	Active medication (60 mg) given as a single dose in the morning.	NR	Single dose of medication	16 weeks	16 weeks	26
	Self-help manual (22)	Patients followed the manual instructions without therapist guidance (pure self-help approach) Outpatient setting	Patients given a manual developed by first author (Jim Mitchell) that included elements of used in manual-based CBT for BN. The manual incorporated a series of 14 reading and homework assignments.	NR	NR	NR	Same as above	22
	Self-help plus fluoxetine (21)	Same as above	60 mg of fluoxetine plus self-help manual described above	NR	Single dose of medication; self-help not reported	16 weeks of medication	Same as above	20

Study	Treatment Group	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Goldbloom et al. 1997[74]	60 mg/day Fluoxetine (23)	Eating disorders program of Toronto Hospital outpatient	Sessions based on a format described in Clinical Management-Fluoxetine Manual (written for this study and modeled on Clinical Management-Imipramine Manual for the National Institute of Mental Health Collaborative Study on Treatment of Depression treatment manual (Fawcett, Epstein, Feister, Elkin, Autry, 1987).	None	10 sessions, session time approx 10 minutes or less	16 weeks	18 weeks	12
	CBT (24)	Same as above	Sessions based on manual specific to CBT in BN (Fairburn, Marcus, Wilson, 1993).		16 sessions, 1 hour in length, given weekly			14
	CBT plus 60 mg/day Fluoxetine (29)	Same as above	Patients met separately with pharmacotherapists and psychotherapists similar to fluoxetine and CBT alone arms.		Same as above for each			12
Walsh et al. 1997[75]	CBT plus medication (23)	Three therapists (see below) delivered therapy and one psychiatrist oversaw medication administration	20 sessions of CBT plus 200 to 300 mg/day of desipramine	NR	20 sessions (length NR)	16 weeks	18 weeks	23
	SPT plus medication (22)	Same as above	20 sessions of SPT plus 200 to 300 mg/day of desipramine	NR	20 sessions (length NR)	16 weeks	18 weeks	22

Study	Treatment Group	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
	CBT alone (25)	Three therapists (one psychiatrist, one doctoral-level psychologist, and one master's level psychologist)	Manual based (Wilson 1989) modified Fairburn; patients were taught to identify possible triggers to binge eating and purging, how to normalize eating patterns, learn problem solving skills for coping in future, and importance in maintaining improved behaviors.	NR	20 sessions (length NR)	16 weeks	18 weeks	25
	SPT alone (22)	Same as above	Manual based modified Fairburn; patients were asked to identify potential family issues that may be causing BN, express feelings and be independent. Termination of therapy was also discussed.	NR	20 sessions (length NR)	16 weeks	18 weeks	22
	Medication alone (28)	Patients met weekly with a psychiatrist who collected data and inquired about side effects	200 to 300 mg/day of desipramine	NR	16 sessions (length NR)	16 weeks	18 weeks	28

Study	Treatment Group	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Agras et al. 1992[76]	Desipramine for 16 weeks (12) or 24 weeks (12)	Treatment was administered by one of the study psychiatrists in sessions averaging 15 minutes. No psychotherapeutic treatment was provided.	For the first 3 days, study subjects were given 25 mg, after which the dose was increased to 50 mg a day. The dose was then increased by 50 mg increments every 3-5 days to a maximum of 300 mg, depending on response to treatment and side effects.	NR	Participants were seen weekly for the first 4 weeks and then at weeks 6, 8, 12, and 16 for those withdrawn at 16 weeks of treatment. For those continuing on to 24 weeks of treatment, additional study visits occurred at weeks 18, 20 and 24.	16 weeks or 24 weeks	Immediately post treatment, 6 weeks later and 12 weeks later	24
	Individual CBT (23)	Administered by a PhD level psychologist with at least 5 years of experience treating BN.	Manual-based CBT that focused on self-monitoring of food intake, binge eating and its circumstances and purging. Cognitive restructuring was used to correct distorted cognitions like body image concerns.	NR	15, 50 minute sessions over 16 weeks and followed up to weeks 20, 24, and 28.	16 weeks	Immediately post treatment, 6 and 12 weeks later	22
	Desipramine 16 weeks plus CBT (12) or desipramine 24 weeks plus CBT (12)	Combination of above	Combination of above	NR	Combination of above	Combination of above	Combination of above	24

Study	Treatment Group	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Mitchell et al. 1990[77]	Imipramine (54)	Physician, NOS	50 mg by mouth at bedtime, then increased over the next two weeks to 200 mg by mouth at bedtime. Subjects were maintained at that level for the next two weeks. If symptoms persisted, their dose was increased to 300 mg.	None	NR	10 weeks	Post treatment	31
	Intensive group psychotherapy plus placebo (34)	Physician, NOS and NOS therapist	Intensive group treatment included 3 phases. Phase 1 focused on meal planning and CBT techniques. In phase 2, the interruption phase, the expectation was that patients would disrupt their bulimic behaviors and eat regular balanced meals. In phase 3, the stabilization phase, participants were taught how to reintroduce high risk foods and other relapse-prevention techniques. In addition, one placebo tablet by mouth at bedtime was given and increased over time.	None	Sessions were 2 two hour sessions twice a week for the first two weeks, then 5 nights a week for 3 hours for 2 weeks then tapering down to 2 sessions per week for two weeks and finally once a week for 1.5 hours in the last four weeks.	10 weeks	Post treatment	29
	Intensive group psychotherapy plus imipramine (52)	Physician, NOS and NOS therapist	Medication and group therapy same as above	None	Medication and group therapy same as above	10 weeks	Post treatment	39

BN Bulimia nervosa
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ERP-SS: Exposure response prevention single setting
NT: Nutritional therapy
NR: Not reported
PE: Psychoeducation
SG: Support group
SM: Self-monitoring
SPT: Supportive psychotherapy

Table 49. Key Question 4: Internal Validity Assessment of Included Studies by Outcome of Interest

Studies	**Q1.** Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled in a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q11.** Were all study groups concurrently treated?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in the length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete the study?	**Q21.** Was there a ≤ 15%difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Quality Score**
Outcomes (Frequency of Binge Eating and Purging)																							
Schmidt et al. 2006[94]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	N	N	N	Y	N	Y	NR	**6.4**
Hsu et al. 2001[95]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	Y	Y	N	N	Y	N	NR	Y	**6.8**
Mitchell et al. 2001[73]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	NR	NR	NR	N	Y	NR	NR	NR	N	**6.4**
Goldbloom et al. 1997[74]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	NR	N	Y	Y	N	Y	N	**6.6**
Walsh et al. 1997[75]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	Y	NR	NR	Y	N	N	Y	Y	Y	N	**7.7**
Mitchell et al. 1990[77]	Y	N	NR	Y	Y	N	N	Y	Y	Y	Y	NR	NR	Y	N	NR	N	Y	Y	Y	N	Y	**6.6**

Studies	**Q1.** Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled in a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q11.** Were all study groups concurrently treated?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in the length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete the study?	**Q21.** Was there a ≤ 15%difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Quality Score**
Agras et al. 1992[76]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	Y	NR	N	N	Y	Y	Y	Y	**6.8**
Agras et al. 1989[98]	Y	Y	NR	Y	Y	Y	Y	NR	Y	Y	Y	NR	N	N	Y	NR	N	N	Y	Y	Y	Y	**7.3**
Leitenberg et al. 1988[97]	Y	NR	NR	Y	Y	Y	Y	NR	Y	Y	Y	NR	N	N	NR	NR	N	N	Y	N	Y	NR	**6.1**
Outcomes (Remission, Recovery, Quality of Life, Eating Disorder Pathology, Comorbid Psychological Symptoms, Impact on Family Members, Psychosocial Functioning)																							
Schmidt et al. 2006[94]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	N	N	N	Y	N	Y	NR	**6.4**
Hsu et al. 2001[95]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	Y	Y	N	N	Y	N	NR	Y	**6.8**
Mitchell et al. 2001[73]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	NR	NR	NR	N	Y	NR	NR	NR	N	**6.4**
Goldbloom et al. 1997[74]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	NR	N	Y	Y	N	Y	N	**6.6**

Studies	Q1. Were pts randomly assigned to study groups?	Q2. Did the study use appropriate methods of randomization?	Q3. Was there concealment of allocation?	Q4. Were methods other than randomization used to make groups comparable?	Q5. Were pts assigned to groups based on factors other than pt or phy preference?	Q6. Did pts in different study groups have similar scores on all outcome measures at assignment?	Q7. Were characteristics of pts in different groups comparable at assignment?	Q8. Were all suitable pts or consecutive suitable pts enrolled in a time period?	Q9. Was comparison of interest prospectively planned?	Q10. Was there a ≤5 difference between groups in ancillary treatment(s)?	Q11. Were all study groups concurrently treated?	Q12. Was compliance with treatment ≥85% in both groups?	Q13. Were subjects blinded?	Q14. Was the treating phy blinded?	Q15. Were outcome assessors blinded?	Q16. Were tests performed to ensure blinding?	Q17. Was the outcome objective and objectively measured?	Q18. Was the instrument used to measure the outcome standard?	Q19. Was there ≤15% difference in the length of follow-up between groups?	Q20. Did ≥85% of the pts complete the study?	Q21. Was there a ≤ 15%difference in completion rates in the study groups?	Q22. Was funding free of financial interest?	Overall Quality Score
Walsh et al. 1997[75]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	Y	NR	NR	Y	N	Y	Y	Y	Y	N	**8.0**
Agras et al. 1992[76]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	Y	NR	N	Y	Y	Y	Y	Y	**7.0**
Mitchell et al. 1990[77]	Y	N	NR	Y	Y	N	N	Y	Y	Y	Y	NR	NR	Y	N	NR	N	Y	Y	Y	N	Y	**6.6**
Agras et al. 1989[98]	Y	Y	NR	Y	Y	Y	Y	NR	Y	Y	Y	NR	N	N	Y	NR	N	Y	Y	Y	Y	Y	**7.7**
Leitenberg et al. 1988[97]	Y	NR	NR	Y	Y	Y	Y	NR	Y	Y	Y	NR	N	N	NR	NR	N	Y	Y	N	Y	NR	**6.6**
Outcomes (Mortality, Dropout)																							
Schmidt et al. 2006[94]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	N	Y	Y	Y	N	Y	NR	**7.3**
Hsu et al. 2001[95]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	N	N	Y	Y	Y	Y	Y	N	NR	Y	**7.7**

Studies	Q1. Were pts randomly assigned to study groups?	Q2. Did the study use appropriate methods of randomization?	Q3. Was there concealment of allocation?	Q4. Were methods other than randomization used to make groups comparable?	Q5. Were pts assigned to groups based on factors other than pt or phy preference?	Q6. Did pts in different study groups have similar scores on all outcome measures at assignment?	Q7. Were characteristics of pts in different groups comparable at assignment?	Q8. Were all suitable pts or consecutive suitable pts enrolled in a time period?	Q9. Was comparison of interest prospectively planned?	Q10. Was there a ≤5 difference between groups in ancillary treatment(s)?	Q11. Were all study groups concurrently treated?	Q12. Was compliance with treatment ≥85% in both groups?	Q13. Were subjects blinded?	Q14. Was the treating phy blinded?	Q15. Were outcome assessors blinded?	Q16. Were tests performed to ensure blinding?	Q17. Was the outcome objective and objectively measured?	Q18. Was the instrument used to measure the outcome standard?	Q19. Was there ≤15% difference in the length of follow-up between groups?	Q20. Did ≥85% of the pts complete the study?	Q21. Was there a ≤ 15%difference in completion rates in the study groups?	Q22. Was funding free of financial interest?	Overall Quality Score
Mitchell et al. 2001[73]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	NR	N	NR	NR	NR	Y	Y	NR	NR	NR	N	**6.8**
Goldbloom et al. 1997[74]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	NR	Y	Y	Y	N	Y	N	**7.0**
Walsh et al. 1997[75]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	Y	NR	Y	NR	NR	Y	Y	Y	Y	Y	Y	N	**8.4**
Agras et al. 1992[76]	Y	NR	NR	Y	Y	Y	Y	Y	Y	Y	NR	N	N	N	Y	NR	Y	Y	Y	Y	Y	Y	**7.7**
Mitchell et al. 1990[77]	Y	N	NR	Y	Y	N	N	Y	Y	Y	Y	NR	NR	Y	N	NR	Y	Y	Y	Y	N	Y	**6.8**
Agras et al. 1989[98]	Y	Y	NR	Y	Y	Y	Y	NR	Y	Y	Y	NR	N	N	Y	NR	Y	Y	Y	Y	Y	Y	**8.2**
Leitenberg et al. 1988[97]	Y	NR	NR	Y	Y	Y	Y	NR	Y	Y	Y	NR	N	N	NR	NR	Y	Y	Y	N	Y	NR	**7.0**

N: No
NR: Not reported
Y: Yes

Table 50. Key Question 4: Individual Study Results

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
						6 Months	
Schmidt et al. 2006[94]	HADS Anxiety	CBT/GSH plus feedback (32)	11.5 (4.1) n = 28	NR	NR	NR	NR
		CBT/GSH (29)	11.4 (3.4) n = 26				
	HADS Depression	CBT/GSH plus feedback (32)	8.5 (3.3) n = 21	NR	NR	NR	NR
		CBT/GSH (29)	6.6 (3.4) n = 17				
	SEED – Binge eating [a]	CBT/GSH plus feedback (32)	3.4 (1.1) n = 30	<50% of sample responded	NR	2.5 (1.5) n = 22	0.140 (-0.356 to 0.637), 0.580
		CBT/GSH (29)	3.3 (1.3) n = 28			2.6 (1.6) n = 19	
	SEED – Vomiting [a]	CBT/GSH plus feedback (32)	3.1 (1.5) n = 30	<50% of sample responded	NR	2 (1.4) n = 22	0.340 (-0.160 to 0.840), 0.183
		CBT/GSH (29)	2.7 (1.5) n = 29			2.1 (1.4) n = 18	
						14 Weeks Post-treatment	**Mean Change Score (Standard Deviation) as Reported by Author**
Hsu et al. 2001[95]	Binge episodes/week	NT plus CT (27)	12.1 (7.0)	NR	NR	NR	-9.41 (7.59)
		NT (23)	12.3 (10.8)				- 8.39 (10.43)
		CT (26)	7.2 (4.3)				- 4.92 (4.97)
		SG (24)	12.2 (13.4)				-5.79 (11.44)
	Vomiting episodes/week	NT plus CT (27)	13.4 (9.2)	NR	NR	NR	-10.56 (8.42)
		NT (23)	13.3 (11.2)				-9.43 (11.42)
		CT (26)	7.7 (5.0)				-5.73 (5.02)
		SG (24)	14.5 (13.6)				-4.58 (13.28)

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	Hamilton Depression Rating Scale (HAM-D)	NT plus CT (27)	18.89 (8.28)	NR	NR	NR	-8.33 (7.35)
		NT (23)	18.04 (7.54)				-5.96 (11.11)
		CT (26)	14.92 (8.04)				-4.46 (7.98)
		SG (24)	18.79 (7.86)				-4.33 (8.08)
	Dysfunctional Attitude Scale (DAS)	NT plus CT (27)	164.37 (31.85)	NR	NR	NR	-43.63 (32.22)
		NT (23)	144.17 (43.12)				-12.00 (49.27)
		CT (26)	152.23 (34.08)				-27.08 (31.73)
		SG (24)	161.42 (45.54)				-6.83 (33.34)
	Self-Control Scale (SCS)	NT plus CT (27)	2.37 (25.72)	NR	NR	NR	24.19 (20.98)
		NT (23)	3.87 (25.89)				9.52 (19.77)
		CT (26)	9.81 (29.75)				14.85 (22.35)
		SG (24)	1.67 (31.31)				-2.50 (15.40)
	EDI	NT plus CT (27)	NR	NR	NR	NR	NR
		NT (23)					
		CT (26)					
		SG (24)					

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
						Mean % Decrease from Baseline to 16 Weeks	Author's ANOVA Results
Mitchell et al. 2001[73]	Vomiting per week*	Fluoxetine and self-help manual (20)	12.43 (6.92)	NR	NR	66.7 (28.9)	NR
		Fluoxetine (26)	16.81 (27.72)			52.8 (50.7)	
		Placebo and self-help manual (22)	13.86 (10.81)			50.2 (55.0)	
	Binge eating per week*	Fluoxetine and self-help manual (20)	11.29 (5.87)	NR	NR	66.8 (29.9)	NR
		Fluoxetine (26)	11.58 (6.74)			50.3 (52.6)	
		Placebo and self-help manual (22)	11.91 (10.70)			59.7 (39.6)	
	EDI total score	Fluoxetine and self-help manual (20)	58.11 (15.14)	NR	NR	NR	EDI and HAMD showed no evidence of a (p >0.05) treatment effect, manual effect or interaction. (p >0.15)
		Fluoxetine (26)	66.79 (16.21)				
		Placebo and self-help manual (22)	68.74 (18.48)				
	HAM-D	Fluoxetine and self-help manual (20)	8.10 (6.56)	NR	NR	NR	EDI and HAMD showed no evidence of a (p >0.05) treatment effect, manual effect or interaction. (p >0.15)
		Fluoxetine (26)	8.85 (6.83)				
		Placebo and self-help manual (22)	10.14 (7.01)				

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	CGI severity	Fluoxetine and self-help manual (20)	5.00 (0.77)	NR	NR	NR	CGI and PGI showed statistically significant improvements because of fluoxetine (p = 0.029 and p = 0.036, respectively), with no evidence of a manual effect (p = 0.420 and 0.907, respectively). Both scores showed no evidence of (p >0.15) of treatment by manual interaction.
		Fluoxetine (26)	4.69 (0.62)				
		Placebo and self-help manual (22)	4.82 (0.66)				
	PGI	Fluoxetine and self-help manual (20)	NR	NR	NR	NR	CGI and PGI showed statistically significant improvements because of fluoxetine (p = 0.029 and p = 0.036, respectively), with no evidence of a manual effect (p = 0.420 and 0.907, respectively). Both scores showed no evidence of (p >0.15) of treatment by manual interaction.
		Fluoxetine (26)					
		Placebo and self-help manual (22)					

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
						18 weeks	
Goldbloom et al. 1997[74b]	Vomiting episodes (unclear if measured by EDE or self-report)	Fluoxetine and CBT (12)	30.9 (29.7)	NR	NR	3.3 (4.5)	Fluoxetine and CBT vs. Fluoxetine: 0.749 (-0.052 to 1.550) p = 0.067
		Fluoxetine (12)	24.6 (20.4)			17.3 (27.2)	Fluoxetine and CBT vs. CBT: 0.174 (-0.574 to 0.923) p = 0.648
		CBT (14)	41.8 (34.4)			9.0 (16.8)	
	Objective Binge Eating (unclear if measured by EDE or self-report)	Fluoxetine and CBT (12)	29.6 (16.5)	NR	NR	1.8 (3.3)	Fluoxetine and CBT vs. Fluoxetine: 1.098 (0.265 to 1.931) p = 0.010
		Fluoxetine (12)	21.0 (12.2)			10.0 (15.9)	Fluoxetine and CBT vs. CBT: 0.072 (-0.675 to 0.819) p = 0.850
		CBT (14)	33.6 (29.5)			7.4 (16.6)	
	EDE shape concern	Fluoxetine and CBT (12)	3.7 (1.7)	NR	NR	2.3 (1.9)	Fluoxetine and CBT vs. Fluoxetine: 0.057 (-0.716 to 0.830) p = 0.885
		Fluoxetine (12)	4.1 (1.0)			2.8 (1.8)	Fluoxetine and CBT vs. CBT: 0.364 (-0.389 to 1.117) p = 0.344
		CBT (14)	3.0 (1.8)			2.3 (2.0)	
	EDE weight concern	Fluoxetine and CBT (12)	3.3 (1.8)	NR	NR	1.8 (1.7)	Fluoxetine and CBT vs. Fluoxetine: 0.122 (-0.652 to 0.895) p = 0.758
		Fluoxetine (12)	3.4 (1.4)			2.1 (1.4)	Fluoxetine and CBT vs. CBT: 0.351 (-0.401 to 1.104) p = 0.360
		CBT (14)	2.6 (1.9)			1.8 (2.2)	

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	EDI (8 subscales)	Fluoxetine and CBT (12)	NR	NR	NR	NR	Author results: For CBT and combination therapy all subscales decreased over treatment except maturity fears and ineffectiveness for the combination group. For FL, only drive for thinness and bulimia declined significantly. FL patients had higher scores on perfectionism than those in the other groups at the 4 week post-treatment follow-up.
		Fluoxetine (12)					
		CBT (14)					
	BDI	Fluoxetine and CBT (12)	14.8 (13.0)	NR	NR	7.5 (9.0)	Fluoxetine and CBT vs. Fluoxetine: 0.356 (-0.423 to 1.135) p = 0.371
		Fluoxetine (12)	16.3 (9.4)			13.6 (15.3)	Fluoxetine and CBT vs. CBT: 0.211 (-0.538 to 0.960) p = 0.581
		CBT (14)	18.4 (11.5)			13.8 (14.2)	
	RSE	Fluoxetine and CBT (12)	NR	NR	NR	NR	Authors results: No significant outcome differences between groups on RSE.
		Fluoxetine (12)					
		CBT (14)					
	SAS-SR	Fluoxetine and CBT (12)	NR	NR	NR	NR	Authors results: No significant outcome differences between groups on SAS-SR.
		Fluoxetine (12)					
		CBT (14)					

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
				16 weeks		18 weeks	
Walsh et al. 1997[75]	Binges per week (diary)	CBT and Med (23)	7.29 (4.8)	0.95 (1.6)	CBT + Med vs. CBT: 0.417 (-0.146 to 0.980) p = 0.147	NR	NR
					CBT + Med vs. Supportive therapy: 0.880 (0.278 to 1.482) p = 0.004		
					CBT + Med vs. Med: 0.107 (-0.436 to 0.651) p = 0.699		
		SPT and Med (22)	7.92 (5.6)	3.57 (3.1)	Supportive therapy + Med vs. CBT: 0.071 (-0.492 to 0.635) p = 0.804		
					Supportive therapy + Med vs. Supportive: 0.335 (-0.250 to 0.919) p = 0.261		
					Supportive therapy + Med vs. Med: 0.233 (–0.319 to 0.784) p = 0.408		
		CBT and placebo (25)	7.22 (4.0)	2.56 (3.3)			
		SPTand placebo (22)	6.18 (3.6)	3.32 (4.0)			
		Desipramine (28)	8.32 (7.5)	2.59 (3.5)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	Vomiting per week (diary)	CBT and Med (23)	10.8 (13.0)	1.1 (2.0)	CBT + Med vs. CBT: 0.341 (-0.221 to 0.902) p = 0.234	NR	NR
					CBT + Med vs. Supportive therapy: 0.435 (-0.146 to 1.017) p = 0.142		
					CBT + Med vs. Med: 0.265 (-0.281 to 0.810) p = 0.341		
		SPT and Med (22)	10.6 (9.0)	5.5 (5.0)	Supportive therapy + Med vs. CBT: 0.009 (-0.555 to 0.572) 0.976		
					Supportive therapy + Med vs. Supportive: 0.069 (-0.512 to 0.649) p = 0.816		
					Supportive therapy + Med vs. Med: 0.190 (-0.361 to 0.740) p = 0.500		
		CBT and placebo (25)	10.8 (12.0)	5.6 (15.0)			
		SPT and placebo (22)	11.9 (13.0)	7.5 (10.0)			
		Desipramine (28)	10.5 (11.0)	3.7 (5.0)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	Body shape questionnaire	CBT and Med (23)	137 (29)	87 (36)	CBT + Med vs. CBT: 0.351 (-0.211 to 0.912) p = 0.221	NR	NR
					CBT + Med vs. Supportive therapy: 0.772 (0.176 to 1.368) p = 0.011		
					CBT + Med vs. Med: 0.530 (-0.022 to 1.083) p = 0.060		
		SPT and Med (22)	132 (30)	94 (35)	Supportive therapy + Med vs. CBT: 0.000 (-0.563 to 0.563) p = 1.000		
					Supportive therapy + Med vs. Supportive therapy: 0.430 (-0.157 to 1.017) p = 0.151		
					Supportive therapy + Med vs. Med: 0.227 (-0324 to 0.779) p = 0.419		
		CBT and placebo (25)	132 (32)	94 (36)			
		SPT and placebo (22)	127 (31)	104 (39)			
		Desipramine (28)	135 (38)	106 (47)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	BDI	CBT and Med (23)	10.9 (6.0)	4.4 (5.0)	CBT + Med vs. CBT: 0.210 (-0.348 to 0.769) p = 0.461	NR	NR
					CBT + Med vs. Supportive therapy: 0.290 (-0.287 to 0.867) p = 0.325		
					CBT + Med vs. Med: 0.027 (-0.516 to 0.570) p = 0.923		
		SPT and Med (22)	15.9 (12.0)	6.7 (7.0)	Supportive therapy + Med vs. CBT: 0.438 (--0.132 to 1.009) p = 0.132		
					Supportive therapy + Med vs. Supportive therapy: 0.486 (-0.103 to 1.076) p = 0.106		
					Supportive therapy + Med vs. Med: 0.303 (-0.250 to 0.856) p = 0.283		
		CBT and placebo (25)	11.7 (10.0)	6.8 (7.0)			
		SPT and placebo (22)	14.3 (9.0)	10.2 (11.0)			
		Desipramine (28)	14.5 (8)	8.2 (9)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	EDE - global score	CBT and Med (23)	3.23 (0.7)	1.52 (0.9)	CBT + Med vs. CBT: 0.252 (-0.307 to 0.812) p = 0.377	NR	NR
					CBT + Med vs. Supportive therapy: 0.683 (0.091 to 1.274) p = 0.024		
					CBT + Med vs. Med: 0.446 (-0.104 to 0.996) p = 0.112		
		SPT and Med (22)	3.31 (0.9)	2.01 (1.1)	Supportive therapy + Med vs. CBT: 0.215 (-0.350 to 0.780) p = 0.456		
					Supportive therapy + Med vs. Supportive therapy: 0.229 (-0.353 to 0.811) p = 0.441		
					Supportive therapy + Med vs. Med: 0.032 (-0.518 to 0.581) p = 0.910		
		CBT and placebo (25)	3.15 (0.7)	1.65 (0.9)			
		SPT and placebo (22)	3.02 (0.7)	1.96 (1.2)			
		Desipramine (28)	3.34 (0.8)	2.01 (0.9)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	SCL-90 global symptom index	CBT and Med (23)	1.83 (0.6)	1.39 (0.4)	CBT + Med vs. CBT: 0.421 (-0.142 to 0.984) p = 0.143	NR	NR
					CBT + Med vs. Supportive therapy: 0.586 (-0.000 to 1.173) p = 0.050		
					CBT + Med vs. Med: 0.255 (-0.290 to 0.801) p = 0.358		
		SPT and Med (22)	1.88 (0.6)	1.51 (0.5)	Supportive therapy + Med vs. CBT: 0.280 (-0.286 to 0.846) p = 0.333		
					Supportive therapy + Med vs. Supportive therapy: 0.432 (-0.155 to 1.019) p = 0.149		
					Supportive therapy + Med vs. Med: 0.104 (-0.446 to 0.654) p = 0.712		
		CBT and placebo (25)	1.69 (0.5)	1.47 (0.5)			
		SPT and placebo (22)	1.66 (0.3)	1.51 (0.5)			
		Desipramine (28)	1.73 (0.4)	1.41 (0.4)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	SCL-90 anxiety	CBT and Med (23)	1.83 (0.7)	1.31 (0.4)	CBT + Med vs. CBT: 0.541 (-0.027 to 1.108) p = 0.062	NR	NR
					CBT + Med vs. Supportive therapy: 0.651 (0.062 to 1.241) p = 0.030		
					CBT + Med vs. Med: 0.482 (-0.069 to 1.033) p = 0.086		
		SPT and Med (22)	1.66 (0.6)	1.37 (0.5)	Supportive therapy + Med vs. CBT: 0.159 (-0.405 to 0.723) p = 0.581		
					Supportive therapy + Med vs. Supportive therapy: 0.260 (-0.323 to 0.843) p = 0.382		
					Supportive therapy + Med vs. Med: 0.059 (-0.491 to 0.608) p = 0.834		
		CBT and placebo (25)	1.57 (0.6)	1.37 (0.5)			
		SPT and placebo (22)	1.56 (0.5)	1.41 (0.5)			
		Desipramine (28)	1.55 (0.5)	1.29 (0.4)			

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
						16 weeks for 16 wk treatment and 8 weeks for 24 wk treatment	
Agras et al. 1992[76 b]	Binge eating(7 day recall)	CBT plus medication continued for 16 weeks (12)	7.5 (3.4)	2.4 (3.1)	CBT + 16 wk Med vs. 16 wk Med: 0.662 (-0.133 to 1.456) p = 0.103	3.2 (4.2)	CBT + 16 wk Med vs. 16 wk Med: 0.538 (-0.249 to 1.326) p = 0.180
					CBT + 16 wk Med vs. 24 wk Med: 0.472 (-0.312 to 1.256) p = 0.238		CBT + 16 wk Med vs. 24 wk Med: 0.386 (-0.395 to 1.166) p = 0.333
					CBT + 16 wk Med vs. CBT: 0.136 (-0.547 to 0.819) p = 0.696		CBT + 16 wk Med vs. CBT: 0.334 (-0.352 to 1.020) p = 0.340
		CBT plus medication continued for 24 weeks (12)	9.3 (5.8)	2.3 (4.7)	CBT + 24 wk Med vs. 16 wk Med: 0.890 (0.078 to 1.703) p = 0.032	1.0 (3.0)	CBT + 24 wk Med vs. 16 wk Med: 0.940 (0.123 to 1.757) p = 0.024
					CBT + 24 wk Med vs. 24 wk Med: 0.749 (-0.052 to 1.550) p = 0.067		CBT + 24 wk Med vs. 24 wk Med: 1.141 (0.303 to 1.978) p = 0.008
					CBT + 24 wk Med vs. CBT: 0.172 (-0.511 to 0.855) p = 0.621		CBT + 24 wk Med vs. CBT: 0.350 (-0.337 to 1.037) p = 0.318
		Desipramine 16 weeks (12)	5.5 (4.6)	3.5 (6.1)		6.2 (13.7)	
		Desipramine 24 weeks (12)	5.9 (5.1)	2.7 (2.8)		3.3 (3.9)	
		Individual CBT (23)	8.7 (7.2)	2.8 (5.9)		2.5 (3.6)	

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	Purging (7 day recall)	CBT plus medication continued for 16 wks (12)	8.3 (4.3)	2.6 (3.2)	CBT + 16 wk Med vs. 16 wk Med: 0.097 (-0.676 to 0.870) p = 0.805	3.2 (4.3)	CBT + 16 wk Med vs. 16 wk Med: 0.170 (-0.604 to 0.944) p = 0.667
					CBT + 16 wk Med vs. 24 wk Med: 0.544 (-0.243 to 1.332) p = 0.176		CBT + 16 wk Med vs. 24 wk Med: 0.480 (-0.305 to 1.264) p = 0.231
					CBT + 16 wk Med vs. CBT: 0.271 (-0.413 to 0.956) p = 0.437		CBT + 16 wk Med vs. CBT: 0.457 (-0.233 to 1.147) p = 0.195
		CBT plus medication continued for 24 wks (12)	11.7 (5.9)	1.7 (4.7)	CBT + 24 wk Med vs. 16 wk Med: 0.649 (-0.145 to 1.443) p = 0.109	1.1 (3.0)	CBT + 24 wk Med vs. 16 wk Med: 0.736 (-0.064 to 1.536) p = 0.071
					CBT + 24 wk Med vs. 24 wk Med: 1.308 (0.451 to 2.164) p = 0.003		CBT + 24 wk Med vs. 24 wk Med: 1.536 (0.650 to 2.423) p = 0.001
					CBT + 24 wk Med vs. CBT: 0.391 (-0.297 to 1.079) p = 0.265		CBT + 24 wk Med vs. CBT: 0.426 (-0.263 to 1.115) p = 0.226
		Desipramine 16 weeks (12)	9.7 (9.4)	4.7 (8.6)		6.2 (13.7)	
		Desipramine 24 weeks (12)	6.3 (4.9)	2.9 (3.0)		3.4 (4.1)	
		Individual CBT (23)	10.1 (7.7)	2.7 (5.9)		2.2 (3.6)	

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
				Post-treatment	Author's ANCOVA Results		
Mitchell et al. 1990[77 b,c]	Self-report binges/week	Imipramine plus intensive group psychotherapy (48)	8.4 (NR)	0.7 (NR)	p = 0.004 for the interaction term		
		Imipramine (45)	7.3 (NR)	3.7 (NR)	p = 0.004 for drug treatment		
		Intensive group psychotherapy plus placebo (33)	9.2 (NR)	1.0 (NR)	p = 0.0001 for group therapy		
	Self-report vomiting episodes/week	Imipramine plus intensive group psychotherapy (48)	9.6 (NR)	1.0 (NR)	p = 0.0003 for the interaction term		
		Imipramine (45)	8.6 (NR)	4.7 (NR)	p = 0.04 for drug treatment		
		Intensive group psychotherapy plus placebo (33)	13.2 (NR)	1.3 (NR)	p = 0.0001 for group therapy		
	HAM-D	Imipramine plus intensive group psychotherapy (48)	11.0 (NR)	2.3 (NR)	p = 0.84 for the interaction term		
		Imipramine (45)	11.6 (NR)	7.0 (NR)	p = 0.004 for drug treatment		
		Intensive group psychotherapy plus placebo (33)	9.5 (NR)	4.2 (NR)	p = 0.0001 for group therapy		

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	HAM-A	Imipramine plus intensive group psychotherapy (48)	5.8 (NR)	1.3 (NR)	p = 0.96 for the interaction term		
		Imipramine (45)	6.0 (NR)	3.8 (NR)	p = 0.02 for drug treatment		
		Intensive group psychotherapy plus placebo (33)	5.5 (NR)	2.7 (NR)	p = 0.0001 for group therapy		
	Global severity	Imipramine plus intensive group psychotherapy (48)	4.04 (NR)	2.44 (NR)	p = 0.14 for the interaction term		
		Imipramine (45)	4.2 (NR)	3.52 (NR)	p = 0.07 for drug treatment		
		Intensive group psychotherapy plus placebo (33)	4.03 (NR)	2.58 (NR)	p = 0.0001 for group therapy		
	Global improvement	Imipramine plus intensive group psychotherapy (48)	3.85 (NR)	2.21 (NR)	p = 0.74 for the interaction term		
		Imipramine (45)	3.84 (NR)	3.02 (NR)	p = 0.002 for drug treatment		
		Intensive group psychotherapy plus placebo (33)	3.91 (NR)	2.82 (NR)	p = 0.0001 for group therapy		

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	EDI total score	Imipramine plus intensive group psychotherapy (42)	66.1 (NR)	26.2 (NR)	p = 0.19 for the interaction term		
		Imipramine (35)	67.4 (NR)	49.6 (NR)	p = 0.005 for drug treatment		
		Intensive group psychotherapy plus placebo (30)	60.9 (NR)	28.5 (NR)	p = 0.0001 for group therapy		
				4 months		**6 months**	
Agras et al. 1989[98 c]	Purge frequency/week	CBT plus ERP (16)	12.2 (8.3)	5.8 (10.3)	CBT plus ERP vs. CBT: 0.234 (-0.435 to 0.902) p = 0.493	NR	NR
		CBT alone (17)	11.1 (6.0)	2.8 (6.3)			
		SM (16)	12.3 (8.3)	4.6 (6.2)	CBT plus ERP vs. SM: 0.149 (-0.528 to 0.825) p = 0.667		
	BDI	CBT plus ERP (16)	19.1 (9.4)	9.2 (7.2)	CBT plus ERP vs. CBT: 0.148 (-0.519 to 0.815) p = 0.663	NR	NR
		CBT alone (17)	18.2 (6.7)	7.1 (7.7)			
		SM (16)	19.6 (10.2)	13.5 (10.2)	CBT plus ERP vs. CM: 0.394 (-0.288 to 1.077) p = 0.257		

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
				14 weeks		6 months	
Leitenberg et al. 1988[97]	Vomiting frequency (calculated from 3 weeks of patient diary entries)	CBT plus ERP-MS (12)	10.21 (8.4)	3.38 (4.2)	CBT plus ERP-MS vs. CBT: 0.499 (-0.287 to 1.284) p = 0.213	1.61 (2.4)	CBT plus ERP-MS vs. CBT: 0.744 (-0.057 to 1.545) p = 0.069
		CBT plus ERP-SS (11)	13.81 (8.1)	3.69 (6.5)	CBT plus ERP-SS vs. CBT: 0.974 (0.137 to 1.811) p = 0.023	5.28 (7.3)	CBT plus ERP-SS vs. CBT: 0.723 (-0.093 to 1.539) p = 0.082
		CBT alone (12)	8.57 (4.5)	5.13 (6.5)		5.25 (7.0)	
	EAT	CBT plus ERP-MS (12)	51.42 (16.8)	31.83 (21.4)	CBT plus ERP-MS vs. CBT: 0.080 (-0.693 to 0.852) p = 0.840	28.40 (14.8)	CBT plus ERP-MS vs. CBT: 0.121 (-0.652 to 0.895) p = 0.758
		CBT plus ERP-SS (11)	43.36 (13.5)	27.45 (17.4)	CBT plus ERP-SS vs. CBT: 0.115 (-0.675 to 0.904) p = 0.776	23.91 (20.2)	CBT plus ERP-SS vs. CBT: 0.066 (-0.723 to 0.855) p = 0.870
		CBT alone (12)	48.92 (19.3)	30.92 (18.8)		28.17 (20.7)	
	BDI	CBT plus ERP-MS (12)	19.80 (10.8)	12.33 (12.3)	CBT plus ERP-MS vs. CBT: 0.189 (-0.585 to 0.964) p = 0.632	11.60 (6.5)	CBT plus ERP-MS vs. CBT: 0.179 (-0.595 to 0.953) p = 0.651
		CBT plus ERP-SS (11)	17.00 (7.7)	8.64 (7.3)	CBT plus ERP-SS vs. CBT: 0.132 (-0.658 to 0.921) p = 0.743	8.18 (7.6)	CBT plus ERP-SS vs. CBT: 0.255 (-0.537 to 1.047) p = 0.527
		CBT alone (12)	18.00 (6.0)	8.67 (7.2)		11.67 (12.4)	
	Lawson Social Self-Esteem (LSE)	CBT plus ERP-MS (12)	118.42 (32.0)	125.42 (20.5)	CBT plus ERP-MS vs. CBT: 0.315 (-0.463 to 1.093) p = 0.427	122.10 (28.5)	CBT plus ERP-MS vs. CBT: 0.219 (-0.556 to 0.994) p = 0.580
		CBT plus ERP-SS (11)	123.91 (30.5)	132.18 (31.5)	CBT plus ERP-SS vs. CBT: 0.258 (-0.534 to 1.050) p = 0.524	133.00 (27.5)	CBT plus ERP-SS vs. CBT: 0.056 (-0.733 to 0.845) p = 0.889
		CBT alone (12)	111.00 (29.1)	127.17 (27.1)		121.92 (36.5)	
	RSE	CBT plus ERP-MS (12)	24.33 (6.3)	27.08 (3.9)	CBT plus ERP-MS vs. CBT: 0.092 (-0.681 to 0.865) p = 0.816	27.10 (5.0)	CBT plus ERP-MS vs. CBT: 0.102 (-0.671 to 0.875) p = 0.796
		CBT plus ERP-SS (11)	25.45 (4.6)	29.55 (6.3)	CBT plus ERP-SS vs. CBT: 0.154 (-0.636 to 0.944) p = 0.703	28.73 (5.4)	CBT plus ERP-SS vs. CBT: 0.022 (-0.767 to 0.810) p = 0.957
		CBT alone (12)	24.42 (4.8)	27.67 (5.2)		27.83 (7.2)	

Study	Outcome/Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedges' g (95% CI), p-Value	Last Follow-up Score (SD)	Pre to Last Follow-up Between Group Effect-size Estimate Hedges' g 95% CI), p-Value
	Body dissatisfaction	CBT plus ERP-MS (12)	22.92 (11.0)	15.10 (6.3)	CBT plus ERP-MS vs. CBT: -0.496 (-1.282 to 0.289) p = 0.215	16.17 (11.9)	CBT plus ERP-MS vs. CBT: -0.074 (-0.846 to 0.699) p = 0.852
		CBT plus ERP-SS (11)	9.76 (12.8)	7.16 (8.7)	CBT plus ERP-SS vs. CBT: -0.854 (-1.680 to -0.027) p = 0.043	11.25 (9.8)	CBT plus ERP-SS vs. CBT: -0.545 (-1.350 to 0.259) p = 0.184
		CBT alone (12)	19.44 (12.9)	5.38 (15.3)		13.66 (14.7)	

[a] SEED scale points include: 1 = not at all; 2 = up to 1 per week; 3 = 2/3 per week; 4 = daily; 5 = more than 1 per day.
[b] Intent-to-treat analysis
[c] Analysis based on completers of treatment/therapy

BDI: Beck depression inventory
BN: Bulimia nervosa
BSQ: Body shape questionnaire
CBT: Cognitive behavioral therapy
EDE: Eating disorder examination
EDI: Eating disorders inventory
ERP-MS: Exposure response prevention multiple settings
ERP-SS: Exposure response prevention single setting
GRP: Group therapy
HAM-A: Hamilton anxiety
HAM-D: Hamilton depression
IND: Individual therapy
IPP: Interpersonal problems
RSE: Rosenberg self-esteem scale
SAS-M: Social adjustment scale-modified
SF-36: Medical outcomes study short-form
SM: Self-maintenance
SPT: Supportive psychotherapy
STAI: State trait anxiety inventory

Table 51. Key Question 4: Remission Rates Reported in Studies

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Number at Last Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
Hsu et al. 2001[95]	Abstinence (defined as no binge eating/vomiting or laxative/diuretic/diet pill use in the week prior to post-treatment assessment)	NT plus CT (27)	14 (51.9)	NT plus CT vs. NT: 5.115 (1.372 to 19.077) p = 0.015	NR	NR
		NT (23)	4 (17.4)			
		CT (26)	9 (34.6)	NT plus CT vs. CT: 2.034 (0.673 to 6.146) p = 0.208		
		SG (24)	5 (20.8)	NT plus CT vs. SG: 4.092 (1.183 to 14.157) p = 0.026		
Mitchell et al. 2001[73 a]	Abstinence Rates (need definition)	Fluoxetine and self-help manual (20)	NR	NR	5 (26)	Fluoxetine and self-help manual vs. Fluoxetine: 1.833 (0.422 to 7.969) p = 0.419
		Fluoxetine (26)			4 (16)	
		Placebo and self help manual (22)			5 (24%)	Fluoxetine and self-help manual vs. Self-help: 1.133 (0.274 to 4.692) p = 0.863
Goldbloom et al. 1997[74 a]	Abstinence Rates	Fluoxetine and CBT (12)	NR	NR	3 (25)	Fluoxetine + CBT vs. Fluoxetine: 1.667 (0.225 to 12.353) p = 0.617
		Fluoxetine (12)			2 (17)	
		CBT (14)			6 (43)	Fluoxetine + CBT vs. CBT: 0.444 (0.083 to 2.388) p = 0.345

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Number at Last Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
Walsh et al. 1997[75]	Remission (past 28 days)	CBT and Med (18)	9 (50%)	CBT + Med vs. CBT: 4.333 (0.912 to 20.595) p = 0.065	NR	NR
				CBT + Med vs. Supportive therapy: 7.500 (1.315 to 42.765) p = 0.023		
				CBT + Med vs. Med: 3.000 (0.762 to 11.811) p = 0.116		
		SPT and Med (17)	3 (18%)	Supportive therapy + Med vs. CBT: 0.929 (0.158 to 5.448) p = 0.935		
				Supportive therapy + Med vs. Supportive therapy: 1.607 (0.233 to 11.092) p = 0.630		
				Supportive therapy + Med vs. Med: 0.643 (0.129 to 3.203) p = 0.590		
		CBT and placebo (16)	3 (19)			
		SPT and placebo (17)	2 (12)			
		Desipramine (20)	5 (25)			
Mitchell et al. 1990[77]	Remission: free of bulimic symptoms for the last two weeks; appears % was based on patients with final follow-up visits data	Imipramine plus intensive group psychotherapy (39)	NR	NR	NR	NR
		Imipramine (31)	5 (16)			
		Intensive group psychotherapy plus placebo (29)	NR			
Agras et al. 1989[98 b]	Abstinence (reported for 1 week prior at each assessment)	CBT plus ERP (16)	5 (31.2)	CBT plus ERP vs. CBT: 0.318 (0.076 to 1.332) p = 0.117	3 (20)	CBT plus ERP vs. CBT: 0.162 (0.033 to 0.787) p = 0.024
		CBT alone (17)	10 (56.3)		10 (60)	
		SM (16)	4 (23.5)	CBT plus ERP vs. SM: 1.364 (0.290 to 6.415) p = 0695	3 (19.8)	CBT plus ERP vs. SM: 1.000 (0.169 to 5.903) p = 1.000

Study	Outcome	Group (n)	Number at Post-treatment (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value	Number at Last Follow-up (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
Leitenberg et al. 1988[97]	Remission/week	CBT plus ERP-MS (12)	4 (33.3)	CBT plus ERP-MS vs. CBT: 5.500 (0.513 to 59.014) p = 0.159	5 (50)	CBT plus ERP-MS vs. CBT: 1.429 (0.271 to 7.518) p = 0.674
		CBT plus ERP-SS (11)	4 (36.4)		2 (18.2)	
		CBT alone (12)	1 (8.33)	CBT plus ERP-SS vs. CBT: 6.286 (0.577 to 68.423) p = 0.131	4 (33.3)	CBT plus ERP-SS vs. CBT: 0.444 (0.063 to 3.112) p = 0.414

[a] Intent-to-treat analysis
[b] Analysis based on completers of treatment/therapy

CBT: Cognitive behavioral therapy
CT: Cognitive therapy
ERP-MS: Exposure response prevention – multi-setting
ERP-SS: Exposure response prevention – single setting
NR: Not reported
NT: Nutritional therapy
SG: Support group
SM: Self-maintenance
SPT: Supportive psychotherapy

Table 52. Key Question 4: Dropouts in Studies of Combination Therapies

Study	Group	Number Randomized	Overall Number of Dropouts (%)		Effect Size Odds Ratio (95% CI), p-Value
Schmidt et al. 2006[94]	CBT/GSH plus feedback	32	Post treatment: 15 (47)	Follow-up: 10 (31)	Post-treatment CBT/GSH + Feedback vs. CBT/GSH: 1.250 (0.453 to 3.446) p = 0.666
	CBT/GSH	29	Post treatment 12 (41)	Follow-up: 10 (35)	Follow-up CBT/GSH + Feedback vs. CBT/GSH: 0.864 (0.296 to 2.518) p = 0.788
Hsu et al. 2001[95]	NT plus CT	27	27 (27) does not report number per group		NR
	NT	23			
	CT	26			
	SG	24			
Mitchell et al. 2001[73]	Fluoxetine and self-help manual (20)	91 [d]	8 (8.8)		NR
	Fluoxetine (26)				
	Placebo and self-help manual (22)				
Goldbloom et al. 1997[74] [a]	FL-CBT	29	13 (45)		Fluoxetine + CBT vs. Fluoxetine: 0.522 (0.172 to 1.588) p = 0.252
	FL	23	14 (61)		Fluoxetine + CBT vs. CBT: 0.406 (0.132 to 1.246) p = 0.115
	CBT	24	16 (67)		

Study	Group	Number Randomized	Overall Number of Dropouts (%)	Effect Size Odds Ratio (95% CI), p-Value
Walsh et al. 1997[75]	CBT and Med	23	8 (35)	CBT + Med vs. CBT: 0.948 (0.290 to 3.100) p = 0.930
				CBT + Med vs. Supportive therapy: 1.422 (0.399 to 5.072) p = 0.587
				CBT + Med vs. Med: 0.711 (0.228 to 2.220) p = 0.557
	Supportive therapy and Med	22	6 (27)	Supportive therapy + Med vs. CBT: 0.667 (0.192 to 2.313) p = 0.523
				Supportive therapy + Med vs. Supportive therapy: 1.000 (0.265 to 3..769) p = 1.000
				Supportive therapy + Med vs. Med: 0.500 (0.151 to 1.660) p = 0.258
	CBT and placebo	25	9 (36)	
	SPT and placebo	22	6 (27)	
	Desipramine	28	12 (43)	
Agras et al. 1992[76 b]	Combination therapy with medication continued for 16 wks (12)	71	13 (18)	NR
	Combination therapy with medication continued for 24 wks (12)			
	Desipramine 16 wks (12)			
	Desipramine 24 weeks (12)			
	Individual CBT (23)			
Mitchell et al. 1990[77]	Imipramine plus intensive group psychotherapy	52	13 (25)	Med + Group Psychotherapy vs. Med: 0.449 (0.196 to 1.028) p = 0.058
	Imipramine	54	23 (43)	Med + Group Psychotherapy vs. Group Therapy: 1.933 (0.620 to 6.032) p = 0.256
	Intensive group psychotherapy plus placebo	34	5 (15)	

Study	Group	Number Randomized	Overall Number of Dropouts (%)	Effect Size Odds Ratio (95% CI), p-Value
Agras et a. 1989[98]	CBT plus ERP	17	1 (6)	CBT plus ERP vs. CBT: 0.212 (0.022 to 2.022) p = 0.178
	CBT alone	22	5 (23)	CBT plus ERP vs. SM: 0.333 (0.031 to 3.555) p = 0.363
	SM	19	3 (16)	
Leitenberg et al. 1988[97 c]	CBT plus ERP-MS	12	2 (17)	CBT plus ERP-MS vs. CBT: 5.952 (0.256 to 138.249) p = 0.266
	CBT plus ERP-SS	11	0 (0)	
	CBT alone	12	0 (0)	

[a] Goldbloom et al.[74] reports that four patients in the fluoxetine arm experienced dropped out because of medication side effects, as did two patients in the combination therapy group. They offer no explanation of what side effects were experienced.
[b] Agras et al.[76] did not report dropouts separately for all groups. Overall number of dropouts was calculated by adding the number of patients not available for data collection at 32 weeks and the number of patients stopping medication at 24 weeks.
[c] Author reported data for patients with pre/post data only
[d] This total includes these three treatment groups and a placebo group (n = 22). The number of dropouts was not specified by group.

CBT/GSH: Cognitive behavioral therapy/guided self-help
CI: Confidence interval
CT: Cognitive therapy
ERP-MS: Exposure response prevention – multi-setting
ERP-SS: Exposure response prevention – single setting
FL: Fluoxetine
NR: Not reported
NT: Nutritional therapy
SG: Support group
SM: Self-maintenance
SPT: Supportive psychotherapy

Table 53. Key Question 4: Results of Meta-analysis

Studies Combined	Treatment	Outcome	Summary Effect Size Hedges' g (95% CI), p-Values	Strength-of-evidence	I-squared (I^2)/ Tau Squared (T^2)
Agras et al. 1989[98] Leitenburg et al. 1988[97]	CBT plus ERP versus CBT alone	BDI	0.142 (-0.368 to 0.651), 0.586	Insufficient	0.000 /0 / 000
Agras et al. 1989[98] Leitenburg et al. 1988[97]	CBT plus ERP versus CBT alone	Frequency of vomit or purge	0.559 (-0.161 to 1.279), 0.128	Insufficient	45.448 / 0.124
Walsh et al. 1997[75] Agras et al. 1992[76]	CBT plus desimpramine versus desimpramine alone	Frequency of binge	0.305 (-0.215 to 0.826), 0.250	Insufficient	0.000 / 0.000
Walsh et al. 1997[75] Agras et al. 1992[76]	CBT plus desimpramine versus desimpramine alone	Frequency of vomiting	0.337 (-0.053 to 0.726), 0.093	Insufficient	0.000 / 0.000
Walsh et al. 1997[75] Goldbloom et al. 1997[74] Agras et al. 1992[76]	CBT plus desimpramine versus CBT alone	Frequency of vomiting	0.278 (-0.097 to 0.653), 0.147	Insufficient	0.000 / 0.000

BDI: Beck depression inventory
CBT: Cognitive behavioral therapy
ERP: Exposure response prevention

Appendix I. Evidence Tables Key Question 5

Table 54. Key Question 5: Study Enrollment Details

Study	Study Inclusion Criteria (as Described in Article)	Study Exclusion Criteria (as Described in Article)	Number of Pts Considered for Enrollment	Number of Pts Eligible for Enrollment	Number of Pts Randomized	% of Pts Considered Who Were Randomized
Zeeck et al. 2009[99]	Patients with BN according to DSM-IV and ICD 10, more than 18 years of age, within one hour of the clinic, and fulfilled at least one of the following: failed outpatient psychotherapy within last 2 years (minimum of 25 sessions); bulimic symptoms that are too severe for outpatient treatment; chronic course of illness with a minimum of 5 years and/or sever comorbidity that does not allow for outpatient treatment.	Serious unstable medical conditions, current suicidal ideation, current severe substance dependence or psychotic disorder.	204	55	55	27.0

Table 55. Key Question 5: Characteristics of Enrolled Patients

Study	Group (n)	% Females	Mean Age of Pts (SD)	Years of Bulimia (SD)	Mean BMI (SD)	Mean frequency of binge-eating episode (SD)	Mean frequency of purging episode (SD)	Mean frequency of emesis episodes (SD)	Mean frequency of laxative use (SD)	Number of pts who have a history of anorexia nervosa (%)	Number of pts with lifetime history of major depression (%)	Number of pts with current major depression (%)	Number of pts who self-mutilate (%)	Number of pts with history of drug or alcohol abuse (%)	Number of pts with history of attempted suicide (%)
Zeeck et al. 2009[99]	Inpatient treatment	90.5	24.0 (7.6)	NR	21.5 (2.2)	2.7 (0.5) Severity of binge eating (SIAB-EX)	NR	2.4 (1.1) Severity of binge eating (SIAB-EX)	NR	33.3	NR	NR	NR	NR	NR
	Day clinic treatment	95.5	26.2 (7.2)	NR	21.4 (2.5)	2.5 (0.8) Severity of binge eating (SIAB-EX)	NR	2.9 (0.4) Severity of binge eating (SIAB-EX)	NR	40.9	NR	NR	NR	NR	NR

NR: Not reported
SD: Standard deviation
SIAB-EX: Structured Expert Inventory of Anorexic and Bulimic Syndromes

Table 56. Key Question 5: Characteristics of Treatment

Study	Treatment Group	Provider and Setting	Description of Treatment	Ancillary Treatment	Number and Time of Sessions	Duration of Treatment	Length of Follow-up	n at Follow-up
Zeeck et al. 2009[99]	Inpatient treatment (21)	Experienced treatment team: nurse, art therapist, body therapist, and psychiatrist and psychotherapists.	2 weekly individual sessions, 2 weekly group sessions, 1-2 planned sessions with a nurse to work on the eating diary, 1 weekly session in an eating disorder group, 2 weekly group sessions of body therapy, 1 weekly group session of art therapy, sessions with a social worker or family sessions when needed, 1 weekly session of relaxation therapy, visit with a medical doctor for a physical assessment and treatment planning once weekly and the possibility of attending sporting events.	47.6% on antidepressant(s)	Day clinic hours are Monday to Friday 8 am to 4 pm.	12 weeks	Immediately post treatment, 3, 12 and 36 months later	NR

Table 57. Key Question 5: Internal Validity Assessment of Included Studies by Outcome of Interest

Studies	**Q1.** Were pts randomly assigned to study groups?	**Q2.** Did the study use appropriate methods of randomization?	**Q3.** Was there concealment of allocation?	**Q4.** Were methods other than randomization used to make groups comparable?	**Q5.** Were pts assigned to groups based on factors other than pt or phy preference?	**Q6.** Did pts in different study groups have similar scores on all outcome measures at assignment?	**Q7.** Were characteristics of pts in different groups comparable at assignment?	**Q8.** Were all suitable pts or consecutive suitable pts enrolled in a time period?	**Q9.** Was comparison of interest prospectively planned?	**Q10.** Were all study groups concurrently treated?	**Q11.** Was there a ≤5 difference between groups in ancillary treatment(s)?	**Q12.** Was compliance with treatment ≥85% in both groups?	**Q13.** Were subjects blinded?	**Q14.** Was the treating phy blinded?	**Q15.** Were outcome assessors blinded?	**Q16.** Were tests performed to ensure blinding?	**Q17.** Was the outcome objective and objectively measured?	**Q18.** Was the instrument used to measure the outcome standard?	**Q19.** Was there ≤15% difference in the length of follow-up between groups?	**Q20.** Did ≥85% of the pts complete the study?	**Q21.** Was there a ≤15% difference in completion rates in the study groups?	**Q22.** Was funding free of financial interest?	**Overall Quality Score**
Outcomes (Frequency of Binge Eating and Purging)																							
Zeeck et al. 2009[99]	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	NR	N	N	Y	NR	N	Y	Y	Y	Y	Y	**7.3**
Outcomes (Remission, Recovery, Quality of Life, Eating Disorder Pathology, Comorbid Psychological Symptoms, Impact on Family Members, Psychosocial Functioning)																							
Zeeck et al. 2009[99]	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	NR	N	N	Y	NR	N	Y	Y	Y	Y	Y	**7.3**
Outcomes (Mortality, Dropout)																							
Zeeck et al. 2009[99]	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	NR	N	N	Y	NR	Y	Y	Y	Y	Y	Y	**7.7**

NR: Not reported
N: No
Y: Yes

Table 58. Key Question 5: Individual Results of Studies on Inpatient versus Outpatient Treatment

Study	Outcome Instrument	Group (n)	Pretreatment Score (SD)	Post-treatment Score (SD)	Pre-Post Between Group Effect-size Estimate Hedge's g (95% CI), p-Value	3-month Follow-up Score (SD)	Pre to Follow-up Between Group Effect-size Estimate Hedge's g (95% CI), p-Value
Zeeck et al. 2009[99 a]	EDI scale "bulimia"	Inpatient (21)	11.24 (4.40)	5.76 (5.79)	0.21 (-0.38 to .80), 0.49	5.95 (6.24)	0.51 (-0.09 to 1.11), 0.09
		Day clinic (22)	11.59 (3.67)	5.14 (3.94)		3.86 (3.75)	
	SIAB-EX ranking of severity of vomiting	Inpatient (21)	2.43 (1.12)	1.38 (1.36)	0.04 (-0.55 to 0.63), 0.89	1.14 (1.11)	0.02 (-0.57 to 0.61), 0.95
		Day clinic (22)	2.91 (0.43)	1.91 (1.31)		1.64 (1.05)	
	SIAB-EX ranking of severity of binge eating	Inpatient (21)	2.52 (0.75)	1.05 (1.02)	0.27 (-0.32 to 0.86), 0.37	1.19 (1.17)	0.23 (-0.36 to 0.82), 0.45
		Day clinic (22)	2.73 (0.46)	1.50 (0.96)		1.18 (1.00)	
	SCL-GSI	Inpatient (21)	1.26 (0.48)	0.87 (0.48)	0.10 (-0.49 to 0.68), 0.75	0.87 (0.58)	0.02 (-0.57 to 0.61), 0.95
		Day clinic (22)	1.11 (0.59)	0.67 (0.47)		0.71 (0.47)	

[a] Based on intent to treat analyses, with the n based on patients who actually started the treatment.

Note: SIAB scores range from 0 (none) to 3 (once a day or more)

EDI: Eating disorder inventory
SCL-GSI: Symptom checklist-global severity index
SIAB: Structured Inventory of Anorexic and Bulimic Syndromes

Table 59. Key Question 5: Remission Rates Reported in Inpatient versus Outpatient Studies

Study	Group	Number at Post-treatment/ Total Number in Group (%)	Between Group Effect Size Odds Ratio (95% CI), P-value	Number at 3-month Follow-up/ Total Number in Group (%)	Between Group Effect Size Odds Ratio (95% CI), p-Value
Zeeck et al. 2009[99 a]	Inpatient (27)	7 (25.9)	2.1 (0.54 to 8.22) 0.29	3(11.1)	1.04 (0.19 to 5.68), 0.96
	Day clinic (28)	4 (14.3)		3 (10.7)	

[a] Based on intent to treat analyses

Table 60. Key Question 5: Dropouts in Studies of Inpatient versus Outpatient Treatment

Study	Group	Number Randomized	Overall Number of Dropouts (%)	Effect Size Odds Ratio (95% CI), p-Value
Zeeck et al. 2009[99] [a]	Inpatient	27	9 (33.3)	0.90 (0.30 to 2.74), 0.85
	Day clinic	28	10 (35.7)	

[a] Based on intent to treat analyses

Appendix J. Reimbursement and Mental Health Mandates and Parity Laws

Table 61. Commercial Coverage Policies

Third-party Payer	Coverage Policy	Coverage Area	Date of Last Review	Policy/ Bulletin Number
Anthem BlueCross and BlueShield http://www.anthem.com/	A DSM Axis 1 or ICD-9 Eating Disorder diagnosis is required for all levels of care and services covered. The policy covers the following levels of care: acute inpatient, residential treatment center (RTC), RTC without 24-hour nursing, partial hospitalization program, and outpatient treatment. Anthem specifies the particular requirements for each level of care in its Behavioral Health Necessity Criteria guidelines.	CO, CT, IN, KY, ME, MO, NV, NH, OH, VA, WI	NR	NR
Aetna http://www.aetna.com/	Aetna's coverage policy lists the following treatments as medically necessary for anorexia or bulimia: nutritional counseling, psychotherapy, and pharmacotherapy. The following services/procedures are considered experimental and not covered: brain imaging, biophoshonates, naltrexone, lithium, and buproprion, Mandometer treatment, and transcranial magnetic stimulation.	Nationally	09/04/2009	0511
BlueCross BlueShield of Massachusetts http://www.bluecrossma.com/	The only BCBSMA medical policy bulletin specifically addressing treatments relevant to bulimia is its outpatient behavioral health treatment bulletin. It lists many covered therapies, including outpatient psychotherapy and medication management.	MA	03/10/2010	423
CIGNA Access CIGNA's Members' Benefits Guide at: http://apps.cignabehavioral.com/. Access CIGNA's policy related to dialectical behavioral therapy at: http://www.cigna.com/	CIGNA's Behavioral Health arm provides benefits for DSM-IV diagnoses and lists specific guidelines for access to different levels of treatment. CIGNA advises that all patients with an eating disorder must be assessed for comorbid psychiatric disorders, including substance abuse disorders. If present, these disorders should be treated along with the patient's eating disorder. CIGNA levels of care for eating disorders and specifically for bulimia nervosa include the following: inpatient hospitalization, partial hospitalization, residential care, outpatient care, and intensive outpatient care. CIGNA also lists guidelines for continued treatment and for discharge. These guidelines can be found in the members' benefits guide. Additionally, CIGNA's medical coverage policy states that it will not cover dialectical behavioral therapy for the treatment of eating disorders.	Nationally	NR	NR

Third-party Payer	Coverage Policy	Coverage Area	Date of Last Review	Policy/ Bulletin Number
Health Net http://healthnet.com/	Health Net contracts with Managed Health Network to provide behavioral health benefits. Health Net categorizes bulimia nervosa as a "severe mental illness," in its members' benefits guide, and refers to the MHN members' guide for all specific benefits and care criteria for treatment of bulimia nervosa. It lists criteria for determining access to various levels of care including inpatient, partial-inpatient, residential, intensive outpatient, outpatient, and home care.	Northeast, US and West Coast, US	NR	NR
Health Partners (MN) http://www.healthpartners.com/policies/.	Health Partners has several policy bulletins on general management of adult and child behavioral health conditions, but none are specific to eating disorders.	MN	NR	NR
Humana	Humana "coverage issues" policies on its website do not include any policy or criteria pertaining to bulimia nervosa or eating disorders.	Available in 15 states in the southeast and Midwest plus Puerto Rico	NR	NR
Inland Empire Health Plan (IEHP) http://ww2.iehp.org/	IEHP categorizes bulimia nervosa as a severe mental illness. As such, IEHP policy states that "inpatient mental health care days for the treatment of severe mental illnesses are not limited." Likewise, the plan does not place limits on outpatient mental health care days for severe mental illnesses. Thus, inpatient and outpatient treatments for bulimia nervosa at plan providers are covered.	CA	NR	NR
Kaiser Permanente Health Plan https://www.kaiserpermanente.org	Kaiser does not make its coverage policies public. Its website, however, provides information for its members on bulimia nervosa, and its diagnosis and treatment, including use of cognitive behavioral therapy. Various regions of the Kaiser network offer classes for beneficiaries and their families about eating disorders and treatment.	Nationally	NR	NR
Lovelace Health Plan Lovelace Health Plan's Provider Reference Guide: http://www.lovelacehealthplan.com/. Optum Health New Mexico's Consumer Handbook: https://www.optumhealthnewmexico.com/	Lovelace has several health plans under its umbrella and covers diagnosed psychiatric conditions as defined by the DSM-IV or the ICD 9, both of which include bulimia nervosa. Among the things LoveLace requires to authorize treatment are a DSM diagnosis, including all five axes; documented medical and psychiatric history; assessment of mental status, including suicidal ideation or psychosis; presenting problems; and all relevant conditions affecting health.	NM	NR	NR

Third-party Payer	Coverage Policy	Coverage Area	Date of Last Review	Policy/ Bulletin Number
MHN https://www.mhn.com/	MHN, a subsidiary of Health Net, administers managed behavioral health care plans. In its "Level of Care and Treatment Criteria," MHN lists specific admissions criteria for three levels of care, including adult half day partial hospitalization, adult psychiatric home care, and child/adolescent half day partial hospitalization. The admissions criteria describe the general mental health of the patient and not specific disorders. For each level of care MHN specifies the types of therapy that can be provided (individual, group, and family psychotherapy) and how often they can be given, as well as criteria for continuing care and for discharge.	Nationally	NR	NR
Magellan Behavioral Health https://www.magellanprovider.com/	Magellan administers behavioral health benefits for many health plans. Their "Medical Necessity Criteria" list admissions criteria for various levels of treatment for bulimia nervosa. The levels of care include hospitalization, residential, partial hospitalization, and intensive outpatient. All levels of care require a DSM-IV diagnosis. Other requirements vary, but include mental competence, how the patient responds to treatment, and the severity of other psychiatric conditions.	Nationally	NR	NR
Medica http://medica.com/	Medica contracts with United Behavioral Health to provide its behavioral health benefits. In its "Provider Administrative Manual," these benefits are stated to include: individual, family, and group therapy, psychiatric evaluation and medication, hospitalization when medically necessary, and attention deficit disorder diagnostic evaluations. They refer to UBH for all other policy information.	MN, WI, ND, SD	06/03/2009	NR
Neighborhood Health Plan (NHP) http://nhp.org/	NHP contracts its behavioral health care benefits to Beacon Health Strategies. NHP covers inpatient and outpatient benefits at participating providers. NHP states that it provides clinical coverage 24 hours a day. Coverage for bulimia nervosa treatment depends on the exact plan a member has purchased.	MA	NR	NR
New Directions Behavioral Health (NDBH) https://www.ndbh.com/	NDBH publishes level of care guidelines including: acute inpatient hospitalization, partial hospitalization, residential treatment, outpatient treatment, and intensive outpatient treatment. Services for eating disorders, including bulimia nervosa, are provided to members. Each level of care has its own admission, continued stay, and discharge criteria.	Nationally	09/30/2009	NR

Third-party Payer	Coverage Policy	Coverage Area	Date of Last Review	Policy/ Bulletin Number
United Behavioral Health (UBH) http://www.unitedbehavioralhealth.com	UBH's website states that it offers "comprehensive behavioral...services from counseling to inpatient care" but provides no publicly available benefits coverage information on its website. UBH benefit coverage is subject to state mandates in the areas in states in which it operates.	Nationally	NR	NR
The Regence Group (TRG) Behavioral Health http://blue.regence.com/	TRG classifies eating disorders as a "subclass of complex biopsychosocial disorders characterized by severe disturbances in eating behavior." Bulimia nervosa, eating disorder not otherwise specified, and anorexia nervosa are all listed as covered eating disorders. TRG covers inpatient treatment, residential treatment, and partial hospitalization treatment. TRG states that services provided for eating disorders must be "provided in a specialized program, unit, or facility which is either a component of or a stand-alone licensed and accredited hospital, and in which 24 hours medically supervised acute inpatient services are provided."	ID, UT, WA	02/11/2010	NR
Value Options http://valueoptions.com/	Value Options' "Provider Handbook" lists criteria for admission to inpatient, residential, and outpatient services. To be eligible for benefits, a member must receive a DSM-IV diagnosis and must fulfill general qualifications for each level of care. For bulimia nervosa care, the Provider Handbook refers to the American Psychiatric Association's (APA) Practice *Guidelines for the Treatment of Eating Disorders*.	Nationally	NR	NR
Wellmark BlueCross BlueShield http://www.wellmark.com/	Wellmark's medical policies are publicly accessible online; however, no policy listed pertains to diagnosis or treatment of bulimia nervosa or eating disorders.	IA, SD	NR	NR

Table 62. State Mental Health Mandates and Parity Laws

State/Year of Law or Mandate	Policy Type [a]	Mental Health Conditions Covered [b]	Full or Partial Parity (P) or Mandates (M) [c]	Exceptions [d]
AL 2002 www.legislature.state.al.us	I, G	ICD	M	Yes
AK 1997 www.legis.state.ak.us	G	"Mental illness"	M	Yes
AZ 1997/2001 www.azleg.state.az.us	G	"Mental illness"	P	Yes
AR 1997/2001 www.arkleg.state.ar.us	G	ICD or DSM-IV	P	Yes
CA 2000 www.assembly.ca.gov	I, G	Severe mental illness; bulimia nervosa included	P	No
CO 1997/2001 www.leg.state.co.us	G	"Biologically-based mental illness"	P	No
CT 1999 www.cga.ct.gov	I, G	DSM-IV	P	No
DE 2001 www.state.de.us	I, G	Bulimia nervosa included	M	No
FL 1992 www.leg.state.fl.us	G	DSM-IV	M	Yes
GA 1998 www.legis.state.ga.us	I, G	DSM-IV	M	Yes
HI 2000 www.capitol.hawaii.gov	I, G	"Serious mental illness," bulimia nervosa n/s	P	Yes
ID 2000 www.legislature.idaho.gov	O	The State Dept of Insurance commissioner's office requires adherence to the 1996 Federal Mental Health Parity Act		
IL 2001 www.illinois.gov/government/gov_legislature.cfm	G	Serious mental illness including bulimia nervosa	P	Yes

State/Year of Law or Mandate	Policy Type [a]	Mental Health Conditions Covered [b]	Full or Partial Parity (P) or Mandates (M) [c]	Exceptions [d]
IN 1999/2001/2003 www.state.in.us/legislative	I, G	"Mental illness"	M	Yes
KS 2001 www.kslegislature.org	I, G	DSM-IV diagnoses	M	NS
KY 200 www.lrc.state.ky.us	G	ICD or DSM-IV diagnoses	M	Yes
LA 2001 www.legis.state.la.us	G	Bulimia nervosa included	M	Yes
ME 2003 www.state.me.us/legis	G	DSM-IV Includes eating disorders	P	Yes
MD 1994 http://mlis.state.md.us/	I,G	All "mental illness or emotional disorders"	M	No
MA 2000 www.magnet.state.ma.us/legis/legis.htm	I, G	DSM-IV diagnoses Including eating disorders	P	No
MI 2001 www.michiganlegislature.org	I,G	"Mental health"	M	Yes
MN 1995 www.leg.state.mn.us	I,G	All "mental health disorders"	P	No
MS 2001 http://billstatus.ls.state.ms.us/	I, G	"Mental illness"	M	Yes
MO 1999 www.moga.mo.gov	I, G	Bulimia nervosa included	M	Yes
MT 2003 http://leg.mt.gov/css/default.asp	n/s	"Severe mental illness," bulimia nervosa n/s	None	No
NE 1999 www.nebraskalegislature.gov	G	ICD	M	Yes
NV 1999 www.leg.state.nv.us	I, G	DMS-IV diagnoses	M	Yes

State/Year of Law or Mandate	Policy Type [a]	Mental Health Conditions Covered [b]	Full or Partial Parity (P) or Mandates (M) [c]	Exceptions [d]
NH 1994/2002 http://gencourt.state.nh.us/	G	DMS-IV diagnoses Including eating disorders	P (biologically based illness); M (other mental illnesses)	No
NJ 1999 www.njleg.state.nj.us	I, G	"Biologically-based mental illness," bulimia nervosa NS	M	No
NM 2000 http://www.nmlegis.gov/lcs/	G	"Mental health benefits" as defined by health plan	P	Yes
NY 1998 http://assembly.state.ny.us/	G	"Mental, nervous ,or emotional disorders"	M	NS
NC 1997 www.ncga.state.nc.us	O[e]	"Mental illness"	P	No
ND 1995 www.legis.nd.gov	G	"Mental disorders"	Not specified	NS
OH 1985 www.legislature.state.oh.us	I,G	"Mental or nervous disorders"	M	Yes
OK 1999 www.lsb.state.ok.us	G	"Severe mental disorder"	P	Yes
OR 2005; effective 2007 www.leg.state.or.us	G	All mental health disorders	M	NS
PA 1998 www.legis.state.pa.us	G	"Serious Mental illness"	M	Yes
RI 2001 www.rilin.state.ri.us	I, G	DSM-IV or ICD	P	No
SC 2005 www.scstatehouse.gov	O[f]	Severe mental illness, bulimia included	P	Yes
SD 2003 http://legis.state.sd.us/	I,G	"Biologically-based mental illness"	P	No
TN 1998 www.legislature.state.tn.us	G	"Mental health"	M	Yes
TX 1991 www.capitol.state.tx.us	G	"Serious mental illness"	M	Yes

State/Year of Law or Mandate	Policy Type [a]	Mental Health Conditions Covered [b]	Full or Partial Parity (P) or Mandates (M) [c]	Exceptions [d]
UT 2000 www.le.state.ut.us	G	DSM-IV	M	No
VT 1997 www.leg.state.vt.us	G, I	ICD	None	No
VA 1999 http://legis.state.va.us/	NS	"Biologically-based mental illness"	P	Yes
WA implemented 2005-2010 www.leg.wa.gov	NS	"Mental illness"	P	Yes
WV 2004 www.legis.state.wv.us	NS	DSM-IV Bulimia included	P	Yes
WI 1981 www.legis.state.wi.us	G	"Nervous or mental disorders"	M	Yes

[a] The policies affected are either individual or group policies, although some state laws only apply to state employee health plans.

[b] Not all state parity laws apply to all mental disorders. Most refer to mental disorders listed in the DSM IV or the ICD, which both list bulimia nervosa as a mental disorder. Some states list specific mental disorders, others use general terms like "mental health services," or "biologically-based mental illness." Bulimia nervosa may or may not be covered under the latter two definitions, depending on the interpreter of the law.

[c] States may mandate minimum benefits for mental disorders, like yearly minimum inpatient and outpatient days. These mandated benefits may or may not be the same as benefits for physical illness.

[d] Several states have exceptions for small companies or companies that will experience a certain percentage cost increase in their premiums if they comply with the law.

DSM-IV: Diagnostic and Statistical Manual of Mental Disorders
G: Group
I: Individual
ICD: International Classification of Diseases
NS: Not specified
O: Other

Appendix K. Ongoing Clinical Trials and Previous Systematic Reviews

Table 63. Ongoing Clinical Trials of Treatment for Bulimia Nervosa

Clinicaltrials.gov Identifier or Other Identifier	Sponsor	Design	Purpose	Start Date (Month/Year)	Expected Completion Date (Month/Year)	Estimated Enrollment
NCT0058843	University of Chicago	RCT	To compare family based therapy (FBT) to supportive psychotherapy for adolescents with BN.	04/2001	05/2006 Not completed	80
NCT00879151	Stanford University	RCT	To compare cognitive behavioral therapy for adolescent girls (CBT-A) and family based therapy (FBT) to supportive psychotherapy for adolescents with BN.	01/2009	05/2013	158
NCT00773617	National Institute of Mental Health	RCT	To compare integrative cognitive-affective therapy (ICAT) to CBT.	03/2009	04/2011	80
NCT00320047	National Institute of Mental Health	Case series	To evaluate the effectiveness of the drug baclofen in reducing binge eating in people with BN and BED.	04/2005	06/2007 Not completed	10
NCT00304187	National Institute of Mental Health	RCT	This is a placebo controlled study intended to determine the effectiveness of the antibiotic erythromycin in decreasing the frequency of binge eating in people with BN.	09/2004	12/2009 Still recruiting	96
NCT00461071	Medical University of Vienna, Austria	RCT	To compare guided self-help via the Internet to bibliotherapy for young women with BN.	04/2007	04/2010	150
NCT01038128	Mclean Hospital, Massachusetts	Case series	To evaluate the efficacy of the drug Memantine to improve symptoms of BN and body dysmorphic disorder	12/2009	08/2010	20
NCT00308776	National Institute of Mental Health	Case series	To determine the effectiveness of administering cholecystokinin to reduce binge eating in people with BN.	10/2003	07/2009 Still ongoing	32

Clinicaltrials.gov Identifier or Other Identifier	Sponsor	Design	Purpose	Start Date (Month/Year)	Expected Completion Date (Month/Year)	Estimated Enrollment
NCT00988481	Neuropsychiatric Research Institute, Fargo, ND	Case series	To evaluate the effectiveness of adding the drug topiramate to standard medication therapy for people with BN who are partial responders.	09/2009	09/2010	10
NCT00974038	Columbia University	RCT	To compare CBT to supportive psychotherapy for adolescents with BN.	11/2006	11/2010	40
NCT00522769	Kaiser Permanente	RCT	To compare CBT to a wait list control for adolescents with research defined BN.	05/2005	05/2009 Study completed	26
NCT00220662	St. Paul's Hospital, Canada	RCT	To compare Readiness and Motivation therapy (RMT) to a wait list control for people with AN and BN.	06/2000	06/2006 Still ongoing	100
NCT00768677	Zucker Hillside Hospital, New York	Case series	To determine if topiramate decreases binge eating among adolescents and young women with BN and other eating disorders.	07/2003	Completed	NR
NCT00877786	University of North Carolina	RCT	To compare two forms of CBT: face-to-face group therapy to on group therapy via CBT4BN.org.	04/2008	09/2013	180
NCT00733525	National Institute of Mental Health	RCT	To compare a stepped approach, including self-help and drug therapies to current best available treatment for BN (e.g.,CBT plus drug therapy).	09/2000	08/2005 Still ongoing	293
NCT00755391	New York State Psychiatric Institute	RCT	To compare CBT to supportive psychotherapy for adolescents with BN	02/2008	02/2013	20
NCT00494858	National Institute of Mental Health	RCT	To compare to forms of CBT—focused CBT and broad CBT—for women with dysregulated subtype of bulimia.	07/2007	05/2011	74
NCT01033149	Linder Center of Hope, University of Cincinnati	Case series	To evaluate the efficacy and safety of N-acetylcysteine in treating BN.	12/2009	12/2011	15

Clinicaltrials.gov Identifier or Other Identifier	Sponsor	Design	Purpose	Start Date (Month/Year)	Expected Completion Date (Month/Year)	Estimated Enrollment
NCT00600743	St. Luke's/Roosevelt Hospital Center, New York	Case series	To evaluate if CCK-1R Agonist will reduce binge eating among patients with BN.	01/2008	Completed	40
NCT00766558	Penn State University	Observational	To evaluate the effectiveness of written emotional disclosure on the remediation of eating disorder behavior, cognitions, and management of emotions for people with eating disorders.	11/2008	12/2010	50
NCT00184301	Norwegian University of Science and Technology	RCT	To determine if inpatient treatment is better than intensive outpatient group treatment for patients with concurrent eating disorder and personality disorder.	09/2005	12/2012	40
NCT00272545	National Institute of Mental Health	Non-randomized controlled trial	To compare the effectiveness of normalization of eating, based on principles of CBT, to treatment as usual for women with anorexia or bulimia	01/2006	Completed	280
NCT01051375	University of Ottawa	RCT	To compare the effectiveness of a psychoeducational workshop and telephone support to a waitlist control for the management of adolescents with eating disorders.	12/2009	07/2011	60
NCT00870753	Norwegian School of Sport Sciences	RCT	To compare the effectiveness of Yoga to no treatment for adults with eating disorders.	03/2009	12/2011	50
NCT01095107	The Cleveland Clinic	RCT	To determine if adjusting diet (low fat vs. increased fat) reduces hospital stay, metabolic, and gastrointestinal disorders among people with eating disorders.	01/2010	04/2011	20

BN: Bulimia nervosa
CBT: Cognitive behavioral therapy
RCT: Randomized controlled trial

Table 64. Previously Published Systematic Reviews (Published 2006 to Present)

Reference/Title	Purpose	Search Strategy	Number of Included Studies	Findings	Authors' Conclusions
Hay et al. 2009[15] *Psychological treatments for bulimia nervosa and binge eating*	To evaluate the efficacy of CBT, CBT-BN and other psychotherapies in the treatment of adults with BN, BED, or EDNOS	Searched MEDLINE, EMBASE, PsycINFO, CURRENT CONTENTS, LILACS, SCISEARCH, CENTRAL, and the Cochrane Collaboration Depression, anxiety, and Neurosis Controlled Trials Register for randomized controlled trials Last search date: June, 2007	48 RCTs (38 BN or EDNOS) BN specific: 9 CBT vs. waitlist; 8 CBT vs. other psychotherapies; 2 GSH vs. PSH; 4 CBT vs. CBT augmented by ERP; 5 psychotherapy (non-CBT) vs. waitlist; 4 CBT vs. component of CBT; 3 GSH vs. waitlist; 2 GSH vs. CBT/IPT; 1 PSH vs. waitlist	The evidence supported the efficacy of CBT, particularly CBT-BN in the treatment of people with bulimia and less strongly for people with related eating disorders. ERP did not enhance the efficacy of CBT self-help approaches that used structured CBT manuals were promising. IPT seemed efficacious in the long-term.	"There is a small body of evidence for the efficacy of CBT in bulimia nervosa and similar syndromes, but the quality of trials is very variable and sample sizes are often small."
Arbaizar et al. 2008[227] *Efficacy of topiramate in bulimia nervosa and binge-eating disorder: a systematic review*	To establish the efficacy of topiramate as a treatment for eating disorders associated with obesity	Searched Medline for controlled trials on the efficacy of topiramate in BN and BED Last search date: January 2008	5: 2 RCTs on BN and 3 on BED	The two RCTs on BN included 129 patients and compared the efficacy and safety of topiramate to placebo. In both studies the frequency of binge eating decreased more in the topiramate group than the placebo group. In the first study, binge eating decreased by 5.3 days compared to 3.2 days in the placebo group. In the second study, binge eating reduced by 3.4 days in the treatment group and there was no change in the placebo group. In both studies the dropout rate was high and limits the generalizability of the findings.	"Topiramate is effective in the short-term treatment of eating disorders associated with obesity. Additional studies are needed to prove its efficacy in the long-term and to determine the optimal effective dose."

Reference/Title	Purpose	Search Strategy	Number of Included Studies	Findings	Authors' Conclusions
Sysko and Walsh 2008[228] *A critical evaluation of the efficacy of self-help interventions for the treatment of bulimia nervosa and binge-eating disorder*	To evaluate the utility of self-help programs to reduce eating disorder symptoms among individuals with BN and BED	Searched MEDLINE, PsycINFO, and other databases for any published study using a pure or guided self-help format	26 total of which 20 were on BN (7 case series, 5 self-help vs. waitlist, 8 self-help vs. another intervention, and 2 self-help plus CBT vs. CBT alone	The results of studies comparing self-help to an active treatment control are not as positive as studies with no control group or a wait list control group.	"Open and wait-list trials indicate that self-help is helpful in treating BN and BED, but there is little efficacy of self-help in comparison to other treatments."
Couturier and Lock, 2007[229] *A review of medication use for children and adolescents with eating disorders*	To review the literature on the use of medications for eating disorders in children and adolescents. The review focused on two major classes of drugs: antidepressants and atypical antipsychotics.	Searched PubMed for all articles on medications use in children and adolescents with AN, BN, or EDOS Search dates not reported	2 case series studies: 1 on BN and 1 on AN	The results of the one trial in which 10 adolescents aged 12 to 18 years received 60 mg of fluoxetine plus supportive therapy indicated a decrease in binge eating and purging frequency and improvement on the global impressions-improvement scale.	"Evidence-based pharmacological treatment for children and adolescents with eating disorders is not yet possible due to limited number of studies available."
Shapiro et al. 2007[112] *Bulimia nervosa treatment: a systematic review of randomized controlled trials* Based on the systematic review prepared by RTI International-University of North Carolina Evidence-Based Practice Center, titled *Management of eating disorders,* 2006[230]	To assess the efficacy of treatment for BN, harms associated with treatments, factors associated with treatment efficacy, and differential outcomes by sociodemographic characteristics	Searched MEDLINE, CINAHL, PsycINFO, ERIC, the National AGRICultural OnLine Access (AGRICOLA), and Cochrane Collaboration libraries for RCTs on cognitive therapy or family therapy or drug therapy or therapy, computer-assisted published between 1980 to September 2005	12 RCTs on medication (all comparing treatment to placebo), 6 RCTs on medication plus behavioral intervention, 13 RCTs on behavioral interventions	Medication: Fluoxetine (60n mg/day) decreases binge eating and purging and associated psychological features in the short-term. Behavioral interventions: Cognitive behavioral therapy reduces core behavioral and psychological features in the short and long term.	"Evidence for medication or behavioral treatment for BN is strong, for self-help is weak, for harms related to medication is strong but either weak or non-existent for other interventions, and evidence for differential outcomes by sociodemographic factors is nonexistent." Future studies need to pay attention to sample sizes, standardization of outcomes, attrition, reporting abstinence, and longer follow-ups.

Reference/Title	Purpose	Search Strategy	Number of Included Studies	Findings	Authors' Conclusions
Espindola and Blay 2006[231] *Bulimia and binge eating disorder: systematic review and metasynthesis*	To perform a systematic review and metasynthesis of qualitative research on how life is experienced by individuals with bulimia and binge eating disorder	Searched PubMed, LILACS, SciELO, PsycINFO, and EMBASE for qualitative studies published between 1990 and 2005	A total of 15 studies met the inclusion criteria, of which 7 focused on bulimia, 2 on BED, 6 included mixed eating disorder populations.	The authors identified the following main themes: illness representation, negative feelings, positive feelings, symptom function, sociocultural context, personal history, and recovery.	According to the authors, the experience of bulimic patients involves a certain ambiguity, since it involves negative and positive feeling simultaneously. Individuals feel guilt and shame about their eating disorder, but also indicate that their disorder gives them a sense of control and relief.
Perkins et al. 2006[111] *Self-help and guided self-help for eating disorders*	To evaluate the efficacy of PSH and GSH compared to a wait list control, attention placebo control, other psychological or pharmacological (or combinations/augmentations) for people with eating disorders	Searched the Cochrane Central register of Controlled Trials, MEDLINE, and EMBASE for controlled trials published between 1966 to 2003	13 RCTs and 3 nonrandomized controlled trials all focusing on individuals with bulimia	PSH/GSH versus waitlist (3 studies: no significant difference in abstinence from binge eating and purging. Treatment did improve other eating disorder symptoms, interpersonal functioning and depression. PSH/GSH versus formal psychological therapies (6 studies): No significant difference in improvement on binge eating and purging, other eating disorder symptoms, or comorbid psychological symptoms.	"PSH/GSH may have some utility as a first step in treatment and may have potential as an alternative to formal therapist-delivered psychological therapy."

Reference/Title	Purpose	Search Strategy	Number of Included Studies	Findings	Authors' Conclusions
Stefano et al. 2006[232] *Self-help treatments for disorders of recurrent binge eating: a systematic review*	To conduct a systematic review of randomized controlled trials that evaluate the efficacy of self-help techniques in the treatment of BED and/or BN compared with waiting list or no treatment, or a control psychotherapy	Searched MEDLINE, EMBASE, PsycINFO, LILACS, the Cochrane Depression, Anxiety and Neurosis Group Database of Trials for studies published between January 1994 and June 2004	9 RCTs: 2 BED only, 4 BN only, and 3 mixed	Meta-analytic results indicated that patients treated with active interventions had a reduced number of binge eating episodes at the end of treatment.	"The results support self-help interventions but shall be interpreted with caution. Because of the small number of studies using self-help techniques for BED and BN, further larger randomized, multi-centered controlled studies that apply standardized inclusion criteria, evaluation instruments, and self-help materials are needed."

AN: Anorexia nervosa
BED: Binge eating disorder
BN: Bulimia nervosa
CBT: Cognitive behavioral therapy
CBT-BN: Manual based CBT for BN
EDNOS: Eating disorder not otherwise specified
ERP: Exposure response prevention
GSH: Guided self-help
IPT: Interpersonal psychotherapy