

A Review of Studies on the Effectiveness of Cognitive Behavioral Therapy in Treating Eating Disorders

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Abstract

Eating disorders, including anorexia, bulimia, and binge eating disorder, are serious and growing global health concerns. Cognitive behavioral therapy (CBT), especially its enhanced version (CBT-E), has been widely employed in the treatment of such disorders. This paper reviews research conducted between 2020 and 2023, examining the effectiveness of CBT across various eating disorders, its applicability, and its limitations. Studies have shown that CBT and CBT-E are highly effective in improving patients' body mass index, relieving anxiety and depression symptoms, boosting self-esteem, reducing binge eating, and changing unhealthy behaviors. While CBT is widely used in Western countries and proves effective in individual treatment, its application and spread in Asian countries are limited by cultural differences and the lack of localized approaches. Future studies should advance by exploring the applicability of CBT in Asia and diversify the studied population, particularly by increasing the sample of men, to improve the generalizability of findings. Overall, this review supports the use of CBT-E as an effective treatment for a range of eating disorders in both adults and adolescents, though further comprehensive studies are needed globally to validate its clinical efficacy.

Keywords

Cognitive Behavioral Therapy; Eating Disorders; Enhanced Cognitive Behavioral Therapy

1. Introduction

Eating disorders (EDs) are significant and growing global health issues that encompass a range of severe mental health conditions, manifested as abnormal eating patterns, unhealthy behaviors linked to food, and intense distress or preoccupation with body weight and shape [1]. Individuals suffering from EDs will be typically expected to experience extreme emotions, attitudes, and behaviors toward eating and their body weight [1]. EDs can lead to severe psychological, physical, and social consequences that may become life-threatening if not treated properly [2]. The three spectrums of eating disorders include anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorders (BED), all incorporated in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) [3].

Research data from Western countries, primarily the United States, demonstrates a growing trend in the diagnoses of EDs among both sexes in recent decades, with the lifetime prevalence of anorexia nervosa being 0.6%, including 0.3% of men and 0.9% of women [4]. Between 2000 and 2018, studies from England and France reveal that the

lifetime prevalence of EDs for women is 8.4%, ranging from 3.3% to 18.6%. Meanwhile, for men, the estimated lifetime prevalence of EDs is 2.2%, ranging from 0.8% to 6.5% [5].

With surging demand for ED treatment, the validity and reliability of the treatments require greater attention and testing by professionals. In recent years, the outpatient treatment success rate (OUTP) in the United States has ranged from 50% to 80%, and researchers are still exploring coping strategies to improve the success rate [4].

The cognitive behavioral treatment for bulimia nervosa (CBT-BN) was first mentioned in 1981 by Christopher G. Fairburn and colleagues [7] as an evidence-based treatment specifically designed to address the cognitive and behavioral aspects of individuals with BN [8]. Compared to traditional medication and other psychotherapies, CBT has been found to be more effective in addressing eating disorders, with the exception of AN [6]. While AN may pose greater challenges for treatment compared to BN, a study conducted by Gu and colleagues revealed that enhanced cognitive-behavioral therapy (CBT-E) is a promising therapeutic option for both adults and adolescents with AN in outpatient settings in China [9].

CBT-E addresses the psychopathological processes in eating disorders in general or within certain subgroups of patients with EDs. CBT-E typically involves 20 individual treatment sessions spanning over 20 weeks. The first 4 weeks consist of either a 'focused' version targeting the core psychopathology of the eating disorder, or a 'broad' version, which additionally addresses other maintaining mechanisms, including mood intolerance, clinical perfectionism, low self-esteem, and interpersonal difficulties. The remaining 16 weeks are tailored to the patient's progress and individualized needs. Therapies typically build on the chosen focus and gradually introduce relapse prevention strategies to maintain the changes. The flexibility of CBT-E distinguishes it from regular CBT, as it allows for a more comprehensive and adaptive approach to treating eating disorders [10].

With the increasing prevalence of EDs in Asian countries, the application of CBT and CBT-E that are previously used in Western countries are gradually gaining recognition in Asian societies. This expanding demand for clinical treatments has stimulated research efforts devoted to determining the applicability and effectiveness of CBT when applied in Asian contexts. Chisato Ohara et al. [11] conducted a randomized controlled trial in Japan to compare the effectiveness of CBT-E with treatment as usual (TAU) in treating BN. The study concluded that patients receiving CBT-E improved significantly compared to those who received TAU, with the difference particularly evident in the reduction of binge-eating episodes, purging behaviors, and enhancing overall psychological well-being. Hence, this literature review aims to examine studies conducted over the past four years on the effectiveness of CBT in treating eating disorders, with a focus on both Western and Asian cultural contexts.

2. Methods

2.1 Search strategy

Relevant studies on the effectiveness of CBT in treating eating disorders were identified by searching databases such as Web of Science, PubMed, and the UB library. The keywords included "cognitive behavioral therapy," "eating disorders," "anorexia nervosa," "bulimia nervosa," "binge eating disorder," "effectiveness," "Western," "Eastern," and "Asian." The search was limited to studies published between January 2020 and 2023. Inclusion criteria for the literature review were original research articles published in peer-reviewed journals, available in full text, and written in English or Chinese. Studies were required to focus on the effectiveness of CBT or CBT-E in treating eating disorders. Exclusion criteria included review articles, editorials, case reports, and studies not available in full text or not conducted in the specified languages.

3. Results

3.1 Data review

After reviewing the title, abstract, and full text, 15 research articles were included in the review. The studies in the review included a mixed diagnostic sample of AN, BN, BED, or eating disorders not otherwise specified. Two studies included an exclusively BED or BN, five studies used AN as a sample, and one study involved a BN sample.

The age of the patients in the 15 studies ranged from 13 to 77 years old, with two studies focusing exclusively on an adolescent sample (ages 13 to 18), and one study including both adolescent and adult samples. The remaining studies primarily focused on adult patients.

All the studies reviewed were conducted within a CBT-E context. Four studies employed a randomized controlled trial (RCT) design, three studies utilized a quality-assessment protocol, and the remaining studies used observational

studies (naturalistic studies), outpatient case series, and non-randomized effectiveness trials. The term "quality-assessment protocol" in some studies refers to methods used to evaluate the quality and implementation fidelity of CBT-E interventions rather than the outcomes of the treatment itself.

The scales used to measure outcomes in these studies included the Clinical Impairment Assessment (CIA) [12], the Eating Disorder Examination (EDE) [13], the Eating Disorder Examination Questionnaire (EDE-Q) [14], the Depression Anxiety and Stress Scales (DASS) [15], the Brief Symptom Inventory (BSI, Italian version) [16], and the Mood and Anxiety Symptom Questionnaire (MASQ) [17].

3.2 Overall efficacy of CBT/CBT-E in treating eating disorders

In the studies included in the review, the effectiveness of CBT and CBT-E was verified by comparing the treatments with other valid therapeutic intervention methods for eating disorders and using questionnaires to compare pre-treatment scores with the ones at the end of treatment (EOD) or in the follow-up sessions. Some of the studies have a specific ED focus such as BED but some studies evaluate CBT and CBT-E for treating eating disorders in general.

In three randomized controlled trials comparing CBT-E with other treatment methods, the analysis of outcome measures indicated that CBT-E is more effective than dialectical behavioral therapy (DBT) and family-based treatment (FBT) for treating eating disorders. Thus, this result suggests that CBT-E is a suitable option for individuals with eating disorders.

The study conducted by Melisse and colleagues is notable for being the first to report on the effectiveness of CBT-E in adult patients diagnosed with binge eating disorder (BED) compared to those with other eating disorders. Additionally, this study performed further analyses to determine whether the classification of Other Specified Feeding or Eating Disorders (OSFED) influenced group categorization. Regarding feasibility, Melisse et al.'s study demonstrated that CBT-E can be effectively implemented in everyday clinical practice within specialized eating disorders centers. Moreover, the research findings also suggested that CBT-E is a suitable treatment for adults with eating disorders, particularly those with a body mass index (BMI) ranging from 17.6 to 39.9 [18].

Emotional disorders are a particularly important contributor to the onset and persistence of eating disorders among many other factors [19]. This is particularly evident in adolescents, who tend to experience dramatic mood swings during this period of development, making them more susceptible to developing eating disorders [19]. According to the narrative review [19], the CBT-E model emphasizes the role of overvaluing weight, shape, and eating, which leads to difficulties for patients in managing certain emotional states. In general, CBT-E, a model designed to provide faster response compared to TAU, demonstrated significant improvements within the first six weeks of treatment, with comparatively lasting effects on eating disorder behaviors.[20] To quantify the severity of eating disorder behaviors, many researchers utilized a self-report questionnaire "Disorder Examination Questionnaire (EDE-Q)" that included behaviors of binge eating and purging. Melisse's study in 2022 found significant improvements in EDE-Q scores from the beginning of CBT-E treatment to the end of treatment (EOT) and at a 20-week follow-up [18].

Overall, CBT-E was significantly less intensive and showed an early behavioral change that offering twice-weekly sessions at the start could explain the faster response to CBT-E in the first phase of treatment [20].

3.3 CBT/CBT-E and AN

Anorexia nervosa (AN) typically involves low BMI, restrictive food intake, distorted body image, intense fear of weight gain, and a strong desire for thinness [22]. Given that the primary concern for patients experiencing AN is weight loss, CBT for AN focuses intensively on nutrition therapy and weight restoration. In studies comparing treatment approaches, patients in the CBT-E group showed significantly greater weight regain compared to those receiving TAU [23]. At the end of the treatment, twenty patients showed considerable weight gain and significantly reduced scores for clinical impairment [24]. Research on CBT-E in both adolescents and adults has highlighted its effectiveness and longer-lasting impact, especially for severely ill patients [25]. For the patients who received inpatient treatment, BMI levels improved to above 18.5 kg/m² [26].

3.4 CBT/CBT-E and BED/BN

The symptoms of bulimia nervosa (BN), such as dietary restraint, excessive exercise, and purging behaviors, are understood to stem directly from its core psychopathology—behavioral attempts to control weight and shape. This overvaluation of shape and weight is often referred to as the "core psychopathology" of BN [27]. In addition, episodes of binge eating followed by purging behavior is a typical symptom of BN, largely influenced by its restrictive eating pattern. Although individuals with BED also experience episodes of binge eating, similar to those with BN, they do

not engage in compensatory behaviors such as self-induced vomiting, misuse of laxatives, diuretics, diet pills, fasting, or excessive exercise. BED is particularly common among individuals in weight control programs who are being classified as obese [28].

To estimate binge eating BED and BN, researchers often rely on self-reported Eating Disorder Examination Questionnaire (EDE-Q) to acquire frequency ratings for key eating behaviors. Higher scores on EDE-Q indicate more severe eating disorder pathology. Based on the comparison of scores from pre- and post-therapy sessions, researchers identified a drop in the mean score of the recovered group from 5.92 to 0.5, representing a 44.3% remission rate for binge eating [21].

While BMI improvement in CBT for anorexia nervosa (AN) specifically focuses on weight gain, the BMI improvement in CBT for BED is considered an additional benefit rather than the primary goal. In the study of CBT for BED, recovered patients showed a small but significant decrease in BMI, even though the therapy emphasized weight gain prevention rather than weight loss [21]. Like the aforementioned studies, the improvements primarily addressed factors such as susceptibility to hunger, cognitive control over eating, and concerns about eating, shape, and weight, rather than directly promoting weight loss [21].

In addition to binge eating behaviors, mood intolerance plays a crucial role in the development and maintenance of BN. Both binge eating and purging are used as mechanisms to modulate mood and alleviate stress experienced from intense concerns about body shape. However, this fear of weight gain decreased with CBT interventions, with a more salient change observed in the BN-spectrum, which reported a greater initial fear of weight compared to the BED group [29]. A study conducted by Hay and colleagues in 2022 revealed the efficacy of CBT-E in stress reduction, improving mental health-related quality of life, and reduction in binge eating behavior [30].

3.5 Limitations of the studies

Among the studies included in the review, insufficient clarifications regarding the application of CBT-E were identified. Particular studies have shown that CBT-E has the same effect as other treatment methods, and therefore there is a lack of significant advantages of CBT-E that separate it from other therapies targeting eating disorders [9, 31, 32]. Moreover, the high treatment costs [33], accompanied by the extended treatment periods [23], limit the application of CBT-E in treating eating disorders. Such costly and time-consuming treatment may exclude individuals from non-WEIRD (Western, Educated, Industrialized, Rich, and Democratic) populations who lack the financial means or access to advanced treatment programs. Consequently, the conclusiveness of the results is limited by variations among studies in terms of their design, follow-up periods, sample sizes, and the diagnoses and ages of patients.

3.6 CBT in Western and Asian countries

All the research papers used in this review examined both inpatient and outpatient groups. However, it is found that most studies conducted in Western countries primarily selected outpatient groups as a sample, except when focusing on severe and extreme cases [26]. Interestingly, since psychological diagnosis and treatment for eating disorders are still evolving in many Asian countries, most interventions, including pharmacotherapy and nutritional therapy, are directed toward inpatient patients.

Another perspective used to justify the difference between applications of CBT and CBT-E in Western and Asian countries is the cultural distinction between collectivism and individualism. Considering most Asian societies are collectivist, studies often favor family-based CBT approaches that reflect the cultural emphasis on community and social harmony. In contrast, studies conducted in Western countries collected data that emphasizes individual outcomes and changes that concentrate on individual outcomes, thus aligning with the individualistic orientation that prioritizes personal change. In China, two studies [9, 31] explored the feasibility and efficacy of group cognitive behavior therapy (G-CBT) adapted from CBT-E for Chinese AN patients. Both G-CBT and Individual Outpatient Treatment (IOT) groups showed statistically significant improvement in eating pathology and associated psychopathology ($p < 0.001$) after the treatments were given. However, no statistically significant difference in the improvements in symptoms between the two groups ($p > 0.05$) is identified. During the last two months of treatment, G-CBT was found to result in additional significant improvement in ED psychopathology, though its overall therapeutic effect was impacted by baseline weight and early symptom improvement. Preliminary findings from this open-label trial similarly suggested that G-CBT, adapted from CBT-E, is valid when applied in outpatient settings to facilitate weight restoration and psychopathology reduction in Chinese AN patients. Hence, these research findings highlight the adaptability of therapeutic approaches like G-CBT when applied in collectivist cultures, while also emphasizing the importance of developing culturally tailored interventions for patients with anorexia nervosa outside of the WEIRD societies.

4. Discussion

The purpose of this study was to review the application of CBT-E over the past four years, analyze its effectiveness across various dimensions, explore its implementation in Asian countries, and provide practical recommendations for its future effective application. Previous reviews on the application of CBT-E for eating disorders from 2008 to 2019 [20] concluded that CBT-E is an efficacious and effective treatment for adults and adolescents with a range of eating disorder diagnoses, yet most are limited within the context of Western societies.

The present review analyzed the literature on CBT-E for EDs in both Western and Asian countries. In the 15 studies, we found that the therapeutic effect of CBT-E was reflected in many dimensions, and it yielded statistically comparable results in changes in BMI, recovery of anxiety and depression, significant gains in self-esteem, remission rates, and reduced binge eating and unhealthy behaviors [18, 35, 32, 30]. When compared with conventional treatment measures, the advantages of CBT-E are reflected in better treatment effects and longer maintenance time.

It is worth noting that CBT-E is not widely used in Asian countries, and this review makes an analysis of the obtained application of CBT-E in China [31] and Japan [11]. Research indicates that CBT-E is well-received among Asian patients and is perceived as beneficial, demonstrating statistically significant improvements in the remission of eating disorders, levels of psychopathology, family functioning, and treatment satisfaction.

As to why CBT-E is not widely used in Asian countries, we have analyzed the reasons in combination with the existing literature. One possible reason for the limited use of CBT-E in Asia is that patients often mistrust the professionalism of healthcare providers and believe that the quality of the treatment is insufficient to relieve their symptoms. In contrast, therapists in Western countries are generally trusted and well-trained, as highlighted by a study illustrating that the majority of CBT-E therapists under such conditions are either psychologists, psychiatrists, or registered nurses [20]. Culturally speaking, collectivist societies in Asia often underutilize mental health services due to culturally based shame and stigma. Even when mental health treatments are used, Asian patients often favor group or family therapy approaches over individual-focused treatments like CBT-E [37].

The current study provides a comprehensive review of recent literature supporting the effectiveness of CBT-E and its primary outcome measures, alongside an analysis of its application in Asia. The summarized research findings provide a valuable reference for the potential implementation of CBT-E in Asian countries and societies.

The current review also has its limitations. Firstly, this review covers research papers published in the relatively narrow timeframe of 2020 to 2023 and thus may have excluded some compelling studies, thereby limiting the scope of our conclusions regarding the broader applicability and efficacy of CBT-E for eating disorders. Secondly, the review focuses exclusively on CBT-E, while other forms of CBT for eating disorders were not explored. Moreover, the pandemic, which began in 2019, likely impacted the volume and scope of research during this period. The inclusion of online CBT-E interventions further complicates the results, suggesting that broader future research is needed [36]. Additionally, only three studies on CBT-E in Asian countries were identified [9, 11, 31], limiting the generalizability of our findings on its application and effectiveness in this context. Lastly, many of the studies reviewed primarily used female samples [26, 29], and most participants were from WEIRD (Western, Educated, Industrialized, Rich, and Democratic) populations, meaning the results may not be fully generalizable to the broader population. Addressing these gaps is essential for future research.

Overall, results from this review support the implementation of CBT-E as a transdiagnostic treatment for adults and older adolescents with eating disorders. However, more advanced studies are needed to examine the availability and clinical effectiveness of CBT-E in the treatment of eating disorders. Moreover, researchers can extend their studied population beyond WEIRD countries to provide a more comprehensive overview of the effectiveness of CBT in other cultural and societal contexts. Future studies should advance by exploring the applicability of CBT and CBT-E in Asia and diversifying the studied population to improve the generalizability of findings.

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