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Modular Cognitive–Behavioral Therapy for Body Dysmorphic Disorder

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Abstract

This study pilot tested a newly developed modular cognitive–behavioral therapy (CBT) treatment manual for body dysmorphic disorder (BDD). We tested feasibility, acceptability, and treatment outcome in a sample of 12 adults with primary BDD. Treatment was delivered in weekly individual sessions over 18 or 22 weeks. Standardized clinician ratings and self-report measures were used to assess BDD and related symptoms pre- and posttreatment and at 3- and 6-month follow-ups. At posttreatment, BDD and related symptoms (e.g., mood) were significantly improved. Treatment gains were maintained at follow-up. A relatively low drop-out rate, high patient satisfaction ratings, and patient feedback indicated that the treatment was highly acceptable to patients. To our knowledge, this represents the first test of a broadly applicable, individual psychosocial treatment for BDD.

Keywords

body dysmorphic disorder; BDD; cognitive-behavioral therapy; body image; treatment

Body dysmorphic disorder (BDD) is a severe body image disorder consisting of an often-delusional preoccupation with an imagined or slight defect in appearance (American Psychological Association, 1994). This preoccupation causes clinically significant distress or impairment in social, occupational, or other important areas of functioning, and it is not better accounted for by another mental disorder (e.g., dissatisfaction with body shape and size in anorexia nervosa). BDD is a common disorder; nationwide surveys have found a point prevalence of 1.7 to 2.4% (Buhlmann et al., 2010; Koran, Abujaoude, Large, & Serpe, 2008; Rief, Buhlmann, Wilhelm, Borkenhagen, & Brähler, 2006). BDD usually begins during early adolescence (Phillips & Diaz, 1997; Phillips, Didie, et al., 2006) and, when untreated, the disorder is often chronic and unremitting (Phillips, Pagano, Menard, & Stout,

2006). BDD is associated with high lifetime rates of psychiatric hospitalization (48%), being housebound (31%; Phillips & Diaz, 1997), and high rates of suicidality. In cross-sectional studies, lifetime suicidal ideation rates are 78–81%, and lifetime suicide attempt rates are 24–28% (Perugi et al., 1997; Phillips, Coles, et al., 2005; Phillips & Diaz, 1997; Phillips & Menard, 2006; Veale, Boocock, et al., 1996). This suicide attempt rate is 6–23 times higher than in the U.S. population. Completed suicide has been reported (Atiullah & Phillips, 2001; Cotterill, 1981; Cotterill & Cunliffe, 1997; Phillips & Menard, 2006; Veale, Boocock, et al., 1996; Yamada, Kobashi, Shigemoto, & Ota, 1978). When controlling for age, gender, and geographic region, the standardized mortality ratio is markedly elevated (American Psychological Association, 2003; Harris & Barraclough, 1997). Despite BDD's relatively high prevalence and substantial morbidity, no widely applicable manualized psychosocial treatment has been tested for this complex disorder.

Treatments for other disorders are not applicable to BDD because there are important differences between symptoms of BDD and those of other disorders (Phillips, 2005). Differences include the content of the preoccupation (appearance), specific repetitive and avoidance behaviors (e.g., surgery seeking, mirror checking, skin picking, compulsive grooming), perceptual distortions, and poor insight, which are typically present in BDD but not disorders such as obsessive-compulsive disorder (Eisen, Phillips, Coles, & Rasmussen, 2004). Thus, a treatment that specifically targets BDD's unique symptoms is greatly needed.

Preliminary research suggests that cognitive-behavioral therapy (CBT) specially developed to address the unique features of BDD is promising for this severe disorder. A growing literature—consisting of case reports, case series, and two studies using wait-list control groups (for review see Ipser, Sander, & Stein, 2009)—suggests the effectiveness of cognitive and behavioral techniques, such as cognitive restructuring and exposure and ritual prevention exercises, in reducing BDD symptoms when delivered individually (McKay et al., 1997; Neziroglu, 1996; Veale, Gournay, et al., 1996) or in a group-therapy format (Rosen, Reiter, & Orosan, 1995; Wilhelm, Otto, Lohr, & Deckersbach, 1999). In Wilhelm et al.'s (1999) study of group CBT for BDD, BDD symptoms and depressive symptoms significantly improved. These preliminary findings are encouraging; however, limitations of these early studies raise questions about the generalizability and replicability of their results. For example, some individual treatments (McKay et al., 1997; Neziroglu, 1996) used lengthy (e.g., 2 hours) and frequent (e.g., daily) sessions that are difficult to employ in clinical settings, given third-party reimbursement policies. In addition, most studies had restrictive inclusion criteria that reduced sample representativeness, some studies included patients who appeared to have mild or even subclinical BDD, and few studies included men, even though about 40% of those with BDD are male (Koran et al., 2008; Rief et al., 2006). One study excluded delusional patients, even though more than one-third of patients currently have delusional BDD beliefs (Phillips, Menard, Pagano, Fay, & Stout, 2006). Thus, it is unclear whether the treatment is suitable for such patients.

Only two prior studies used a treatment manual. Rosen et al.'s (1995) brief group treatment manual focuses mostly on weight and shape concerns, whereas BDD patients usually focus on other body areas, such as skin, hair, or facial features (Phillips & Diaz, 1997; Phillips, Menard, Fay, & Weisberg, 2005). Thus, Rosen et al.'s manual does not apply to the large majority of BDD patients. This manual remains unpublished. Wilhelm et al. (1999; a case series) employed a very preliminary version of the manual used in the study described in this report; however, this manual was also developed for a group treatment. Neither Rosen et al.'s nor Wilhelm et al.'s manual were developed for individualized treatment, nor were they very detailed or personalized to address all of the heterogeneous symptoms of BDD. The lack of a widely applicable CBT manual for clinical and research use has been a major limitation for the field.

Thus, we (Wilhelm, Phillips, & Steketee, in press) developed a broadly applicable treatment manual that focuses specifically on BDD symptoms and is based on our BDD model, which has been informed by prior theories of BDD (e.g., Veale, Gournay, et al., 1996; Wilhelm & Neziroglu, 2002). Our CBT model (e.g., Wilhelm, Buhlmann, Cook, Greenberg, & Dimaite, 2010) is based on the premise that individuals with BDD misinterpret visual input of normal appearance features or minor appearance flaws in biased ways that result in negative cognitive, emotional, and behavioral consequences of BDD. Our cognitive-behavioral model proposes that individuals with BDD selectively attend to specific aspects of appearance or minor appearance flaws. This theory is informed by clinical observations and neurocognitive findings (Deckersbach et al., 2000; Feusner, Moody, et al., 2010; Feusner, Townsend, Bystritsky, & Bookheimer, 2007), which suggest that patients overfocus on details rather than holistic elements of a visual stimuli. Furthermore, according to our cognitive-behavioral model, individuals with BDD tend to exaggerate the meaning and importance of these minor, or even nonexistent, physical imperfections. For example, an individual with BDD can misinterpret a blemish as a reflection of low personal worth (Buhlmann, Teachman, Naumann, Fehlinger, & Rief, 2009; Veale, Boocock, et al., 1996). Sufferers react to negative interpretations of minor or even nonexistent flaws with anxiety, depressed mood, shame, and further excessive attention to the perceived flaws. Additionally, the model postulates that negative feelings resulting from this faulty cognitive processing lead to attempts to neutralize these feelings with ritualistic behaviors (e.g., surgery seeking) and avoidance of situations (e.g., social situations) that trigger these unpleasant feelings. Because these ritualistic behaviors and avoidance behaviors sometimes temporarily diminish painful emotions, they are negatively reinforced, and, in this way, are hypothesized to maintain dysfunctional BDD-related behaviors.

In addition to targeting the proposed maintenance factors outlined in the model above, our comprehensive manual also addresses limitations of the prior manuals. Our manual is broadly applicable to BDD patients, including those with delusional beliefs. It includes core treatment elements and optional treatment modules (see below) that allow for a flexible, personalized treatment for each patient. In addition to using a widely applicable BDD manual, the current study also aimed to address the limitations of prior studies by including patients who were diverse in terms of gender, symptom severity, delusional beliefs, and presence of comorbid disorders. Thus, this study is the first to test a broadly applicable, modular, manualized CBT, specifically developed to address the unique symptoms of BDD and its associated features (e.g., mood, absent or poor insight).

Method

PARTICIPANTS

Institutional Review Boards at Massachusetts General Hospital and Butler Hospital approved the study methods. Participants were recruited via flyers and brochures that we posted in the community and sent to clinicians for distribution to their patients (e.g., mental health professionals, dermatologists, plastic surgeons) as well as letters to these clinicians and information about the study on our programs' Web sites. Recruitment materials included questions such as "Are you worried about your appearance?" Interested individuals called to participate in a telephone screen to assess for BDD and make an initial determination of whether study inclusion/exclusion criteria appeared to be met. To be included in the study, all patients had to be diagnosed with primary DSM-IV BDD (based on the Structured Clinical Interview for DSM-IV [SCID-P; First, Spitzer, Gibbon, & Williams, 1995]) and endorse symptoms of at least moderate severity (as indicated by a minimum score of ≥ 24 on the Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder [BDD-YBOCS; Phillips et al., 1997]). BDD symptoms had to have been present for at least 6 months. Exclusion criteria were active suicidality and/or the presence of any clinical

features requiring a higher level of care than outpatient treatment; mental retardation (estimated IQ <80 on the Wechsler Abbreviated Scale of Intelligence [WASI; Wechsler, 1999]), dementia, brain damage, or other cognitive impairment that would interfere with the capacity to engage in CBT; DSM-IV substance abuse or dependence within the past 3 months; or bipolar disorder, psychotic disorder (except BDD-related delusional disorder), or borderline personality disorder. We also excluded individuals who reported body image concerns accounted for primarily by weight concerns so as not to include individuals whose primary symptoms reflected an eating disorder rather than BDD. Individuals who reported previous treatment with ≥ 10 sessions of CBT similar to ours for BDD were excluded. Participants were not allowed to receive any psychotherapy other than the study treatment at any time during the study. Patients receiving psychotropic medication were allowed to participate as long as any medication changes had occurred 2 months or more before the initial evaluation and the patient agreed to refrain from medication changes while enrolled in the study.

A total of 153 individuals were screened by telephone for this study, 138 of whom were excluded for the following reasons: 41 had primarily weight concerns that could not be classified as BDD symptoms (e.g., a primary diagnosis of an eating disorder), 23 patients had subthreshold BDD symptoms, 20 were receiving psychotherapy or were taking medication that had recently been changed or was likely to require a change during the study, 15 did not return phone calls, 9 were too severely ill (e.g., suicidal) and required a higher level of care, 5 had BDD symptoms that fluctuated substantially, and 25 were not included for other reasons (e.g., not interested in participating in a study, thought the study was too much of a time commitment, or lived far from the study site). Fifteen individuals were invited to come to the clinic to participate in an in-person evaluation to determine eligibility; all signed informed consent. Three individuals were ineligible due to: mental retardation ($n=1$), insufficient symptom severity ($n=1$), or previous CBT for BDD ($n=1$). Hence, the final sample comprised 12 adults who began treatment (of whom eight were recruited at Massachusetts General Hospital and four at Butler Hospital/Brown University).

Our sample ($n=12$) included seven females and five (42%) males. The mean age was 32.2 years ($SD=4.6$). The mean age of onset of BDD symptoms was 15.1 years ($SD=4.1$ years). The majority of participants (10 of 12) were Caucasian; two participants were Asian. Patients completed a mean of 17.1 ($SD=2.0$) years of education. Participants' primary appearance concerns included hair ($n=4$), nose ($n=2$), skin ($n=2$), body shape/size ($n=2$), buttocks ($n=1$), and height ($n=1$). BDD was the primary problem for all patients; however, several patients had comorbid conditions. Current Axis I comorbidity was as follows: major depressive disorder ($n=2$); dysthymia ($n=6$); social phobia ($n=3$); specific phobia ($n=3$); obsessive-compulsive disorder, in partial remission ($n=1$); posttraumatic stress disorder ($n=1$); general anxiety disorder ($n=1$); anxiety disorder not otherwise specified ($n=1$); binge-eating disorder ($n=1$); and binge-eating disorder, in partial remission ($n=1$). One-third of the participants (4 of 12) had previously received cosmetic treatment for their appearance concerns, including multiple surgeries ($n=2$), dermatologic treatment ($n=1$), and electrolysis ($n=1$). Two patients were taking psychiatric medication, one patient was taking fluoxetine and lorazepam, and another patient was taking citalopram.

Procedure

CBT treatment methods are described below. Participants received treatment free of charge and were compensated \$25 for completing follow-up interviews. Treatment was delivered by Drs. Wilhelm, Phillips, or Steketee in individual 60-minute sessions twice weekly during the first 4 weeks and once weekly thereafter. Participants were randomized to one of two treatment lengths: 18 sessions ($n=5$) or 22 sessions ($n=7$). Although somewhat longer than is typical for CBT for other disorders, the longer treatment seemed reasonable, given the

severity and delusionality associated with BDD, as well as our prior clinical experience with these patients. Furthermore, Wilhelm et al.'s study (1999) showed that symptoms improved in a linear manner with no asymptotic decline in efficacy over 12 sessions, suggesting that additional sessions might have led to further gains. Other researchers in the field have also recommended longer treatment for optimal outcomes and reduced relapse risk (see Rosen et al., 1995; Veale, Gournay, et al., 1996). Case series (Neziroglu & Yaryura-Tobias, 1993) indicate that 20-session or longer treatments are acceptable to patients, consistent with our clinical experience. For these reasons, two different treatment durations were used in order to explore whether 18 sessions were sufficient or whether four additional sessions appeared to increase treatment outcome or was more acceptable to patients. Therapeutic progress and related symptoms (e.g., mood) were assessed at baseline and posttreatment using measures described below. Symptoms were assessed again at 3- and 6-month follow-up assessments.

Safety Procedures—Given the high rates of suicidality and morbidity in BDD, the following procedures were in place to assess and manage suicidality and clinical deterioration. Screening procedures excluded potential subjects who would require a higher level of care. Once patients started treatment, therapists were available between sessions if necessary to discuss any safety concerns. Psychiatric emergency rooms at both sites were available at all times. The Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996) was administered weekly for clinical purposes to monitor depression and suicidality; any participant with a score >1 on the suicide item (#9) at any visit was immediately evaluated by the therapist to determine whether a higher level of care was clinically indicated. In addition, we monitored for clinical deterioration, as defined by three consecutive Clinical Global Impression Scale (CGI; Guy, 1976) ratings of 6 (*much worse*) or 7 (*very much worse*).

Treatment—The main components of the manualized treatment protocol are described below and are available in Wilhelm et al. (in press).

CORE TREATMENT COMPONENTS

Psychoeducation and Case Formulation—Based on the information obtained during the assessment, the therapist and patient together derived a cognitive-behavioral model for the patient's specific BDD symptoms, including hypothesized mechanisms that were causing and/or maintaining the symptoms.

Cognitive Restructuring—Cognitive techniques included Socratic questioning to evaluate maladaptive thoughts, completing thought records, identifying cognitive errors, applying the downward arrow technique, and identifying and evaluating advantages and disadvantages of holding BDD-related beliefs and behaviors.

Exposure and Ritual Prevention—After identifying avoidance behaviors (e.g., social situations, work or school, physical activities), the therapist and the patient developed an exposure hierarchy of situations that provoked anxiety or discomfort (e.g., social activities such as attending family gatherings, work situations, or situations that exposed body parts to others, such as leaving the house without sunglasses or a hat). To reduce ritualistic behaviors like excessive mirror checking, participants monitored the frequency and contexts in which they performed their rituals, and identified strategies to resist them. Behavioral experiments in which patients tested a particular hypothesis (e.g., "I will be mocked if I attend class looking like this") were often designed before assigning the situation as an exposure and ritual prevention exercise. After the experiment the patient and therapist determined whether the original predictions were accurate and what conclusions could be drawn based on the outcome of the experiment.

Mindfulness/Perceptual Retraining—Recent findings in cognitive neuroscience suggest that BDD patients overfocus on details of visual stimuli (e.g., Deckersbach et al., 2000; Feusner, Moller, et al., 2010; Feusner, Moody, et al., 2010; Feusner et al., 2007). This is consistent with clinical observations. When BDD patients look at their reflection in the mirror, they usually focus selectively on the body parts of concern, while ignoring other body parts. Perceptual retraining was combined with mindfulness skills to help patients learn to “see the big picture” and to attend to aspects of appearance other than the perceived defects. Patients learned to observe and describe their *entire* body while standing a *normal distance* (e.g., 3 feet) from the mirror, rather than a few inches away. Instead of using harsh language, such as “Look at my bug-eyes! I look like a freak!” patients learned to describe their appearance using *objective, nonjudgmental language* (e.g., “My eyes are brown and round”). Patients were also asked to refrain from engaging in “appearance-fixing” behaviors while in front of the mirror. In addition, patients learned to retrain their attention when interacting with other people; rather than just comparing their disliked body parts to the same body parts of others, they learned to pay attention to other aspects of appearance and nonappearance characteristics of others, as well as their surroundings.

Advanced Cognitive Strategies—As patients made progress on negative thoughts and intermediate beliefs about their appearance, therapists helped them identify and modify deeper-level (core) beliefs such as “I am worthless” or “I am unlovable.” Patients learned how to broaden the basis of their self-worth to include factors other than appearance (e.g., talents, intelligence, moral values).

Relapse Prevention—Throughout the treatment and, in particular, during the last sessions, patients learned to schedule healthy activities (e.g., hobbies, a volunteer job) to replace BDD-related repetitive behaviors. During relapse prevention, therapists helped patients prevent, expect, and react effectively to setbacks, and taught patients to conduct self-therapy sessions.

Modular Interventions—In addition to the strategies described above, the treatment protocol included flexible treatment modules that therapists selected as needed according to each patient’s individual symptoms. This approach ensured that the treatment was tailored to problem areas that are characteristic of some but not all patients (Eifert, Schulte, Zvolensky, Lejuez, & Lau, 1997). Modules focused on (a) *skin picking and hair plucking*: This module uses habit reversal for compulsive skin picking and hair pulling, which more than one-third of BDD patients engage in to try to improve their appearance (Grant, Menard, & Phillips, 2006; Phillips & Taub, 1995). Many patients consider skin picking, which can be medically dangerous (O’Sullivan, Phillips, Keuthen, & Wilhelm, 1999), one of their most distressing symptoms. (b) *Muscularity and shape/weight module*: This module is most often used for patients (mostly males) with muscle dysmorphia, a particularly malignant form of BDD associated with anabolic steroid abuse in which patients think they are insufficiently big and muscular (Pope, Gruber, Choi, Olivardia, & Phillips, 1997; Pope, Phillips, & Olivardia, 2000; Pope et al., 2005). This module is also used for patients who think they are too fat (although patients with primary weight concerns were excluded from the study). (c) *Cosmetic treatment module*: This module contains psychoeducation for patients who are considering cosmetic treatment (e.g., surgical, dermatologic) for BDD symptoms. A majority of BDD patients receive cosmetic treatment for their perceived appearance flaws; however, cosmetic treatments do not appear effective for BDD (Phillips, Grant, Siniscalchi, & Albertini, 2001). Cognitive and motivational strategies are used to address maladaptive beliefs about the perceived benefits of surgery as well as to enhance patients’ engagement in CBT. (d) *Mood management module*: This module includes activity scheduling and other approaches for more severely depressed patients. Treatment also included a *motivational*

interviewing module to be used whenever patients exhibited ambivalence about starting treatment or to enhance motivation as needed during the course of their treatment.

MEASURES

All participants were interviewed before and after treatment, as well as during the follow-up phase, by a doctoral-level independent evaluator. Participants were assessed with the following measures before and after treatment.

Yale-Brown Obsessive Compulsive Scale Modified for BDD—The BDD-YBOCS is a reliable and valid 12-item semistructured clinician-administered scale that rates current severity of BDD symptoms. The BDD-YBOCS was the primary outcome measure. A reduction in BDD-YBOCS score of 30% or greater, an empirically based cut point, was selected a priori to designate response to treatment (Phillips et al., 1997).

Clinical Global Impression Scale—The CGI (Guy, 1976) is a widely used measure that provides a global rating of change in overall symptoms; scores range from 1 (*very much improved*) to 7 (*very much worse*). A score of 1 or 2 (*much* or *very much improved*, respectively) was considered to constitute response to the treatment. The CGI was also administered weekly for clinical purposes to assess for clinical deterioration.

Brown Assessment of Beliefs Scale—The Brown Assessment of Beliefs Scale (BABS; Eisen et al., 1998) is a reliable and valid 7-item semistructured clinician-administered interview that was used to assess delusionality of BDD beliefs (e.g., “I am hideous looking”). The BABS assesses insight/delusionality dimensionally and also categorizes beliefs as delusional or nondelusional; the cut point for the presence of delusional thinking is a total BABS score ≥ 18 plus a score of 4 on item 1 (*conviction*). On this scale, 3 of 12 patients (25%) had delusional BDD beliefs at study baseline.

Beck Depression Inventory—Participants also completed the BDI-II (Beck et al., 1996), a reliable and valid 21-item self-report measure of depression severity with items that reflect DSM-IV criteria for major depressive disorder. The BDI-II was also administered weekly for clinical purposes to monitor depression and suicidality.

Client Satisfaction Inventory—Patients’ satisfaction with clinical services received was assessed at each visit using the Client Satisfaction Inventory (CSI; McMurtry & Hudson, 2000). The CSI is a 25-item reliable and valid self-report questionnaire that yields a measure of satisfaction with treatment ranging from 0 to 100% satisfied.

Results

Data were analyzed with the Statistical Package for the Social Sciences, version 17.0. Analyses for continuous variables were performed using paired *t* tests, which enable presentation of data from this small study in a simple manner, devoid of some of the assumptions needed for HLM (e.g., linear or parametric change over time); normality was upheld even in this small sample. The primary analyses were intention to treat; these analyses included the full sample of 12 patients who had at least one treatment session. When posttreatment data were missing, data were carried forward from the last assessment completed. Secondary analyses were also conducted, using data only from the 10 treatment completers. The dependent variables reflected changes in outcome from baseline. We performed paired *t* tests to examine whether patients maintained their post-treatment gains at 3- and 6-month follow-up. All tests were two-tailed. An alpha level of .05 was used to determine statistical significance.

Means and standard deviations on the outcome measures at pretreatment and posttreatment are presented in Table 1. Mean BDD symptom severity at initial evaluation was moderate to severe. Scores on the BDD-YBOCS decreased significantly for both the intention-to-treat and the completer samples (intention to treat, $t_{(11)} = 5.41$, $p < .001$, effect size $d = 3.35$ ¹; completers, $t_{(9)} = 6.08$, $p < .001$, effect size $d = 3.82$).² On the BDD-YBOCS, 75% of those in the intention-to-treat sample were responders, and 80% of completers were responders.³ The mean percentage decrease on the BDD-YBOCS for the intention-to-treat sample was 47.1% ($SD = 32.2$); for completers it was 53.0% ($SD = 30.8$). On the CGI, 75% of the intention-to-treat sample and 80% of completers were responders.

BDI scores also decreased significantly (intention to treat, $t_{(11)} = 2.21$, $p = .049$, effect size $d = .50$; completers, $t_{(9)} = 3.23$, $p = .01$, effect size $d = .82$). Improvement in insight of BDD beliefs, as measured by the BABS, occurred at a trend level (intention to treat, $t_{(11)} = 1.87$, $p = .09$, effect size $d = .76$; completers, $t_{(9)} = 2.06$, $p = .07$, effect size $d = .86$).

Of the 12 patients who received at least one treatment session, 10 (83%) completed all treatment sessions. One patient terminated treatment early because of severe depression and lack of motivation to complete homework assignments, and one reported that he did not want to give up his BDD-related repetitive behaviors because he was afraid that his appearance would worsen substantially if he were to even slightly decrease these behaviors.

Satisfaction with treatment length (18 or 22 sessions) was determined qualitatively posttreatment based on an interview with the patient and the therapist; because of the small sample size, statistical comparisons of outcomes in these two groups were not conducted. Based on patient and clinician feedback, participants who were assigned to 18 sessions wished the treatment had been longer because they felt they could continue to benefit from treatment. Patients who had been assigned to 22 sessions were pleased that their treatment was not shorter. The mean posttreatment CSI score was 88.94% ($SD = 10.97$), suggesting that patients were highly satisfied with the treatment provided.

All patients who completed treatment provided 3-month follow-up data; 9 of the 10 provided 6-month follow-up data. Paired t tests revealed that BDD-YBOCS scores did not change significantly from posttreatment to 3-month follow-up, $t_{(9)} = .811$, $p = .438$, $d = 0.07$, or from posttreatment to 6-month follow-up, $t_{(8)} = -.39$, $p = .707$, $d = 0.04$. Similarly, BABS scores remained stable between posttreatment and 3-month follow-up, $t_{(9)} = .68$, $p = .513$, $d = 0.17$, and between posttreatment and 6-month follow-up, $t_{(8)} = .27$, $p = .797$, $d = 0.07$. BDI scores also remained stable between posttreatment and 3-month follow-up, $t_{(8)}^4 = .87$, $p = .409$, $d = 0.12$, and from posttreatment to 6-month follow-up, $t_{(8)} = -.26$, $p = .798$, $d = -0.03$. According to the CGI, 80% of completers were responders at 3- and 6-month follow-up.

Discussion

Results from this pilot study suggest that our modular manualized CBT treatment for BDD is feasible to implement and appears to be an effective treatment for patients with this disorder. Mean BDD symptom severity scores improved from moderately severe to the subclinical range, and depressive symptoms significantly improved from moderate to mild.

¹Although two patients terminated early, one completed most of the posttreatment interview assessment. Therefore, the last observation carried forward approach affected only one patient who had missing data at the posttreatment visit. A sensitivity analysis excluding this patient yields virtually identical results, $t_{(10)} = 5.10$, $p < 0.001$, $d = 3.40$.

²Effect size d for paired comparisons, calculated with correction for small sample bias as $d = g[1 - (3/(4(n-1) - 1)]$, where $g = M_{\text{post}} - M_{\text{pre}} / SD_{\text{pre}}$ (Becker, 1988).

³The same patients who met the criterion for response based on a $\geq 30\%$ change in the BDD-YBOCS also met the criterion for reliable change based on the reliable change index (Jacobson & Truax, 1991).

⁴BDI-II data are missing for one patient.

In addition, delusionality decreased by 26%. While improvement on the BABS indicated a change from poor to fair insight at a trend level (most likely due to the small sample size), the effect size was large. Our relatively high retention rate suggests that this intervention is acceptable to most patients, as more than 80% of those who began treatment completed it. Moreover, follow-up data showed that patients who completed treatment maintained their gains for at least 6 months following treatment completion. In addition, patients reported very high levels of satisfaction with the treatment (88.9%) based on the CSI.

The modular manualized treatment that we developed has the advantages of all manual-based treatments (e.g., replicable, standardized techniques that can be used to enhance training and dissemination; Addis, 1997; Wilson, 1996). Standard treatment manuals have been criticized for limiting therapist creativity and flexibility (e.g., Strupp & Anderson, 1997). A modular approach provides the flexibility to personalize a treatment to address important symptoms that are characteristic of some but not all patients (Eifert et al., 1997). Thus, modularized treatment provides a structured flexibility, whereby treatment procedures can be used flexibly and tailored to an individual patient's needs while ensuring that core procedures are delivered with a high level of fidelity (e.g., Chorpita, 2007).

One study limitation is the small sample size, which limited statistical power and may have led to Type II error. As Kraemer, Mintz, Noda, Tinklenberg, and Yesavage (2006) point out, small pilot studies can result in effect sizes with wide confidence intervals, and therefore it is important to consider that such studies are more useful as a proof of concept approach than as a means to obtain reliable efficacy estimates. Another limitation is the large number of individuals who were screened but did not qualify for the study, potentially limiting the generalizability of these findings. However, the most common reason individuals were excluded was that they did not meet diagnostic criteria for BDD. In addition, given that this study is to our knowledge the first study of a manualized modular psychosocial treatment for BDD, we chose to use standard inclusion/exclusion criteria for efficacy trials. Study inclusion/exclusion criteria were broader than in most previous studies of CBT for BDD. Another potential limitation is that this treatment may not be appropriate for BDD patients who are actively suicidal, as this was an exclusion criterion (although individuals with passive suicidal ideation were included). Suicidal ideation, suicide attempts, and completed suicide are major problems in BDD and thus far have received little attention in treatment studies due to the exclusion of actively suicidal patients for safety reasons. Future treatment studies may need to be specifically tailored to address suicidality in BDD. In addition, at this initial stage of treatment development and testing therapists were senior clinicians with expertise in BDD, so it is not clear whether comparable results will be achieved by less experienced clinicians. Thus, research is needed to test the treatment to determine whether it could be successfully applied by nonexpert therapists. Finally, this pilot study did not include a control condition that would enable us to compare the degree of improvement observed over the course of treatment with improvement that might be expected simply due to the passage of time or regression to the mean. However, given the well-documented chronicity of BDD (Phillips, Pagano, et al., 2006), it is unlikely that we would obtain such a high improvement rate over the course of 24 weeks. Given the uncontrolled nature of the study, it is also possible that patients could have responded to the nonspecific elements of the therapy (e.g., therapist attention); however, this is also unlikely, given the severity and complexity of BDD symptoms. Thus, the promising results of this open trial require follow-up with controlled trials in larger samples in which the efficacy of CBT for BDD is examined compared to wait-list, treatment as usual, or alternative treatment conditions. Given that BDD is an understudied, severe, and common disorder for which efficacious treatment options are currently very limited, such studies are greatly needed.

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Table 1

Means and Standard Deviations on Outcome Measures at Pretest and Posttest

Measure	Pretreatment (n=12)	Posttreatment Intention-to-treat sample (n =12)	Posttreatment Completer sample (n=10)	3-month follow-up Completer sample (n =10)	6-month follow-up Completer sample (n=9)
Yale-Brown Obsessive-Compulsive Scale Modified for BDD (BDD-YBOCS)	32.9(4.1)	18.1(11.7)	16.0(10.7)	15.2(10.3)	17.0(10.5)
Beck Depression Inventory (BDI-II)	22.9(13.2)	15.8(16.2)	12.4(14.6)	11.8(15.3) ^a	11.8(16.7)
Brown Assessment of Belief Scale (BABS)	14.7(4.7) ^b	10.8(7.5) ^c	10.1(7.2) ^c	8.7(7.3)	9.0(7.1)

Note.

^a n=9 due to missing data.

^b Reflects poor insight.

^c Reflects fair insight.