Psychosocial functioning and quality of life in body dysmorphic disorder

Katharine A. Phillips[a,b,*], **William Menard**[a], **Christina Fay**[a], and **Maria E. Pagano**[b]

a*Butler Hospital, Brown Medical School, Providence, RI 02906, USA*

b*Department of Psychiatry and Human Behavior, Brown Medical School, Providence, RI 02906, USA*

Abstract

Psychosocial functioning and quality of life in body dysmorphic disorder (BDD) have received only limited investigation. We examined these domains in 176 subjects with current *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV),* BDD using reliable measures, several of which have not been used previously in BDD studies. Scores were compared to published norms. On the Medical Outcomes Study 36-Item Short-Form Health Survey, mental health–related quality of life scores for BDD subjects were approximately 1.8 SD units poorer than US population norms and 0.4 SD units poorer than norms for depression. On the Quality of Life Enjoyment and Satisfaction Questionnaire Short Form, BDD subjects had a mean converted score of $49.9\% \pm 16.4\%$, which was 2.1 SD units poorer than the normative community sample score of $78.1\% \pm 13.7\%$. On the Social Adjustment Scale—Self-Report, BDD subjects had a mean Overall Adjustment total score of 2.37 ± 0.52, which was 2.4 SD units poorer than the published norm of 1.59 ± 0.33. Scores on the Range of Impaired Functioning Tool reflected functional impairment in all domains. More severe BDD symptoms were significantly associated with poorer functioning and quality of life on all measures. On all but one measure, functioning and quality of life for subjects who were not currently receiving mental health treatment did not significantly differ from those who were receiving treatment. These findings indicate that individuals with BDD, regardless of treatment status, have markedly poor functioning and quality of life. In addition, they suggest that treatment should aim at improving functioning and quality of life in addition to relieving symptoms.

1. Introduction

Body dysmorphic disorder (BDD), a distressing or impairing preoccupation with an imagined or slight defect in appearance, is a relatively common disorder [1,2] that is associated with high lifetime rates of psychiatric hospitalization (48%), being housebound (31%), and suicide attempts (22%–24%) [3,4]. Despite these indications that BDD is a severe and impairing illness, psychosocial functioning and quality of life in BDD have received only limited investigation.

In one study (n = 188), BDD symptoms had interfered moderately, severely, or extremely with social functioning in 99% of subjects and with occupational/academic functioning in 80% [3]. In a pharmacotherapy study [5], BDD subjects' (n = 20) total score on the Schneier Disability Profile [6] suggested moderate functional impairment. Individuals with BDD also have high levels of perceived stress, with a study of 78 subjects yielding perceived stress scores that were 2.3 SD units higher (ie, worse) than in a large national probability sample [7].

* Corresponding author. Tel.: +1 401 455 6490; fax: +1 401 455 6539., *E-mail address:*katharine_phillips@brown.edu (K.A. Phillips)..

Two studies have investigated quality of life in BDD using standard measures. One study [8] used the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) [9,10] in 62 consecutive patients with BDD, 85% of whom participated in a placebo-controlled fluoxetine study in BDD [11]. Pretreatment scores on the mental health subscales averaged 1.9 SD units (range, 1.6–2.2) poorer than norms for the general US population, and 0.4 SD units (range, 0.2–0.7) poorer than norms for patients with clinical depression (major depression and/or dysthymia) [8]. In an open-label citalopram study in BDD (n = 15), pretreatment SF-36 mental health scores averaged 2.0 SD units (range, 1.8–2.1) poorer than norms for the general US population, and 0.5 SD units (range, 0.5–0.6) poorer than clinical depression norms [12]. To our knowledge, this citalopram study [12] and the previously noted fluoxetine study [13] are the only BDD studies that have systematically reported on multiple domains of functioning using a reliable and valid measure. Scores on this measure (the Range of Impaired Functioning Tool [LIFE-RIFT]) [14] reflected impaired functioning in most domains.

To our knowledge, only one previous study has assessed numerous domains of social functioning in BDD [15]. That study used the Social Adjustment Scale—Self-Report (SAS-SR) [16] in an open-label fluoxetine trial in major depression. Depressed patients with comorbid BDD (n = 28) had a mean total adjustment score of 2.6 ± 0.6, which was similar to that of depressed patients without comorbid BDD (n = 322) and 3.1 SD units poorer than community norms [15].

Although the above studies indicate that patients with BDD have poor functioning and quality of life, the quality of life studies are limited by a small sample size [8,12]. Another limitation is that the studies that used standard functioning or quality of life measures were pharmacotherapy trials [5,11–13,15] or contained primarily pharmacotherapy trial participants [8], which may have introduced bias. For example, individuals who seek psychiatric treatment may be more severely ill and impaired than those in the community who do not seek treatment. Conversely, the pharmacotherapy studies had standard efficacy study exclusion criteria (eg, subjects could not have a current substance use disorder and or be highly suicidal), which may have excluded more severely ill and impaired individuals. These studies also excluded individuals with a clinically significant or unstable medical illness, which may have affected physical health–related quality of life scores.

In the present study, we examined psychosocial functioning and quality of life with standard measures in the largest sample to date (n = 176). To our knowledge, this is also the broadest sample of individuals with BDD that has been studied (eg, subjects were not excluded from the study because of comorbidity, and many were not currently receiving psychiatric treatment). In addition, we used several measures (Social Adjustment Scale [SAS] and Quality of Life Enjoyment and Satisfaction Questionnaire [Q-LES-Q]) that have not been used previously in a sample ascertained for BDD. On the basis of previous studies [5,8,12] and our clinical experience, we hypothesized that compared to community norms, individuals with BDD would have markedly poor quality of life and psychosocial functioning across numerous domains (eg, work, school, social, household, leisure activities, satisfaction, and psychological distress). We also hypothesized that more severe BDD symptoms and more delusional appearance–related beliefs would be associated with poorer functioning and quality of life, as found previously [8]. Because studies to date on this topic have used clinical samples, we also examined whether there were any differences in functioning and quality of life in subjects currently receiving mental health treatment vs those who were not receiving treatment.

2. Methods

2.1. Subjects

Subjects were 176 consecutive individuals with *DSM-IV* BDD participating in an ongoing naturalistic prospective study of the course of BDD. All 176 subjects currently met full criteria for BDD. Study inclusion criteria were *DSM-IV* BDD or its delusional variant (delusional disorder, somatic type), age 12 years or older, and able to be interviewed in person; the only exclusion criterion was the presence of an organic mental disorder. All subjects were assessed at study intake with reliable interviewer-administered and self-report measures. This report includes only data from the intake interview.

Subjects were referred to the study from a variety of sources, including mental health professionals (46.0%), advertisements (38.6%), our program web site and brochures (10.2%), subject friends and relatives (3.4%), and nonpsychiatrist physicians (1.7%). The sample's mean age was 32.5 ± 12.1 years (range, 14–64), and 65.9% (n = 116) were female. One hundred six (63.9%) subjects were single, 42 (25.3%) were married, and 18 (10.8%) were divorced. The average education level was some college. Seventy-nine percent (n = 122) considered BDD their most problematic current disorder (compared to any comorbid disorders). One hundred seventeen (66.5%) subjects were currently receiving mental health treatment (63.6% outpatient, 2.8% inpatient), whereas 59 (33.5%) were not receiving treatment. The study was approved by the Butler Hospital Institutional Review Board, and all subjects voluntarily provided written informed consent for study participation.

2.2. Assessments

2.2.1. Medical Outcomes Study 36-Item Short-Form Health Survey—This reliable, valid, and widely used self-report scale measures current mental and physical dimensions of health status and health-related quality of life [9,10]. The Mental Health subscales are (1) Mental Health (psychological distress and well-being), (2) Role Limitations due to Emotional Problems, and (3) Social Functioning. The physical health subscales are (1) Physical Functioning, (2) Role Limitations due to Physical Health Problems, and (3) Bodily Pain. Two additional subscales are sensitive to both mental and physical health status: (1) Vitality (energy vs fatigue) and (2) General Health. Subscale scores range from 0 to 100; lower scores indicate poorer quality of life. SF-36 scores were compared to published norms for the general US population (n = 2474), clinical depression (major depression and/or dysthymia [n = 502]), a chronic medical condition (type II diabetes [n = 541]), and an acute medical condition (recent myocardial infarction [n = 107]) [9].

2.2.2. Quality of Life Enjoyment and Satisfaction Questionnaire—This reliable, valid, and widely used measure of current quality of life assesses 8 domains: general activities, physical health, emotional well-being, household, leisure, social, work, and school [17]. The Q-LES-Q "Short Form" consists of the first 14 items of the General Activities scale and is often used to yield a total quality of life score [18]. Higher scores indicate better quality of life. Q-LES-Q scores were compared to norms for a nonclinical community sample (n = 89) [19] (Endicott, personal communication, 2003). This scale (and the SAS-SR, see below) was added after the study began and was completed by 126 subjects.

2.2.3. Social Adjustment Scale—Self-Report—The SAS-SR is a 54-item reliable, valid, and widely used self-report measure of current social functioning in 6 domains: work, social and leisure, extended family, primary relationship, parental, and family unit [16]. An Overall Adjustment scale provides a total score, which is based on the 6 domains. Lower scores indicate better social functioning. SAS-SR scores were compared to published norms for a nonclinical

community sample randomly drawn from the general population of an urban area (n = 482) [16].

2.2.4. Range of Impaired Functioning Tool—This reliable and valid semistructured measure of current functional impairment assesses the domains of work, school, household duties, recreation, relationships with family, relationships with friends, satisfaction (patient rated), and global social adjustment [14]. Domain scores range from 1 to 5; higher scores indicate poorer functioning, and scores greater than 2 reflect impaired functioning. The total score is the sum of scores in 4 domains: work (the worst score reported in work, student, or household functioning), recreation, satisfaction, and relationships (friends are excluded from this domain). The total score does not reflect inability to be employed, to be in school, or to perform household duties because of psychopathology; therefore, we report these percentages separately.

2.2.5. Global Assessment of Functioning Scale and Social and Occupational Functioning Scale—These global interviewer-rated measures have scores ranging from 0 to 100, with lower scores denoting poorer functioning. The Global Assessment of Functioning Scale (GAF) rates symptoms and functioning during the past month, whereas the Social and Occupational Functioning Scale (SOFAS) rates only functioning [20].

2.2.6. Yale-Brown Obsessive-Compulsive Scale Modified for BDD—This reliable and valid 12-item semistructured clinician-administered scale assesses current BDD severity [21].

2.2.7. Brown Assessment of Beliefs Scale—This is a 7-item measure of how delusional appearance–related beliefs are (eg, the belief that the person looks deformed) [22]. This measure was demonstrated to be reliable and valid in 20 patients with BDD, 20 patients with obsessive-compulsive disorder (OCD), and 10 patients with psychotic depression [22].

2.3. Statistical analyses

Mean scores were calculated for all scales using published scoring algorithms. On the Q-LES-Q, raw scores were transformed into a converted score, which is expressed as a percentage of the maximum score on each subscale. The magnitude of differences between BDD scores and published norms were calculated for the effect size index d, using Cohen's categories of small ($d = 0.2$), medium ($d = 0.5$), and large ($d = 0.8$) [23]; SD units were also calculated to allow comparison with previous studies. Scores of subjects currently receiving mental health treatment were compared with scores of subjects who were not receiving treatment using 2-tailed independent sample t tests. Pearson's product-moment correlation coefficient examined relationships between selected variables. Given the descriptive and exploratory nature of the analyses, we have reported all tests with significance values greater than 95% ($P < .05$), 2-tailed. However, because of the number of significance tests conducted, caution should be used when interpreting significant results, as some of them, particularly those of only modest significance, may represent chance associations.

3. Results

Tables 1–4 show quality of life and psychosocial functioning scores, as well as effect sizes, for BDD scores vs scores from other samples. As shown in Table 1, BDD subjects' SF-36 mental health–related quality of life scores were markedly poorer than norms for the US population, patients with type II diabetes, and patients with a recent myocardial infarction. Effect sizes were very large for all comparisons ($d = 1.29$–1.97). Body dysmorphic disorder scores were also poorer than for patients with depression, with small to medium effect sizes

(d = 0.27–0.47). In SD units, BDD mental health–related quality of life scores were approximately 1.8 SD units lower (poorer) than US population norms, 0.4 SD units poorer than norms for depression, 1.6 SD units poorer than norms for type II diabetes, and 1.8 SD units poorer than norms for a recent myocardial infarction. SF-36 physical health–related quality of life scores were approximately 0.3 SD units poorer than US population norms, 0.4 SD units better than norms for depression, 0.2 SD units better than norms for diabetes, and 0.3 SD units better than norms for a recent myocardial infarction.

On the Q-LES-Q Short Form, BDD subjects had a mean raw score of 41.4 and a mean converted score of 49.9% ± 16.4%, compared to 78.1% ± 13.7% for the community sample (Table 2). The effect size was very large (d = 1.84). The BDD subjects' mean score was 2.1 SD units lower (ie, poorer) than the community sample's score; more than 95% of community subjects scored better than the mean BDD score. Scores in all other Q-LES-Q domains were a mean of 2.2 SD units poorer than community norms, with very large effect sizes for all comparisons (d = 1.07–2.45). On the SAS-SR (Table 3), the mean Overall Adjustment total score of 2.37 ± 0.52 was 2.4 SD units poorer than the published community norm of 1.59 ± 0.33, with an effect size of 2.07. Effect sizes across all domains were very large. LIFE-RIFT mean scores (Table 4) reflected impaired functioning in all domains. The mean SOFAS score indicated serious impairment in functioning, and the mean GAF score indicated serious symptoms or serious impairment in functioning. Thirty-six percent of subjects were not working, and 32% were not in school, because of psychopathology.

More severe BDD symptoms (Yale-Brown Obsessive-Compulsive Scale Modified for BDD [BDD-YBOCS] scores) were significantly correlated with poorer functioning and quality of life on all measures (see Table 5). A greater degree of delusion (as assessed by the Brown Assessment of Beliefs Scale [BABS]) was significantly, although modestly, correlated with the SF-36 Mental Health and Social Functioning subscales and with the SAS-SR Overall Adjustment score. Functioning and quality of life scores for subjects who were currently receiving mental health treatment did not significantly differ from scores of those who were not receiving treatment on any scale except the SOFAS (43.2 ± 11.0 vs 49.7 ± 9.4, t = 3.91, P = .026, respectively).

4. Discussion

On all measures, BDD subjects' psychosocial functioning and mental health–related quality of life was markedly and pervasively poorer than that of community samples. It was also poorer than for patients with major depression and/or dysthymia and for patients with an acute or chronic medical condition. Body dysmorphic disorder subjects' scores were very poor across all functioning and mental health domains, including psychological distress, emotional well-being, work, school, role activities, leisure activities, household functioning, all components of social functioning (friends, extended family, parental, family unit, and primary relationships), and life satisfaction. A strikingly high proportion of subjects were not currently working (36%) or in school (32%) because of psychopathology; Most subjects (79%) considered BDD their most problematic disorder.

SF-36 Mental Health subscale scores were also poorer than reported for OCD [24], bipolar disorder [25], and schizophrenia [26,27]. On the Q-LES-Q Short Form, the BDD sample's mean score was poorer than reported for participants in clinical trials with major depression, chronic major depression, dysthymia, premenstrual dysphoric disorder, OCD, social phobia, panic disorder, and posttraumatic stress disorder [19]. LIFE-RIFT scores were similar to those reported for subjects in the National Institute of Mental Health Collaborative Depression Study who were "in episode" for major depression [14]. It is worth noting that the LIFE-RIFT and SAS total scores do not account for inability to work or be in school because of

psychopathology; because a substantial proportion of our sample was not working or in school because of psychopathology, these scales' total scores likely underestimate our sample's actual level of disability.

Of note, poorer functioning and mental health–related quality of life were significantly associated with more severe BDD symptoms on all measures. This finding is consistent with previous reports in which BDD severity was significantly associated with SF-36 Mental Health ($r = –0.63$, $P < .001$) and Social Functioning ($r = –0.55$, $P < .001$) scales [8] and with level of perceived stress ($r = 0.51$, $P < .0001$) [7]. Although these correlations reflect a medium-large effect size [23] and were highly significant, it should be noted that BDD severity accounted for a relatively small proportion of the variance in functioning/quality of life, and additional studies are needed to elucidate determinants of functioning and quality of life in BDD. In the present study, a greater degree of delusion was significantly associated with poorer scores on the SAS-SR and the SF-36 Mental Health and Social Functioning subscales, although these correlations were relatively low and lower than those in a previous study in which correlations were $r = –0.42$ ($P = .002$) for SF-36 Mental Health and $r = –0.33$ ($P = .02$) for SF-36 Social Functioning [8]. It is unclear why the findings differed somewhat in these 2 studies; this is an important topic for future research.

We found that functioning and quality of life were comparably poor regardless of treatment status. This suggests that the poor functioning and quality of life previously reported for clinical samples [5,8,12] are not limited to patients in clinical settings and may characterize individuals with BDD more generally. This result also raises the question of whether mental health treatment improves BDD symptoms; if treatment is beneficial, as treatment efficacy studies have shown [5,11,12,28,29], treated patients might be expected to have better functioning and quality of life than untreated patients. One possible explanation for our finding is that subjects in our study received suboptimal treatment for BDD. Indeed, only a minority of subjects received treatments considered adequate or optimal for BDD [30]—ie, cognitive-behavioral therapy or a relatively high dose of a serotonin reuptake inhibitor [28,29]. In contrast, a high proportion of subjects in BDD treatment efficacy studies received adequate treatment [5,12, 13], which may explain why their functioning and quality of life generally improved. Nonetheless, in these efficacy studies, average posttreatment functioning/quality of life was still not very high and on some measures remained quite impaired. It is also possible that the efficacy studies excluded more complex and severely ill patients who may respond less robustly to treatment. Another possible explanation for our finding of no significant differences between treated and untreated subjects is confounding by severity [31,32], whereby sicker patients may be more likely to receive treatment. If patients who receive treatment are initially more impaired but partially improve with treatment, their functioning/quality of life might improve to the point where it is similar to that of untreated subjects. It is also possible that subjects who were not currently in treatment may have recently been treated and partially improved with treatment, potentially obscuring possible differences between currently treated and untreated subjects. A limitation of our study is that we only assessed the relationship between current (not past or recent) treatment status and functioning/quality of life.

Although mental health–related quality of life was poorer than physical health–related quality of life, the latter, too, was worse than US population and community norms, as reflected by SF-36 physical health scores and the Q-LES-Q physical domain score. SF-36 physical health scores were also poorer than in 2 previous BDD studies [8,12], which could be due to the fact that the previous studies were medication efficacy trials that excluded patients with a clinically significant or unstable medical illness. Even though the BDD sample had a mean age of only 32.5 ± 12.1 years, their physical health scores were an average of only 0.2 to 0.3 SD units better than those of patients with a recent myocardial infarction or diabetes, who had a mean age of 59 to 60 years [9].

This study has several limitations in addition to those noted above. We did not directly compare BDD subjects to community controls or individuals with another psychiatric or medical disorder. In addition, because our sample was not randomly obtained from the community, it is unclear how representative their scores are of individuals with BDD in the general population. Nonetheless, our sample is broader than in previous studies, in that a substantial proportion of participants were not currently receiving psychiatric treatment, and the study inclusion/exclusion criteria were very broad. In addition, the study contains the largest sample of individuals with BDD for whom quality of life and functioning have been assessed. Another strength is that we used both self-report and interviewer-administered measures with strong psychometric properties and established norms.

Further studies of functioning and quality of life in BDD are needed in various settings, including community and mental health settings, as well as surgery and dermatology settings, where individuals with BDD often seek treatment [4,33,34]. It would also be advantageous for future studies to use more recently developed norms for the SF-36. Our results also highlight the critical need for more effective treatments for BDD; relatively few pharmacotherapy or psychosocial treatments have been studied, and treatment response is often only partial [5, 11,12,28,29]. Only a few BDD studies have investigated change in functioning and quality of life with treatment, finding that these domains generally improve with serotonin reuptake inhibitor treatment [5,12,13]. Additional research is needed on the extent to which pharmacologic and psychosocial treatment may improve disability in patients with this relatively common disorder.

References

1. Bienvenu OJ, Samuels JF, Riddle MA, Hoehn-Saric R, Liang KY, Cullen BA, et al. The relationship of obsessive-compulsive disorder to possible spectrum disorders: results from a family study. Biol Psychiatry 2000;48:287–93. [PubMed: 10960159]

2. Grant JE, Kim SW, Crow SJ. Prevalence and clinical features of body dysmorphic disorder in adolescent and psychiatric inpatients. J Clin Psychiatry 2001;62:517–22. [PubMed: 11488361]

3. Phillips KA, Diaz S. Gender differences in body dysmorphic disorder. J Nerv Ment Dis 1997;185:570–7. [PubMed: 9307619]

4. Veale D, Boocock A, Gournay K, Dryden W, Shah F, Willson R, et al. Body dysmorphic disorder: a survey of fifty cases. Br J Psychiatry 1996;169:196–201. [PubMed: 8871796]

5. Hollander E, Allen A, Kwon J, Aronowitz B, Schmeidler J, Wong C, et al. Clomipramine vs desipramine crossover trial in body dysmorphic disorder: selective efficacy of a serotonin reuptake inhibitor in imagined ugliness. Arch Gen Psychiatry 1999;56:1033–9. [PubMed: 10565503]

6. Schneier FR, Heckelman LR, Garfinkel R, Campeas R, Fallon BA, Gitow A, et al. Functional impairment in social phobia. J Clin Psychiatry 1994;55:322–32. [PubMed: 8071299]

7. DeMarco LM, Li LC, Phillips KA, McElroy SL. Perceived stress in body dysmorphic disorder. J Nerv Ment Dis 1998;186:724–6. [PubMed: 9824177]

8. Phillips KA. Quality of life for patients with body dysmorphic disorder. J Nerv Ment Dis 2000;188:170–5. [PubMed: 10749282]

9. Ware Jr JE. SF-36 health survey manual and interpretation guide. Boston: The Health Institute, New England Medical Center; 1993.

10. McHorney CA, Ware JE Jr, Raczek AE. The MOS 36-item short-form health survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. Med Care 1993;31:247–63. [PubMed: 8450681]

11. Phillips KA, Albertini RS, Rasmussen SA. A randomized placebo-controlled trial of fluoxetine in body dysmorphic disorder. Arch Gen Psychiatry 2002;59:381–8. [PubMed: 11926939]

12. Phillips KA, Najjar F. An open-label study of citalopram in body dysmorphic disorder. J Clin Psychiatry 2003;64:715–20. [PubMed: 12823088]

13. Phillips KA, Rasmussen SA. Change in psychosocial functioning and quality of life in body dysmorphic disorder with fluoxetine versus placebo. Psychosomatics 2004;45:438–44. [PubMed: 15345790]

14. Leon AC, Solomon DA, Mueller TI, Turvey CL, Endicott J, Keller MB. The Range of Impaired Functioning Tool (LIFE-RIFT): a brief measure of functional impairment. Psychol Med 1999;29:869–78. [PubMed: 10473314]

15. Nierenberg AA, Phillips KA, Petersen TJ, Kelly KE, Alpert JE, Worthington JJ, et al. Body dysmorphic disorder in outpatients with major depression. J Affect Disord 2002;69:141–8. [PubMed: 12103460]

16. Weissman MM, Prusoff BA, Thompson DW, Harding PS, Myers JK. Social adjustment by self-report in a community sample and in psychiatric outpatients. J Nerv Ment Dis 1978;166:317–26. [PubMed: 650195]

17. Endicott J, Nee J, Harrison W, Blumenthal R. Quality of life Enjoyment and Satisfaction Questionnaire: a new measure. Psychopharmacol Bull 1993;29:321–6. [PubMed: 8290681]

18. Rapaport MH, Endicott J, Clary CM. Posttraumatic stress disorder and quality of life: results across 64 weeks of sertraline treatment. J Clin Psychiatry 2002;63:59–65. [PubMed: 11838628]

19. Rapaport MH, Clary C, Fayyed R, Endicott J. Quality of life impairment in depressive and anxiety disorders. Am J Psychiatry [in press].

20. American Psychiatric Association. *DSM-IV*: diagnostic and statistical manual of mental disorders. 4th ed. Washington (DC): American Psychiatric Press, Inc; 1994.

21. Phillips KA, Hollander E, Rasmussen SA, Aronowitz BR, DeCaria C, Goodman WK. A severity rating scale for body dysmorphic disorder: development, reliability, and validity of a modified version of the Yale-Brown Obsessive-Compulsive Scale. Psychopharmacol Bull 1997;33:17–22. [PubMed: 9133747]

22. Eisen JL, Phillips KA, Baer L, Beer DA, Atala KD, Rasmussen SA. The Brown Assessment of Beliefs Scale: reliability and validity. Am J Psychiatry 1998;155:102–8. [PubMed: 9433346]

23. Cohen J. Statistical power analysis for the behavioral sciences. 2nd ed. New York: Academic Press; 1988.

24. Koran LM, Thienemann ML, Davenport R. Quality of life for patients with obsessive-compulsive disorder. Am J Psychiatry 1996;153:783–8. [PubMed: 8633690]

25. Revicki DA, Tohen M, Gyulai L, Thompson C, Pike S, Davis-Vogel A, et al. Telephone versus in-person clinical and health status assessment interviews in patients with bipolar disorder. Harv Rev Psychiatry 1997;5:75–81. [PubMed: 9385024]

26. Russo J, Trujillo CA, Wingerson D, Decker K, Ries R, Wetzler H, et al. The MOS 36-Item Short Form Health Survey: reliability, validity, and preliminary findings in schizophrenic outpatients. Med Care 1998;36:752–6. [PubMed: 9596066]

27. Wetherell JL, Palmer BW, Thorp SR, Patterson TL, Golshan S, Jeste DV. Anxiety symptoms and quality of life in middle-aged and older outpatients with schizophrenia and schizoaffective disorder. J Clin Psychiatry 2003;64:1476–82. [PubMed: 14728110]

28. Neziroglu F, Khemlani-Patel S. A review of cognitive and behavioral treatment for body dysmorphic disorder. CNS Spectr 2002;7:464–71. [PubMed: 15107768]

29. Phillips KA. Pharmacologic treatment of body dysmorphic disorder: review of the evidence and a recommended treatment approach. CNS Spectr 2002;7:453–60. [PubMed: 15107767]

30. Phillips KA, Pagano ME, Fay C, Menard W. Pharmacotherapy received by individuals with body dysmorphic disorder [Abstracts]. National Institute of Mental Health NCDEU 44th Annual Meeting. Phoenix, AZ; 2004. p. 229.

31. Leon AC, Keller MB, Warshaw MG, Mueller TI, Solomon DA, Coryell W, et al. Prospective study of fluoxetine treatment and suicidal behavior in affectively ill subjects. Am J Psychiatry 1999;156:195–201. [PubMed: 9989554]

32. Warshaw MG, Keller MB. The relationship between fluoxetine use and suicidal behavior in 654 subjects with anxiety disorders. J Clin Psychiatry 1996;57:158–66. [PubMed: 8601551]

33. Cotterill JA. Body dysmorphic disorder. Dermatol Clin 1996;14:457–63. [PubMed: 8818555]

34. Phillips KA, Grant J, Siniscalchi J, Albertini RS. Surgical and nonpsychiatric medical treatment of patients with body dysmorphic disorder. Psychosomatics 2001;42:504–10. [PubMed: 11815686]

Table 1

SF-36 scores for BDD compared with published norms

Quality of life subscale	BDD (N = 176) Mean (SD)	US population (N = 2474) Mean (SD)	d	Depression (N = 502) Mean (SD)	d	Type II diabetes (N = 541) Mean (SD)	d	Acute MI (N = 107) Mean (SD)	d
Mental Health	40.8 (19.0)	74.7 (18.1)	1.87*	46.3 (20.8)	0.27*	76.7 (18.3)	1.90*	75.8 (15.7)	1.97*
Role Limitations/Emotional	25.9 (35.9)	81.3 (33.0)	1.54*	38.9 (39.8)	0.33*	75.6 (36.6)	1.36*	73.5 (38.0)	1.29*
Social Functioning	44.4 (25.9)	83.3 (22.7)	1.70*	57.2 (27.7)	0.47*	82.0 (24.9)	1.49*	84.6 (21.2)	1.67*
Vitality	34.9 (19.9)	60.9 (20.9)	1.24*	40.1 (21.1)	0.25*	55.7 (21.6)	0.98*	57.7 (18.9)	1.16*
Physical Functioning	83.6 (21.7)	84.2 (23.3)	0.02	71.6 (27.2)	0.46*	67.7 (28.7)	0.58*	69.7 (26.1)	0.59*
Role Limitations/Physical	60.2 (43.8)	80.9 (34.0)	0.60*	44.4 (40.3)	0.38*	56.8 (41.7)	0.08****	51.4 (39.4)	0.21**
Bodily Pain	67.8 (26.0)	75.2 (23.7)	0.31*	58.8 (26.7)	0.34*	68.5 (26.5)	0.03	72.8 (25.3)	0.19***
General Health	55.9 (23.8)	71.9 (20.3)	0.78*	52.9 (22.9)	0.13***	56.1 (21.1)	0.01	59.2 (19.3)	0.15****

Effect size (d) calculations are made by comparing BDD scores with each sample.

MI indicates myocardial infarction; Role Limitations/Emotional indicates Role Limitations due to Emotional Problems; Role Limitations/Physical indicates Role Limitations due to Physical Problems.

*
$P < .0001$.

**
$P < .001$.

***
$P < .01$.

****
$P < .05$.

Table 2

Q-LES-Q scores for BDD compared to a community sample

Quality of life dimension	BDD (N = 126) Mean (SD)	Community (N = 89) Mean (SD)	d
General (Short Form)	49.9 (16.4)	78.1 (13.7)	1.84[*]
Physical health	50.4 (18.8)	78.3 (14.9)	1.61[*]
Emotional well-being	48.1 (15.8)	83.2 (11.9)	2.45[*]
Household	55.2 (23.5)	77.9 (17.8)	1.07[*]
Leisure	53.2 (18.7)	78.6 (14.3)	1.49[*]
Social	52.7 (17.8)	75.9 (14.2)	1.41[*]
Work	45.6 (30.9)	80.7 (14.1)	1.43[*]
School[a]	35.4 (33.1)	80.9 (14.4)	1.97[*]

Effect size (*d*) calculations are made by comparing BDD scores with the community sample.

[a]N = 52.

[*]*P* < .0001.

Table 3

SAS-SR Scores^a for BDD compared to a community sample

Dimension	BDD (N = 126) Mean (SD)	Community (N = 482) Mean (SD)	d
Overall adjustment	2.37 (0.52)	1.59 (0.33)	2.07[*]
Work	2.17 (0.64)	1.40 (0.46)	1.55[*]
Social and leisure	2.73 (0.74)	1.83 (0.52)	1.57[*]
Extended family	2.04 (0.62)	1.34 (0.33)	1.72[*]
Primary relationship	2.32 (0.50)	1.75 (0.48)	1.12[*]
Parental	1.77 (0.83)	1.40 (0.42)	0.82[*]
Family unit	2.39 (1.07)	1.46 (0.58)	1.32[*]

Effect size (*d*) calculations are made by comparing BDD scores with the community sample.

^{a}N's vary because subjects did not always assume all roles; therefore, assessment was not applicable.

[*]$P < .0001$.

Table 4

Psychosocial functioning scores of 176 subjects with BDD

Measure	Mean (SD)
LIFE-RIFT	
Total score	13.8 (3.5)
Work impairment	3.1 (1.2)
School impairment	3.4 (1.2)
Household impairment	3.2 (1.2)
Recreation	3.0 (1.4)
Relationships—family	3.6 (1.3)
Relationships—friends	2.7 (1.3)
Satisfaction	3.3 (0.9)
Global social adjustment	4.1 (0.8)
SOFAS	47.7 (13.3)
GAF	45.4 (10.9)
Not working	
Because of psychopathology[a]	36% (N = 63)
Other reasons	12% (N = 21)
Not doing school work	
Because of psychopathology[a]	32% (N = 56)
Other reasons	45% (N = 80)
Not doing household work	
Because of psychopathology[a]	13% (N = 23)
Other reasons	2% (N = 3)

[a] Seventy-nine percent of the sample considered BDD to be their most problematic current disorder.

Table 5

Correlations between study measures for subjects with BDD

Study measures	1	2	3	4	5	6	7	8	9
1. BDD-YBOCS	—	0.44[*]	−0.29[**]	−0.29[**]	−0.40[*]	−0.29[***]	0.37[*]	0.37[*]	−0.35[**]
2. BABS	—	—	−0.17[****]	−0.14	−0.21[****]	−0.16	0.21[****]	0.13	−0.10
3. SF-36 Mental Health	—	—	—	0.55[*]	0.69[*]	0.60[*]	−0.52[*]	−0.57[*]	0.42[*]
4. SF-36 Role Limitations/ Emotional	—	—	—	—	0.49[*]	0.42[*]	−0.43[*]	−0.44[*]	0.31[***]
5. SF-36 Social Functioning	—	—	—	—	—	0.54[*]	−0.56[*]	−0.56[*]	0.48[*]
6. Q-LES-Q Short Form	—	—	—	—	—	—	−0.75[*]	−0.69[*]	0.52[*]
7. SAS-SR	—	—	—	—	—	—	—	0.64[*]	−0.57[*]
8. LIFE-RIFT	—	—	—	—	—	—	—	—	−0.70[*]
9. SOFAS	—	—	—	—	—	—	—	—	—

[*]
$P < .0001$.

[**]
$P < .001$.

[***]
$P < .01$.

[****]
$P < .05$.