Annals of Clinical Psychiatry, 20[1]:33–38, 2008
Copyright © American Academy of Clinical Psychiatrists
ISSN: 1040-1237 print / 1547-3325 online
DOI: 10.1080/10401230701844463

informa
healthcare

Severe Obsessive-Compulsive Disorder with and without Body Dysmorphic Disorder: Clinical Correlates and Implications

S. EVELYN STEWART, MD

McLean Hospital Obsessive-Compulsive Disorder Institute, Belmont, MA and Massachusetts General Hospital and the Department of Psychiatry, Harvard Medical School, Boston, MA, USA

DENISE EGAN STACK, MA

McLean Hospital Obsessive-Compulsive Disorder Institute, Belmont, MA, USA

SABINE WILHELM, PHD

Massachusetts General Hospital and the Department of Psychiatry, Harvard Medical School, Boston, MA, USA

Objective. *Body Dysmorphic Disorder is a putative obsessive-compulsive spectrum disorder. This exploratory study systematically examined prevalence and clinical correlates of Body Dysmorphic Disorder (BDD) comorbidity in an inpatient Obsessive-Compulsive Disorder (OCD) population.*
Method. *Consecutive patients from an OCD Intensive Residential Treatment program were included (N = 275). Clinician-rated and patient-rated measures were administered at baseline and repeated at discharge. The prevalence of BDD was determined and clinical characteristics were statistically compared between groups with (N = 42) and without (N = 233) comorbid BDD.*
Results. *The prevalence of BDD among residential patients with OCD was 15.3% (N = 42). Those with comorbid BDD were younger (*p *= 0.007) and more predominantly female (*p *= 0.02), with lower marriage rates (*p *= 0.006), more severe depression (*p *= 0.003) and increased self-reported illicit substance use histories (*p *= 0.003) versus those without BDD. This cohort also had earlier onset OCD (*p *= 0.02) and more severe hoarding (*p *= 0.01), symmetry (*p *= 0.01), reassurance-seeking (*p *= 0.01) and checking symptoms (*p *= 0.01) than patients without comorbid BDD. OCD treatment response was unaffected by the presence of BDD.*
Conclusion. *BDD is a common comorbidity in severe OCD. Younger women and those with early-onset OCD appear more likely to have BDD. OCD patients with BDD also have increased hoarding, symmetry, reassurance-seeking and checking severity, which requires consideration in treatment planning.*

Keywords Obsessive-compulsive disorder, Body dysmorphic disorder, Comorbidity, Prevalence, Severe, Phenomenology, Hoarding

INTRODUCTION

Obsessive-compulsive disorder (OCD) is a common and debilitating illness, with reported prevalence rates of 1–3% (1). Many cases of OCD present with at least one other psychiatric illness. Body Dysmorphic Disorder (BDD) is a comorbidity in which individuals suffer preoccupation with a slight or imagined defect in appearance, causing independent significant distress or impairment (1). This illness is associated with substantial morbidity, including increased rates of socio-occupational impairment, hospitalization and suicide. Although formally classified as a Somatoform disorder by the

Address correspondence to Sabine Wilhelm, PhD, Massachusetts General Hospital, Simches Research Building, 2nd Floor, OCD Clinic, 185 Cambridge Street, Boston, MA 02114, USA. E-mail: sabinewilhelmwilhelm@earthlink.net

DSM-IV, BDD has also been described as a putative Obsessive-Compulsive Spectrum disorder (OCSD) (2–4).

Largely unknown until the past decade, BDD has emerged as a disorder that is reported across different cultures (5–8). Prevalence rates for this illness are largely unconfirmed, although small studies suggest an estimated prevalence of 0.7%–3% (9–11). BDD has numerous features that are similar to OCD, including the presence of anxiety-triggering thoughts, repetitive behaviors, equal sex ratios and a positive family history of OCD (12). In contrast to OCD, the recurrent thoughts are exclusively appearance-related and the repetitive behaviors are intended to hide, check or improve the imagined defect. Further contrasting these disorders, BDD has increased associated rates of depression and social phobia, lower rates of marriage and poorer insight than OCD (12–14).

No studies to date have measured the prevalence of BDD in an inpatient OCD sample. This is despite the fact that BDD is a putative Obsessive-Compulsive Spectrum disorder, which is known to co-occur with OCD. In outpatient OCD populations, reported BDD rates range widely between 8 and 37% (12,15–18) and exceed general population estimates. OCD prevalence rates are also higher in BDD samples than in the general population, ranging between 6 and 78% (8,12,18). Given the frequent comorbidity between OCD and BDD, it is pertinent to determine whether these patients may have distinct clinical and OCD characteristics that should be considered in diagnostic and treatment formulations. This exploratory, hypothesis-generating study aimed to systematically examine prevalence rates and clinical correlates of comorbid BDD in a large sample of individuals with severe OCD.

METHODS

Sample

Subjects included 275 consecutive admissions to the McLean-Massachusetts General Hospital OCD Institute, an Intensive Residential Treatment (IRT) program. Inclusion criteria permitted those admitted between April 1997 and June 2003. OCD with and without comorbid BDD groups were created using answers in the Body Dysmorphic Disorder Questionnaire (BDDQ) to identify those meeting DSM-IV criteria for BDD (22). Subjects for whom there was inadequate information to confirm or rule-out a diagnosis of BDD were excluded from study. All subjects had a DSM-IV OCD diagnosis confirmed on clinician interview by psychiatrists with expertise in OCD and OCSD's and supported by the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) (23) and the Obsessive Compulsive Symptoms Rating Inventory (OCSRI) (24).

This comprised a subgroup from a previously described treatment sample with severe, treatment-refractory OCD (25). All consecutive subjects from this previous sample who completed the BDDQ were retrospectively selected for inclusion in the current study. Briefly, the larger sample of 403 consecutive admissions to IRT was predominantly male (58.7%). They had a mean age of 32.9 years, a self-reported OCD onset of 15.6 years and a mean Y-BOCS admission OCD severity score of 26.6. The sample demonstrated a significant 30.1% reduction of OCD severity following a program integrating medication, intensive cognitive-behavior therapy (CBT) and milieu treatment (25). All IRT participants receive two to four hours of exposure and response prevention (ERP) daily, and psychopharmacology assessments weekly by OCD expert psychiatrists to monitor medication efficacy and side effects. OCD treatment responders were defined as those with a mean OCD severity reduction of 25% (as measured by the Y-BOCS scale) between admission and discharge (or the last observation prior to discharge).

The current sample had a mean age of 32.9 y (SD 12), a mean OCD onset at 15.9 y (SD 9.3) and high Y-BOCS severity (mean = 26.3; SD 6.5). This study was approved by the Institutional Review Board at McLean Hospital.

Measures

OCD symptom severity was measured using the Y-BOCS, a 10-item measure rating each item between 0 (lowest severity) and 4 (highest severity) (23,26). The Obsessive-Compulsive Symptoms Rating Inventory (OCSRI) rated severity of OCD symptom categories between 0 and 10. This measure has good internal consistency with a Cronbach alpha of 0.83 for the total severity score, and good convergent validity with the Y-BOCS (24).

The presence of BDD was determined using the BDDQ, a self-report screening instrument based on DSM-IV diagnostic criteria (22). This questionnaire is highly correlated with clinician diagnoses of BDD, with reported sensitivity of 100% and specificity of 89%. It identifies body image concerns that are not weight related, and that either cause "much distress" and/or social or occupational interference. The Beck Depression Inventory (BDI) is a 21-item depression severity scale, with a diagnostic cutoff score of 16 (27,28). The Posttraumatic Diagnostic scale (PDS) is a 19-item PTSD measure with item frequency rated between 0 (not at all) and 3 (almost always) (29).

Statistical Analyses

Variables studied were categorical and continuous. Descriptive analyses were conducted for the entire sample and repeated for subgroups with and without BDD. Between group differences were analyzed using Pearson chi-square or the Fisher's exact test for categorical variables. Pearson correlation coefficients were calculated for continuous variables and significant correlations were found between OCD onset and age ($r = 0.37$; $p < 0.001$); and between BDI and Y-BOCS ($r = 0.47$; $p < 0.001$). Given these correlations, MANOVA was conducted followed by univariate ANOVA analyses and Tukey

tests. Tests used were two-tailed, and statistical significance was defined as $p < 0.05$. Statistical analyses were performed using SPSS, version 12.0 (30) and SAS (31).

RESULTS

BDD was identified in 15.3% (42) of the 275 OCD cases. Clinical correlates of subgroups with and without comorbid BDD are described in Tables 1 and 2. Those with comorbid BDD were distinct demographically, as they were significantly younger ($p = 0.007$), more predominantly female ($p = 0.02$) and less likely to have ever been married ($p = 0.006$) than those without BDD. There were no significant differences with respect to employment status. The second difference pertained to comorbidities with an elevated rate of self-reported previous illicit drug use among the OCD+BDD group ($p = 0.003$). The OCD+BDD group also had a higher depression severity versus the OCD-BDD group ($p = 0.003$). Depression comorbidity was also higher in the OCD+BDD group ($p = 0.003$).

The third main area of difference between the two groups was related to OCD characteristics. OCD onset occurred earlier in those with OCD+BDD versus OCD-BDD ($p = 0.02$). OCD symptom profiles also differed significantly and those with BDD reported greater severity of hoarding obsessions ($p = 0.03$) and compulsions ($p = 0.01$), checking, tell/ask/confessing ($p = 0.01$) and symmetry/exactness ($p = 0.01$) symptoms. However, OCD family history did not differ ($p = 0.81$) and OCD severity was not significantly different between groups ($p = 0.07$).

MANOVA analyses also identified significant group differences (between OCD+/-BDD) when age, onset, BDI and Y-BOCS were included (Wilks' lambda = 0.91; $p = 0.001$). On

Table 1 Demographic and Clinical Features of Subjects with OCD +/– BDD[a]

	OCD+BDD (N = 42)	OCD – BDD (N = 233)	Test Statistic (*p*)
Demographics			
Age in years (SD)	26.6 (6.3)	33.2 (12.1)	F(1,183) = 7.6, (0.007)**
% Male (N)	40.5% (17)	59.3% (137)	5.1 (0.02)*
% Employed (N)	67.6% (25)	53.8% (107)	2.4 (0.12)
% Ever married (N)	12.2% (5)	33.8% (76)	7.63 (0.006)**
Mean OCD onset in years (SD)	12.2 (4.8)	16.7 (9.8)	F(1,183) = 5.3, $p = 0.02$
Comordibity			
% with past illicit drug use (N)	55% (22)	30.5% (69)	9.04 (0.003)**
Mean PTSD severity score (SD)[b]	38.8 (25.9)	36.1 (28.6)	–0.38 (0.70)
Depression Severity by BDI Score (SD)[c]	26.6 (10.7)	19.9 (10.3)	F(1,183) = 9.4, $p = 0.003$**

[a]OCD = Obsessive-Compulsive Disorder; BDD = Body Dysmorphic Disorder.
[b]From the Post Traumatic Diagnostic Scale.
[c]Beck Depression Inventory.
*Significant at $p < 0.05$.
**Significant at $p < 0.01$.

Table 2 OCD Characteristics of Subjects with OCD +/– BDD[a]

	OCD+BDD (N = 42)	OCD – BDD (N = 233)	Chi-square[b] (*p*)
OCD Severity by YBOCS Score (SD)[c]	25.7 (6.5)	28.2 (5.5)	F(1,183) = 3.4, (0.07)
% with Positive OCD family history (N)	27.5% (61)	29.3% (12)	0.06 (0.81)
% with OCD treatment response (N)[d]	49.3% (107)	45% (18)	0.25 (0.62)
Hoarding obsession severity (SD)[e]	5.13 (3.0)	3.19 (3.70)	–2.22 (0.03)*
Hoarding compulsion severity (SD)[e]	4.83 (4.09)	2.42 (3.54)	–2.73 (0.01)*
Symmetry/exactness severity (SD)[e]	6.38 (3.57)	4.30 (3.94)	–2.6 (0.01)*
Checking severity (SD)[e]	7.50 (3.30)	5.53 (3.88)	–2.64 (0.01)*
Tell-ask-confess severity (SD)[e]	7.38 (3.12)	5.45 (3.97)	–2.68 (0.01)*

[a]OCD = Obsessive-Compulsive Disorder, BDD = Body Dysmorphic Disorder.
[b]Fisher's Exact Test (F) replaces chi-square test where appropriate.
[c]Y-BOCS = Yale-Brown Obsessive-Compulsive Scale.
[d]Y-BOCS decrease of ≥ 25%.
[e]differing OCSRS (The Obsessive Compulsive Symptoms Rating Scale) symptom type severity (significant differences shown only).
*Significant at $p < 0.05$.

univariate ANOVA, age ($p = 0.007$), OCD onset ($p = 0.02$) and BDI ($p = 0.003$) scores were significantly different between groups. However, there was no significant difference in terms of treatment response ($p = 0.62$).

DISCUSSION

This is the first study to identify BDD as a common comorbidity in an inpatient OCD population. A prevalence rate of 15.3% was reported in this sample. Several demographic, OCD-related and comorbidity differences were identified between OCD groups with and without comorbid BDD. Most of these appear to uniquely distinguish comorbid OCD and BDD versus OCD alone, rather than merely describing BDD. These include earlier OCD onset, increased OCD symptom subtype severity, increased female representation and younger age. However, some of the differences may have been attributable to the presence of BDD itself, as this illness is already known to be associated with lower marriage rates, more severe depression and increased substance use.

In our study we used a self-rating screen, while generally structured clinical interviews are considered to be the gold standard of classification for psychiatric disorders. Thus, one might argue that we underestimated the presence of BDD, as some patients might lack the necessary insight required to determine that their perceived physical defect was imagined. On the other hand, individuals with BDD are usually very ashamed of their problems, and thus tend to be secretive regarding their symptoms. Therefore, it is likely that some BDD patients might be more comfortable acknowledging their symptoms in a self-rating measure than in a personal interview, which would result in a more accurate assessment of the presence of BDD.

Interestingly, although both OCD (13) and BDD (5,12) have gender ratios nearly equal to one, subjects with the combination of these two illnesses were more likely to be female. In addition, younger individuals appear to be at risk for comorbid OCD and BDD. The finding of younger age in OCD+BDD versus OCD-BDD groups is in agreement with past studies (significant at a p-value ≤ 0.01) (16). However, this finding may be related to the earlier OCD onset in the OCD+BDD group, potentially leading to earlier IRT treatment-seeking and thus, to earlier study ascertainment in this sample. The long-term course of these comorbid illnesses requires further investigation.

It is possible that early-onset of OCD renders individuals susceptible to the emergence of obsessive-compulsive spectrum disorders, either through biologic or maladaptive processes. For example, the emergence of OCD symptoms prior to puberty may impact on the developing self-image, making these individuals prone to having excessive reactions to slight body asymmetries or defects and to repeated checking of these body parts. It has already been determined that earlier onset of OCD occurred in individuals with OCD and comorbid hairpulling/ trichotillomania (21). Further, early onset OCD may be a subtype with distinct genetics (32), familial comorbidity and long-term course (33).

The severity of several OCD symptoms was distinct in the presence of BDD. It is possible that the increased severity of symmetry/exactness obsessions is BDD-related, as these are known BDD symptoms (34,35). On the other hand, body parts are rarely perfectly symmetrical, thus, people who are more concerned about symmetry might also be more likely to develop BDD. Furthermore, the severity of checking and asking compulsions may have been confounded by the presence of BDD, as these may also represent BDD symptoms.

This is the first study to report increased hoarding severity in OCD+BDD versus OCD-BDD groups. Both hoarding obsession and compulsion severities were independently increased, suggesting a true distinction of OCD phenomenology in cases that are comorbid with BDD. Moreover, this indicates the need for clinicians of these patients to screen carefully for hoarding, as this symptom type is associated with limited insight (39) and poor treatment response (40).

Several factors that were found to discriminate the OCD+BDD and OCD-BDD groups may be directly attributable to BDD influences alone. If a BDD-OCD group had been available for study, this would have permitted examination of BDD versus OCD influences. The OCD+BDD group was less likely to be married than those without comorbid BDD. However, the OCD-BDD group was also significantly younger, indicating that age may be a confounding factor in the reported association between comorbidity and marital status. And those with BDD are known to have lower marriage rates. Furthermore, the comorbidity profile of OCD+BDD appears to be distinct from that of the OCD-BDD group. Those with OCD and comorbid BDD had increased illicit substance use histories versus those with OCD-BDD. Associations between BDD and substance use (41), and increased family history of substance abuse (12) have also been reported for BDD, which may account for increased rates in the OCD+BDD group. There was also a higher severity of depression in the OCD+BDD group. Once again, this may be a result of the very high major depressive disorder (MDD) rates in BDD (8,42) which exceed those in OCD (11). Alternatively, it may reflect an additive risk of depression that exists for each illness independently (42,43). Nonetheless, the increased depression severity is important as depression is a risk factor for poor OCD treatment response to both medication (44) and CBT (45) approaches.

These findings have important clinical implications. First, the presence of comorbid BDD must be seriously considered and ruled out when treating an individual with OCD. This is especially true among young female individuals with OCD of early-onset. Further, those with BDD comorbidity have increased hoarding severity, which is a known risk factor for poor treatment response to either medication or CBT management (46). Second, after identifying an individual with concurrent OCD and BDD, vigilance is required for the potential emergence of social isolation, worsening depression and substance abuse.

Limitations of this study must be acknowledged. The study compares OCD subjects with and without BDD comorbidity, but

the inclusion of a BDD without OCD comparison group would be necessary to definitively conclude that differences represent unique distinctions between the two disorders. For example, there may be lower marriage rates, more severe depression and increased self-reported illicit substance use histories in BDD without comorbid OCD versus OCD alone. This would indicate that these differences found in the current study may reflect BDD influences, rather than an influence of combined OCD-BDD comorbidity. Another limitation is the absence of full diagnostic structured interviews for subjects or their family members. The study sample was drawn from individuals at a specialized treatment center for severe refractory OCD, meaning that a BDD without OCD comorbidity group was not available, but also decreasing the likelihood of a false-positive OCD diagnosis. The possibility of Berkson's bias should also be considered in this clinical sample, which results in disproportionately more patient comorbidity versus epidemiologic samples (47). BDD rates in this sample with severe OCD may subsequently be falsely inflated. It would also have been helpful to identify the presence of obsessive-compulsive personality disorder in this study. The age of OCD onset was determined by self-report, which is subject to recall bias. Further, this study only examines groups with and without BDD with respect to treatment response. Both groups have other comorbidities that may confound treatment outcome. However, given the absence of differences in treatment outcome per se, this issue is of less relevance.

CONCLUSION

This study has determined that BDD is a common comorbidity in severe OCD. The co-occurrence of BDD with OCD may herald an elevated risk of depression and past illicit substance use. Further, there appear to be unique demographic and phenomenological features of OCD with and without comorbid BDD. This is the first study to identify increased severity of hoarding in OCD+BDD versus OCD-BDD groups, thus contributing to the evolving understanding of comorbidity influences on OCD.

ACKNOWLEDGMENTS

This work was supported by grants from an Obsessive-Compulsive Foundation research award (SES), a McLean Hospital Research Fellowship (SES), a Harvard 50th Anniversary Scholar in Medicine Award (SES) and funding from the McIngvale Foundation. The authors thank all staff and patients of the OCD Institute, Eric Jenike and Erin Hendrickson for their assistance with manuscript preparation.

REFERENCES

1. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed. Washington DC: American Psychiatric Association; 1994.
2. Yaryura-Tobias JA, Neziroglu F. *Obsessive Compulsive Spectrum Disorders: Pathogenesis, Diagnosis and Treatment.* Washington DC: American Psychiatric Press;1997.
3. Yaryura-Tobias JA, Neziroglu F. B*io-Behavioral Treatment of Obsessive Compulsive Spectrum Disorders*. Boston MA: Norton Publishing Inc.;1997.
4. McElroy SL, Phillips KA, Keck PE Jr. Obsessive-compulsive spectrum disorders. *J Clin Psychiatry*. 1994;55(10 suppl.):33–53.
5. Bohne A, Keuthen NJ, Wilhelm S, Deckersbach T, Jenike MA. Prevalence of symptoms of body dysmorphic disorder and its correlates: a cross-cultural comparison. *Psychosomatics*. 2002; 43:486–490.
6. Bohne A, Wilhelm S, Keuthen NJ. Prevalence of Body dysmorphic disorder in a German college student sample. *Psychiatry Res*. 2002;109:101–104.
7. Veale D, Boocock A, Gournay K, Dryden W, Shah F, Walburn J. Body dysmorphic disorder: a survey of fifty cases. *Br J Psychiatry*. 1996;169:196–201.
8. Phillips KA, McElroy SL, Keck PE Jr., Pope HG Jr., Hudson JI. Body dysmorphic disorder: 30 cases of imagined ugliness. *Am J Psychiatry*. 1993;150:302–308.
9. Phillips KA, McElroy SL, Keck PE Jr., Hudson JI, Pope HG Jr. A comparison of delusional and nondelusional body dysmorphic disorder in 100 cases. *Psychopharmacol Bull*. 1994;30:179–186.
10. Mayville S, Katz RC, Gipson MT, Cabral K. Assessing the prevalence of body dysmorphic disorder in an ethnically diverse group of adolescents. *J Child Fam Studies.* 1999;8:357–362.
11. Bienvenu OJ, Samuels JF, Riddle MA, Hoehn-Saric R. The relationship of obsessive-compulsive disorder to possible spectrum disorders: results from a family study. *Biol Psychiatry*. 2000; 48:287–293.
12. Phillips KA, Gunderson CG, Mallya G, McElroy W, Carter W. A comparison study of body dysmorphic disorder and obsessive compulsive disorder. *J Clin Psychiatry*. 1998;59:568–575.
13. Saxena S, Winograd A, Dunkin JJ, Maidment R, Rosen R, Vapnik T, Tarlow G, Bystritsky A. A retrospective review of clinical characteristics and treatment response in body dysmorphic disorder versus obsessive-compulsive disorder. *J Clin Psychiatry*. 2001;62:67–72.
14. McKay D, Neziroglu F, Yaryura-Tobias JA. Comparison of clinical characteristics in obsessive-compulsive disorder and body dysmorphic disorder. J *Anxiety Disord.* 1997;11:447–454.
15. Brawman-Mintzer O, Lydiard BL, Phillips KA, Morton A, Czepowicz V, Emmanuel N, Villareal G, Johnson M, Ballenger JC. Body dysmorphic disorder in patients with anxiety disorders and major depression: a comorbidity study. *Am J Psychiatry.* 1995;152:1665–1667.
16. Simeon D, Hollander E, Stein DJ, Cohen L, Aronowitz B. Body dysmorphic disorder in the DSM-IV field trial for obsessive-compulsive disorder. *Am J Psychiatry*. 1995;152:1207–1209.
17. Diniz JB, Rosario-Campos MC, Shavitt RG, Curi M, Hounie AG, Brotto SA, Miguel EC. Impact of age of onset and duration of illness on the expression of comorbidities in obsessive-compulsive disorder. *J Clin Psychiatry*. 2004;65:22–27.
18. Hollander E, Cohen LJ, Simeon D. Body dysmorphic disorder. *Psychiatr Ann.* 1993;23:359–364.
19. Hasler G, LaSelle-Ricci VH, Ronquillo JG, Crawley SA, Cochran LW, Kazuba D, Greenberg BD, Murphy DL. Obsessive-compulsive symptom dimensions show specific relationships to psychiatric comorbidity. *Psychiatry Res.* 2005;135:121–132.

20. Morer A, Vinas O, Lazaro L, Calvo R, Andres S, Bosch J, Gasto C, Massana J, Castro J. Subtyping obsessive-compulsive disorder: clinical and immunological findings in child and adult onset. *J Psychiatry Res.* 2006;40(3):207–213.
21. Stewart SE, Jenike MA, Keuthen NJ. Severe obsessive-compulsive disorder with and without comorbid hairpulling comparisons and clinical implications. *J Clin Psychiatry*. 2005;66(7):864–869.
22. Phillips KA. Instruments for assessing BDD: the BDDQ: A self-report screening instrument for BDD, in *The Broken Mirror*. New York, Oxford University Press;1996:321–333;380–381.
23. Goodman WK, Price LH, Rasmussen SA, Mazure C, Fleischmann RL, Hill CL, Heninger GR, Charney DS. The Yale-Brown Obsessive Compulsive Scale: I. Development, use and reliability. *Arch Gen Psychiatry.* 1989;46:1006–1011.
24. Wilhelm S, Yovel I, Gershuny B, Steketee G, Buhlmann U, Fama JM. The obsessive-compulsive symptoms rating scale: a detailed severity assessment of Obsessive Compulsive Dysfunction. Manuscript submitted for publication.
25. Stewart SE, Egan-Stack D, Farrell C, Pauls DL, Jenike MA. Effectiveness of Intensive Residential Treatment (IRT) for severe refractory obsessive-compulsive disorder. *J Psych Res*. 2005; 39(6):603–609.
26. Goodman WK, Price LH, Rasmussen SA, Mazure C, Fleischmann RL, Hill CL, Heninger GR, Charney DS. The Yale Brown Obsessive Compulsive Scale: II. Validity. *Arch Gen Psychiatry*. 1989;46:1012–1016
27. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry*. 1961;4:561–671.
28. Burt T, Ishak WW. Outcome measurement in mood disorders. In: Ishak WW, Burt T, Sederer LI, eds. *Outcome Measurement in Psychiatry*. Washington DC: American Psychiatric Publishing; 2002:164–165.
29. Foa EB, Cashman L, Jaycox L, Perry K. The validation of a self-report measure of posttraumatic stress disorder: the Posttraumatic Diagnostic scale. *Psychol Assess.* 1997;9:445–451.
30. SPSS 12.0 for windows. Chicago;2003
31. SAS Institute Inc. *SAS/STAT User's Guide*. Version 8. Cary, NC: STATS Publishing Inc.;1999.
32. Rosario-Campos MC, Leckman JF, Mercadante MT, Shavitt RG, Prado HS, Sada P, Zamignani D, Miguel EC. Adults with early-onset obsessive-compulsive disorder. *Am J Psychiatry*. 2001; 158(11):1899–1903.
33. Stewart SE, Geller DA, Jenike MA, Pauls D Shaw D, Mullin B, Faraone, SV. Long term outcome of pediatric obsessive compulsive disorder: a meta-analysis and qualitative review of the literature. *Acta Psychiatrica Scandinavica*. 2004; 110(1):4–13.
34. Neziroglu F, Anderson M, Yaryura-Tobias JA. An in-depth review of obsessive-compulsive disorder, body dysmorphic disorder, hypochondriasis, and trichotillomania: therapeutic issues and current research. *Crisis Intervention*. 1999;5:59–94.
35. Wilhelm S, Neziroglu F. Cognitive theory of body dysmorphic disorder, In: Frost RO, Steketee G, eds. *Cognitive Approaches to Obsessions and Compulsions: Theory, Assessment and Treatment*: Oxford, Elsevier Press;2002.
36. Mataix-Cols D, Wooderson S, Lawrence N, Brammer MJ, Speckens A, Phillips ML. Distinct neural correlates of washing, checking and hoarding symptom dimensions in obsessive-compulsive disorder. *Arch Gen Psychiatry*. 2004; 61(6):564–576.
37. Hahm DS, Kang Y, Cheong SS, Na DL. A compulsive collecting behavior following an A-com aneurismal rupture. *Neurology*. 2001;56:398–400.
38. Gabbay V, Asnis GM, Bello JA, Alonso CM, Serras SJ, O'Dowd MA. New onset of body dysmorphic disorder following frontotemporal lesion. *Neurology*. 2003;61:123–125.
39. DeBerardis D, Campanella D, Gambi F, Sepede G, Carano A, La Rovere R, Pelusi L, Penna L, Cocconetti A, Cotellessa C. Salerno R, Ferro R. Insight and alexithymia in adult outpatients with obsessive-compulsive disorder. *Eur Arch Psychiatry Clin Neurosci*. 2005;255(5):350–358.
40. Saxena S, Maidment KM, Vapnik T, Golden G, Rishwain T, Rosen R, Tarlow G, Bystritsky A. Obsessive-compulsive hoarding: symptom severity and response to multimodal treatment. *J Clin Psychiatry.* 2002;63:21–27.
41. Grant JE, Menard W, Pagano ME, Fay C, Phillips, K. Substance use disorders in individuals with body dysmorphic disorder. *J Clin Psychiatry.* 2005;66:309–316.
42. Gunstad J, Phillips KA. Axis I comorbidity in body dysmorphic disorder. *Compr Psychiatry.* 2003;44:270–276.
43. Carter AS, Pollock RA, Suvak MK, Pauls DL. Anxiety and major depression comorbidity in a family study of obsessive-compulsive disorder. *Depress Anxiety*. 2004;20:165–174.
44. Erzegovesi S, Cavallini MC, Cavedini P, Diaferia G, Locatelli M, Bellodi L. Clinical predictors of drug response in obsessive-compulsive disorder. *J Clin Psychopharmacology.* 2001; 21(5):488–492.
45. Mataix-Cols D, Marks IM, Greist JH, Kobak KA, Baer L. Obsessive-compulsive symptom dimensions as predictors of compliance with and response to behavior therapy: results from a controlled trial. *Psychotherapy and Psychosomatics.* 2002a; 71:255–262.
46. Saxena S, Maidment KM. Treatment of compulsive hoarding. *J Clin Psychol*. 2004;60(11):1143–1154.
47. Berkson J. Berkson's Bias. *Biometrics Bulletin.* 1946;1:47–153.