Published in final edited form as:

J Affect Disord. 2007 January ; 97(1-3): 129–135.

Clinical features and correlates of major depressive disorder in individuals with body dysmorphic disorder

Katharine A. Phillips^{a,b,*}, Elizabeth R. Didie^{a,b}, and William Menard^a

^a Butler Hospital, 345 Blackstone Blvd., Providence, RI 02906, United States

^b Department of Psychiatry and Human Behavior, Brown Medical School, Providence, RI, United States

Abstract

Background—Body dysmorphic disorder (BDD) and major depressive disorder (MDD) appear highly comorbid. However, MDD in individuals with BDD has received little investigation.

Methods—The prevalence and characteristics of comorbid MDD were assessed in 178 BDD subjects. BDD subjects with current comorbid MDD ($n=68$) were compared to BDD subjects without current comorbid MDD ($n=96$) on demographic and clinical characteristics. Predictors of current MDD were determined using logistic regression.

Results—74.2% of subjects had lifetime MDD, and 38.2% had current MDD. The melancholic subtype was most common, and a majority of depressed subjects had recurrent episodes. Mean onset of BDD occurred at a younger age than MDD. Subjects with current comorbid MDD had many similarities to those without MDD, although those with comorbid MDD had more severe BDD. Subjects with comorbid MDD were also more likely to have an anxiety or personality disorder, as well as a family history of MDD. They also had greater social anxiety, suicidality, and poorer functioning and quality of life. Current MDD was independently predicted by a personality disorder and more severe BDD.

Limitations—It is unclear how generalizable the results are to the community or to subjects ascertained for MDD who have comorbid BDD. The study lacked a comparison group such as MDD subjects without BDD.

Conclusions—MDD is common in individuals with BDD. Individuals with current MDD had greater morbidity in some clinically important domains, including suicidality, functioning, and quality of life. A personality disorder and more severe BDD independently predicted the presence of current MDD.

Keywords

Body dysmorphic disorder; Dysmorphophobia; Depression; Mood disorders; Affective disorders; Somatoform disorders

1. Introduction

Body dysmorphic disorder (BDD), a distressing or impairing preoccupation with an imagined or slight defect in appearance, is classified as a somatoform disorder. However, BDD may be a form of “affective spectrum disorder” (Phillips et al., 1995). Depressive symptoms have long

*Corresponding author. Butler Hospital, 345 Blackstone Blvd., Providence, RI 02906, United States. Tel.: +1 401 455 6490; fax: +1 401 455 6539. E-mail address: Katharine_Phillips@brown.edu (K.A. Phillips).

been noted to be a feature of BDD; more than a century ago, Morselli (1891) referred to such patients as “veritably unhappy”. However, research on depression in BDD is very limited.

Most studies that have examined the prevalence of MDD in BDD patients found a relatively high prevalence, with lifetime rates of 36% of 50 subjects (Veale et al., 1996), 41% of 58 subjects (Perugi et al., 1997), 68% of 50 subjects (Hollander et al., 1993), 69% of 16 subjects (Zimmerman and Mattia, 1998), and 76% of 293 subjects (Gunstad and Phillips, 2003). In the largest study ($n=293$), lifetime MDD was more than twice as common as any other Axis I disorder (Gunstad and Phillips, 2003). Conversely, some studies have found a high prevalence of BDD in depressed patients, especially those with the atypical subtype, although findings have varied considerably. In a study of 86 outpatients and day hospital patients with a major depressive episode with atypical features, 42% had lifetime BDD (Perugi et al., 1998). Two studies of outpatients with MDD ($n=80$, Phillips et al., 1996; and $n=350$, Nierenberg et al., 2002) both found that 14% of patients with atypical MDD had BDD; in the Nierenberg et al study, BDD was significantly more frequent in atypical MDD (14%) than in non-atypical MDD (5%). Another study found no BDD among 42 MDD patients, although the sample was small and the type of depression (atypical vs non-atypical) was not specified (Brawman-Mintzer et al., 1995). In contrast, an inpatient study found that a high proportion of inpatients with MDD – 21% – had BDD (Grant et al., 2001). Two studies in samples ascertained for MDD found that depressed patients with comorbid BDD had an earlier age of MDD onset and longer duration of the current depressive episode (Nierenberg et al., 2002; Phillips et al., 1996). One study (Phillips et al., 1996) but not the other (Nierenberg et al., 2002) found that depressed patients with BDD had greater overall illness severity, interpersonal sensitivity, and functional impairment.

To our knowledge, no previous report has focused on the converse: characteristics of MDD in subjects ascertained for BDD. In this study, we examined the prevalence of comorbid MDD and previously unexamined characteristics of comorbid MDD (e.g., depressive subtypes) in 178 subjects ascertained for BDD. To determine whether individuals with BDD with current comorbid MDD differ from those without current comorbid MDD, we compared these two groups in terms of demographics, clinical characteristics, and family history. We also examined demographic and clinical predictors of current MDD. We hypothesized that more severe BDD and more delusional BDD beliefs would predict current MDD, based on prior findings that these characteristics are associated with more severe depressive symptoms (Phillips et al., 2004).

2. Methods

2.1. Subjects

Subjects were 178 individuals with current (past month) DSM-IV BDD participating in an observational study of BDD's course. This report only includes data from the intake evaluation. Study inclusion criteria were DSM-IV BDD or its delusional variant, age 12 or older, and able to be interviewed in person; the only exclusion criterion was the presence of an organic mental disorder. Subjects with bipolar disorder were excluded from comparison analyses (see below). 80.6% of the sample considered BDD to currently be their primary (most problematic) disorder. The study was approved by an Institutional Review Board; all subjects provided written informed consent (written assent and parent or guardian written consent for adolescents). 47% of the subjects were referred by health care professionals; 53% were self-referred, most of whom were obtained from advertisements (49% of the entire sample).

2.2. Assessments

Interviews were done in person by two experienced B. A.-level interviewers who underwent a rigorous training program used for similar studies at Brown (e.g., Vasile et al., 1997). Training included discussing videotapes, doing mock interviews, and being closely supervised during training and initial interviews. All interviews were thoroughly edited by the first author and a Ph.D. psychologist. Measures were the following: *Structured Clinical Interview for DSM-IV-Non-Patient Version (SCID-IN/P)* (First et al., 1996), *Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II)* (First et al., 1997), *Inventory of Depressive Symptomatology-Self Report (IDS-SR)* (30-item version; scores range from 0 to 84) (Rush et al., 1996), 24-item *Hamilton Rating Scale for Depression* (scores range from 0 to 72) (Miller et al., 1985), *BDD Form* (a semi-structured measure used in previous BDD studies which obtained data on demographics and BDD's clinical features), and *Hollingshead Occupational Index* (two factor version; scores range from 1 to 9) (Hollingshead, 1965). Family history of MDD (probable diagnoses) was obtained for the first 82 subjects and their 380 first-degree relatives using the SCID-I/NP and family history method. Current BDD severity was assessed with three rater-administered scales: 1) *BDD-YBOCS* (past week; scores range from 0 to 48) (Phillips et al., 1997); 2) *BDD-PSR*, which mirrors DSM-IV BDD criteria (past week; scores range from 1 to 7); and 3) *BDDE* (past month; scores range from 0 to 168; this scale was administered to the first 77 subjects) (Rosen and Reiter, 1996). The severity of current comorbid OCD was assessed with the *Y-BOCS* (scores range from 0 to 40) (Goodman et al., 1989), current comorbid social phobia with the *Brief Social Phobia Scale* (scores range from 0 to 72) (Davidson et al., 1997), and current delusional beliefs with the *Brown Assessment of Beliefs Scale (BABS)* (scores range from 0 to 24) (Eisen et al., 1998). Higher scores on the above symptom measures indicate more severe symptoms. The *Global Assessment of Functioning Scale (GAF)* and *Social and Occupational Functioning Scale (SOFAS)* assessed current global symptom severity and functioning; scores range from 0 to 100. Current functioning was assessed with the self-report *Social Adjustment Scale-Self Report (SAS-SR)* (Weissman et al., 1978) and the rater-administered *Range of Impaired Functioning Tool* (Leon et al., 1999) (the total score does not reflect inability to work or be in school due to psychopathology; we report these percentages separately). Current quality of life was assessed with the self-report *Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q)* (we report the Short Form converted score) (Endicott et al., 1993) and the self-report *Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36)* (Ware, 1993); subscale scores range from 0 to 100. Lower scores are poorer on the SF-36, Q-LES-Q, GAF, and SOFAS; higher scores are poorer on the LIFE-RIFT and SAS-SR.

2.3. Statistical analysis

Means, standard deviations, and frequencies were calculated. Correlations were examined with the Spearman rank correlation. Between-group differences for subjects with and without current comorbid MDD were analyzed using chi square, Fisher's exact test, or *t*-tests. Because these analyses are for current MDD, comparison variables focus on current status except for suicide attempts and family history. For comparisons of subjects with and without current comorbid MDD, we excluded the 14 subjects with comorbid bipolar disorder, as it seemed problematic to include them in either group. Tests were two tailed; the alpha level was .05. We did not correct for multiple comparisons because this study is the first to compare these groups and is therefore exploratory. Nonetheless, there is possible inflation of Type I error rates. We report effect size estimates using Cohen's categories of "small" ($d=.2$), "medium," ($d=.5$), and "large" ($d=.8$) for *t*-tests and Cramer's v for chi square analyses ($v=.1$ is small, $.3$ is medium, and $.5$ is large). A simultaneous multiple logistic regression analysis examined predictors of current MDD (selected a priori) with current MDD as the dependent variable.

3. Results

Among all 178 subjects, 74.2% ($n=132$) had lifetime (past or current) comorbid MDD, and 38.2% ($n=68$) had current comorbid MDD. The melancholic subtype was most common, occurring in 49.3% ($n=33$) of subjects with current MDD; 11.9% ($n=8$) had the atypical subtype, 1.5% ($n=1$) had a seasonal pattern, and none had the catatonic subtype. On average, BDD began at a younger age than MDD (16.3 ± 7.1 vs 17.7 ± 7.4 years; $t=-2.12$, $df=131$, $p=.04$). 49.2% ($n=65$) of subjects with MDD developed BDD at least 1 year before MDD, 19.7% ($n=26$) developed BDD and MDD in the same year, and 31.1% ($n=41$) developed BDD at least 1 year after onset of MDD. 62.9% ($n=83$) had recurrent (as opposed to single episode) depressive episodes, with a mean of 5.1 ± 10.9 major depressive episodes (21 subjects [15.9% of subjects with MDD] reported “too many episodes to count” and were excluded from this analysis).

Subjects with and without current MDD were similar on most demographic features (Table 1). As expected, subjects with current MDD had more severe depressive symptoms. They also had more severe BDD on all three measures. Depressive symptom severity was significantly correlated with BDD severity: $r=.38$, $p<.001$ for the HAM-D and BDD-YBOCS, and $r=.36$, $p<.001$ for the IDS-SR and BDD-YBOCS. Subjects with comorbid MDD also had more severe social anxiety but were not significantly more delusional. Subjects with MDD were more likely to have an anxiety or personality disorder. Regarding individual Axis I disorders, the two groups significantly differed only in terms of OCD (35.3% [$n=24$] for MDD subjects vs 15.6% [$n=15$] for non-MDD subjects; $\chi^2=8.50$, $df=1$, $p=.004$). Subjects with current MDD were more likely to have several personality disorders: avoidant (41.4% [$n=24$] vs 15.1% [$n=13$]; $\chi^2=12.51$, $df=1$, $p<.001$); obsessive-compulsive (17.2% [$n=10$] vs 5.8% [$n=5$]; $\chi^2=4.85$, $df=1$, $p=.03$); borderline (17.2% [$n=10$] vs 2.3% [$n=2$]; Fisher's exact $p=.004$); and depressive (12.1% [$n=7$] vs 1.2% [$n=1$]; Fisher's exact $p=.007$). Subjects with current MDD were also significantly more likely to have a family history of MDD. A high proportion of both groups had attempted suicide (Table 2); however, lifetime suicide attempts and current suicidal ideation were both more common in the MDD group. Both groups had marked functional impairment and poor quality of life, with greater impairment for the comorbid MDD subjects on nearly all measures.

As predicted, in the logistic regression analysis more severe BDD was independently associated with current MDD; with each 5-point increase on the 48-point BDD-YBOCS scale, the probability of current MDD nearly doubled (OR=1.80, 95% CI=1.23–2.65, $p=.003$). In addition, the presence of a personality disorder was significantly associated with current MDD (OR=5.39, 95% CI=2.38–12.20, $p<.001$). Contrary to our hypothesis, more delusional BDD beliefs did not predict current MDD. Age, gender, and current treatment status also did not predict current MDD. The logistic regression model significantly predicted current MDD ($\chi^2=43.36$, $df=6$, $p<.001$, $-2 \text{ Log Likelihood}=143.24$) and correctly classified 73.4% of the sample (61.8% of subjects with current MDD and 81.0% of subjects without current MDD).

4. Discussion

The high lifetime prevalence of MDD in this study (74.2%) is similar to that (76%) in the largest prior BDD comorbidity study (Gunstad and Phillips, 2003). However, current MDD was less common in the present study (38.2%) than in the prior study (63.1%). A possible explanation for this difference is that all subjects in the prior study were currently seeking or receiving mental health treatment, whereas about two thirds of subjects in the present study were currently receiving treatment. In the present study there was a trend for a higher prevalence of current MDD in currently treated subjects than in untreated subjects (46.7% [$n=49$] vs 32.2% [$n=19$]; $\chi^2=3.26$, $df=1$, $p=.07$). It is interesting that the melancholic subtype was most common, as prior studies suggested that the atypical subtype may be associated with

BDD (Nierenberg et al., 2002), consistent with BDD patients' rejection sensitivity (Phillips et al., 1996).

For subjects with MDD, depressive symptoms were moderate–severe on the IDS-SR and moderate on the HAM-D. For subjects without current MDD, depressive symptoms were in the low end of the moderate range on the IDS-SR and the no depression range on the HAM-D. The correlation between our IDS-SR and HAM-D scores ($r=0.7$, $p<.001$) is similar to that in other patient samples (Rush et al., 1986). A possible explanation for our sample's relatively higher IDS-SR scores (compared to HAM-D scores) is that the IDS-SR includes some items (e.g., interpersonal sensitivity) and wording (e.g., thinking about “defects” in oneself) that are characteristic of BDD and are not included in the HAM-D. In most prior BDD studies, HAM-D scores were in the moderate or moderate–severe range for the sample as a whole (e.g., Saxena et al., 2001). In one study ($n=75$), depression scores on the Symptom Questionnaire were higher than norms for normal controls ($d=2.6$) or psychiatric out-patients ($d=.34$), and were highly correlated with BDD severity ($r=.60$, $p<.001$) (Phillips et al., 2004).

Subjects with current MDD had greater morbidity than those without MDD in a variety of domains. A notably high proportion of the MDD group – 38.2% – had attempted suicide. A prior report from this sample found that lifetime suicide attempts were independently predicted by more severe lifetime BDD but not lifetime MDD (Phillips et al., 2005). However, both lifetime BDD severity and lifetime MDD independently predicted lifetime suicidal ideation. Functioning and quality of life were markedly poor across the entire sample, with poorer scores for subjects with MDD. In the MDD group, mean GAF and SOFAS scores reflected major impairment in several areas, about half of the subjects were not working due to psychopathology, nearly half were not in school due to psychopathology, and nearly one quarter were receiving disability. On the SF-36, Q-LES-Q, and SAS-SR, scores for subjects with current MDD were 2.1–3.1 SD units poorer than U.S. population or community norms (Endicott et al., 1993; Ware, 1993; Weissman et al., 1978). An association between comorbid MDD and greater morbidity is consistent with studies of other disorders (e.g., Vasile et al., 1997). In our logistic regression analysis, a DSM-IV personality disorder was associated with current MDD, although in univariate analyses only certain individual personality disorders were associated with MDD. More generally, the relationship between personality disorders and depression is unclear (Shea and Yen, 2005); further research on this topic is needed in BDD. Our finding that OCD was the only Axis I disorder that was significantly more common in the MDD group is interesting in light of a finding that in OCD subjects, comorbid recurrent MDD is associated with an increased prevalence of BDD (Hong et al., 2004). These findings suggest that patients with BDD and comorbid MDD should be carefully assessed for OCD, and that those with OCD and MDD should be assessed for BDD.

It is unclear how generalizable our results are to individuals with BDD in the community, clinical samples, individuals with primary MDD, or samples ascertained for MDD. Our study lacked a comparison/control group such as MDD subjects without BDD. Also, this study focused on cross-sectional assessment of current MDD; patients may develop MDD over time, and longitudinal studies are needed. Our use of the family history method may have underestimated the prevalence of MDD in family members. Also, our sample contained few subjects with comorbid bipolar disorder ($n=14$); because of the important relationship between bipolar disorder and OCD (e.g., Perugi et al., 2002), and between OCD and BDD (Phillips et al., 1995), research is needed on comorbid BDD and bipolar disorder. Further research is also needed on the relationship between BDD and MDD—for example, the extent to which MDD may occur secondary to BDD, the extent to which MDD may contribute to BDD's occurrence or severity, and whether BDD and MDD may be related in a more complex way, with some shared etiologic factors, as implied by the affective-spectrum hypothesis (Phillips et al., 1995).

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Table 1
Demographic and clinical characteristics of 164 BDD subjects with or without current MDD

Variable ^a	BDD with current MDD (n=68)	BDD without current MDD (n=96)	Statistic ^b	p	Effect size
Demographics					
Gender (% female)	72.1% (49)	70.8% (68)	$\chi^2 = 0.03$	.86	$v = .01$
Age	32.9 ± 10.8	31.9 ± 13.5	$t = -0.50$	.62	$d = .07$
Race (non-white)	17.9% (12)	14.6% (14)	$\chi^2 = 0.33$	.57	$v = .05$
Ethnicity (Hispanic)	10.6% (7)	5.6% (5)	$\chi^2 = 1.37$	.24	$v = .09$
Marital status (single)	76.5% (52)	75.0% (72)	$\chi^2 = .05$	.83	$v = .02$
Education (high school/GED or less)	33.8% (23)	27.1% (26)	$\chi^2 = 0.86$	.35	$v = .07$
Employed ^c	44.1% (30)	72.9% (70)	$\chi^2 = 13.87$	<.001	$v = .29$
Hollingshead occupation	3.9 ± 1.3	3.9 ± 1.6	$t = -0.12$	.90	$d = .07$
Depression severity					
HAM-D (24-item)	25.4 ± 7.4	9.1 ± 5.6	$t = -15.11$	<.001	$d = 1.59$
IDS-SR (30-item)	43.3 ± 11.5	27.7 ± 10.1	$t = -8.73$	<.001	$d = 1.20$
BDD severity					
BDD-YBOCS	32.7 ± 6.2	28.2 ± 6.9	$t = -4.28$	<.001	$d = .65$
BDDE	100.4 ± 18.5	85.9 ± 20.5	$t = -3.18$	.002	$d = .70$
BDD-PSR	6.1 ± 0.6	5.4 ± 0.7	$t = -6.64$	<.001	$d = 1.14$
BDD delusional (BABS) ^d	17.3 ± 5.1	16.1 ± 6.0	$t = -1.36$	.18	$d = .21$
Non-BDD symptom severity					
Y-BOCS ^e	23.4 ± 7.1	22.0 ± 7.0	$t = -0.61$	.55	$d = .20$
Brief social phobia scale ^f	34.0 ± 11.3	24.9 ± 10.6	$t = -3.13$	.003	$d = .78$
Comorbidity (current)					
Psychotic disorder	4.4% (3)	1.0% (1)	—	.31	$v = .11$
Anxiety disorder	66.2% (45)	49.0% (47)	$\chi^2 = 4.79$	.03	$v = .17$
Substance use disorder	17.6% (12)	17.7% (17)	$\chi^2 = 0.00$	.99	$v = .00$
Eating disorders ^g	11.8% (8)	6.3% (6)	$\chi^2 = 1.55$	.21	$v = .10$
Somatiform disorder	2.9% (2)	0.0% (0)	—	.17	$v = .13$
Personality disorder	65.5% (38)	25.6% (22)	$\chi^2 = 22.73$	<.001	$v = .40$
Family history					
At least 1 first-degree relative with MDD	61.8% (21)	39.6% (19)	$\chi^2 = 3.92$	.05	$v = .22$
Proportion of all first-degree relatives with MDD	31.6% (49)	14.7% (33)	$\chi^2 = 15.58$	<.001	$v = .20$
Treatment					
Mental health treatment	72.1% (49)	58.3% (56)	$\chi^2 = 3.26$	.07	$v = .14$
Medication only	20.6% (14)	21.9% (21)	$\chi^2 = 0.04$	.84	$v = .02$
Therapy only	17.6% (12)	17.7% (17)	$\chi^2 = 0.00$	.99	$v = .00$
Both medication and therapy	33.8% (23)	18.8% (18)	$\chi^2 = 4.82$	.03	$v = .17$

^aResults are presented as % (n) or as mean ± standard deviation.

^b — = Fisher's exact test; $df = 1$ for all chi square tests and are as follows for t -tests: age ($df = 159.6$), Hollingshead occupation ($df = 85$), HAM-D ($df = 116.7$), IDS-SR ($df = 148$), BDD-YBOCS ($df = 162$), BDDE ($df = 75$), BDD-PSR ($df = 162$), BABS ($df = 156$), Y-BOCS ($df = 37$), and Brief Social Phobia Scale ($df = 55$).

^c29.4% ($n = 20$) of the BDD/MDD group worked full-time, and 14.7% ($n = 10$) worked part-time; 44.8% ($n = 43$) of the BDD only group worked full-time, and 28.1% ($n = 27$) worked part-time; an additional 3.0% ($n = 5$) of subjects were on a leave of absence for psychiatric or medical reasons.

^d Average insight was in the poor range.

^eFor subjects with current comorbid OCD ($n = 39$).

^fFor subjects with current comorbid social phobia ($n = 57$).

^gIncludes eating disorder NOS.

Table 2
Suicidality, functional impairment, and quality of life in 164 BDD subjects with or without current MDD

Variable ^a	BDD with current MDD (n=68)	BDD without current MDD (n=96)	Statistic ^b	p	Effect size
Suicidality					
Suicidal ideation ^c	52.2% (35)	5.3% (5)	$\chi^2 = 46.63$	<.001	$\nu = .54$
History of suicide attempt	38.2% (26)	17.7% (17)	$\chi^2 = 8.67$	.003	$\nu = .23$
History of suicide attempt attributed primarily to BDD	17.6% (12)	7.3% (7)	$\chi^2 = 4.17$	.04	$\nu = .16$
Functional impairment					
GAF	38.9 ± 9.1	51.4 ± 8.7	$t = 8.88$	<.001	$d = 1.16$
SOFAS	39.3 ± 9.3	54.6 ± 12.3	$t = 6.70$	<.001	$d = 1.14$
LIFE-RIFT	16.2 ± 2.6	12.1 ± 3.1	$t = -8.98$	<.001	$d = 1.21$
SAS-SR ^d	2.6 ± 0.5	2.1 ± 0.4	$t = -5.66$	<.001	$d = 1.00$
Not working due to psychopathology	51.5% (35)	16.7% (16)	$\chi^2 = 22.50$	<.001	$\nu = .37$
Not in school due to psychopathology	47.1% (32)	18.8% (18)	$\chi^2 = 15.05$	<.001	$\nu = .30$
Receiving disability for any reason	23.5% (16)	9.4% (9)	$\chi^2 = 6.17$	.01	$\nu = .19$
Receiving disability for BDD	10.3% (7)	5.2% (5)	—	.24	$\nu = .10$
Quality of life					
Q-LES-Q ^d	39.7 ± 15.8	58.5 ± 11.7	$t = 7.00$	<.001	$d = 1.15$
SF-36 mental health	30.5 ± 15.4	48.4 ± 17.9	$t = 6.33$	<.001	$d = .94$
SF-36 role emotional	10.6 ± 23.4	39.6 ± 39.3	$t = 5.67$	<.001	$d = .80$
SF-36 social functioning	30.6 ± 22.9	55.6 ± 23.8	$t = 6.41$	<.001	$d = .95$

^a Mean ± SD or % (n) of subjects.

^b — = Fisher's exact test; $df = 1$ for χ^2 analyses and are as follows for t -tests: GAF ($df = 162$), SOFAS ($df = 162$), LIFE-RIFT ($df = 162$), SAS-SR ($df = 162$), SASSR ($df = 75.8$), Q-LES-Q ($df = 82.1$), SF-36 mental health ($df = 148$), SF-36 role emotional ($df = 146.3$), and SF-36 social functioning ($df = 149$).

^c Suicidal ideation present = score of ≥ 1 on the HAM-D suicide item.

^d These measures were added later in the study; the Q-LES-Q was completed by 115 subjects and the SAS-SR by 118 subjects.