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Body dysmorphic traits and personality disorder patterns in rhinoplasty seekers

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ABSTRACT

The purpose of the study was to examine symptoms of body dysmorphic concerns, mental health indices and certain specific personality disorder patterns in seekers of cosmetic rhinoplasty. A sample of 100 consecutive female patients scheduled for esthetic rhinoplasty was recruited for the study. Findings reveal body dysmorphic concerns in 22% of the sample, though individual traits are observed in 5–85% of the sample. Appearance evaluation, but not preoccupation with appearance, correlates with anxiety and depression. Furthermore, dissatisfaction with appearance and body parts decrease, while preoccupation with appearance increases after the surgical intervention. Positive appearance evaluations are associated with histrionic and narcissistic traits, while dissatisfaction with body parts correlates positively with obsessive–compulsive traits. Overall, results imply that body dysmorphic concerns are better conceived of either as an obsessive–compulsive spectrum disorder or as morbid manifestations of inflexible perfectionistic tendencies seen in obsessive–compulsive personality disorders.

Body dysmorphic disorder (BDD) is defined as a preoccupation with some defect in physical appearance. The defect may be a slight physical anomaly but the person's concern may be excessive or it may be nonexistent and just imagined.

In recent years, variable rates of prevalence for BDD in the general population have been reported ranging from 0.7% (Bienvenu et al., 2000) through 1.1% (Otto et al., 2001) to 1.7% (Rief et al., 2006). Higher rates of BDD have been noted among college samples which range from 2.5% (Sarwer et al., 2005) to 5.3% (Taqui et al., 2008). Body dysmorphic concerns generally appear to be stable across short periods of time (Phillips, 2001) and data from nonclinical populations indicate an inconsistent gender ratio, with some studies indicating that a higher proportion of women than men have body image concerns (Striegel-Moore and Franko, 2002). In an Italian study 1.4% of women but no men had BDD (Faravelli et al., 1997).

In addition, women report greater appearance dissatisfaction, worry more about appearance in public, are more upset by someone noticing their appearance, and comment more frequently about their appearance (Phillips et al., 2006). These findings reflect greater importance of appearance for women than men in most societies. An unattractive appearance is considered a liability for women (Bergner et al., 1985). Moreover, as Striegel-Moore and Franko (2002) put it, beauty is an integral element of the female gender role stereotype, and women's bodies are likely to be regarded in an evaluative and objectifying way. With increased public attention on body weight and appearance, endorsed by the media (Thompson et al., 1999) increasingly, negative body image in women has been empirically related to depression (Denniston et al., 1992), anxiety (Thompson and Altabe, 1991), and lowered self-esteem (Phillips et al., 2004; Pecorari et al., 2010).

Apart from anxiety and mood disorders, substance use disorders (Gunstad and Phillips, 2003), and Axis II personality disorders (Phillips and McElroy, 2000) have been linked to BDD. In fact, a sizeable proportion of BDD patients have received a diagnosis of more than one comorbid personality disorder (Bellino et al., 2006). Different studies have reported different rates of comorbidity for each of the clusters of personality disorders with BDD. Cluster C disorders are reported to be the most frequent with rates ranging from 16% to 82%, followed by Cluster B disorders (12–76%) and Cluster A disorders (10–40%) (Cohen et al., 2000; Phillips and McElroy, 2000).

Body dysmorphic concerns are also relatively common among patients seeking cosmetic surgery, affecting an estimated 5% (Sarwer et al., 1998) to 11.9% (Phillips et al., 2000) of them. Some studies have found that preoccupation with the nose is the most common complaint in BDD, making cosmetic rhinoplasty the most common surgical correction sought by individuals with BDD (Andretto Amodeo, 2007; Crerand et al., 2005). Retrospective surveys of BDD patients suggest poor outcome in cosmetic rhinoplasty. Either no postoperative improvement in symptoms or an exacerbation of symptoms is reported by a majority of patients (Phillips, 2001). Even when increased dissatisfaction or

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preoccupation was not reported, a transfer of preoccupation to other body parts may be observed (Veale, 2001).

In recent years, cosmetic rhinoplasty has become increasingly common. One implication is that dissatisfaction with body image is likely to be associated with anxiety and depression which in turn induces the person to seek surgical correction. Another plausible explanation is that some diathesis in the form of personality traits makes a person seek others' attention and account for the person's increased preoccupation with appearance. The nature of this diathesis might help discriminate BDD patients who enjoy a favorable outcome after cosmetic surgery from those who do not.

The purpose of the present study was to first determine the prevalence of BDD traits in rhinoplasty seekers not receiving psychotherapy or psychotropic medication and then to compare the indices of mental health and certain specific personality disorders in those with and without the prominent symptoms of BDD. As individuals with histrionic traits seek the attention of others, those with narcissistic tendencies place high value on physical attractiveness and those with obsessive–compulsive features tend to have perfectionistic leanings and are preoccupied with details. We hypothesize that apart from anxiety and depression, these three personality patterns would be associated with body dysmorphic concerns and help distinguish individuals with prominent indices of body image dissatisfaction from those without.

To our knowledge, no previous study has focused on the heterogeneity of patients with body dysmorphic concerns. We hypothesize that patients with BDD concerns may not all manifest dissatisfaction with appearance, preoccupation with appearance and dissatisfaction with body areas to the same degree. Hence, patients with each of these prominent symptoms may report differing degrees of psychiatric morbidity.

1. Method

1.1. Participants

The study sample comprised 100 successive women patients seeking rhinoplasty for cosmetic reasons. All patients had been scheduled for cosmetic rhinoplasty from December 20, 2007 to February 20, 2008 at two different private clinics. All patients paid for the surgical intervention. Patients were recruited if they were female and were seeking rhinoplasty for the first time and for cosmetic reasons (in the absence of physical indications). As the number of women seeking cosmetic rhinoplasty far exceeded the men (17:3) only women patients were included in the study. All male patients and patients seeking rhinoplasty for non-cosmetic reasons were excluded from the study. To preclude the confounding of results, those currently receiving psychotropic medication or psychotherapy were also excluded from the study. Informed consent was obtained from all patients. No detailed psychiatric evaluation was undertaken before the surgical intervention.

1.2. Measures

All patients responded to a package of questionnaires that included a sociodemographic sheet, body image questionnaire, personality disorders questionnaire and general health questionnaire.

1.3. Sociodemographic data sheet

Information about the patients' age, marital status, education and occupation was noted.

1.4. The Multidimensional Body-Self Relations Questionnaire (Brown et al., 1990)

As the aim of the study was not to screen individuals with BDD but rather to identify individuals manifesting particular body dysmorphic traits, the Multidimeensional Body-Self Relations Questionnaire-Appearance Scales was used instead of more standard measures of body dysmorphic disorder. The Multidimensional Body-Self Relations Questionnaire-Appearance scales (MBSRQ-AS) is a 34-item self-report inventory for the assessment of self-attitudinal aspects of the body-image construct. The MBSRQ-AS includes the following subscales: Appearance Evaluation (scale 1 with 7 items), Appearance Orientation (scale 2 with 12 items), the Body Areas Satisfaction Scale (scale 3 with 9 items), Overweight Preoccupation (4 items), and Self-Classified Weight (2 items). Each of the items is scored on a 5-point scale (ranging from 1 = definitely disagree to 5 = definitely agree). All subscales possess acceptable internal consistency and stability. The Persian version of the scale (Barahmand, 2009) demonstrated acceptable internal consistency for each of the subscales (ranging from $\alpha = .73$ to $\alpha = .91$). In a previous study, the concurrent validity of the MBSRQ-AS was demonstrated when its association with scores on the Body Image Disturbance Questionnaire was established and normative cut-off scores were specified (Barahmand, 2009). In keeping with the aims of the present study, only scores pertaining to the Appearance Evaluation, the Appearance Orientation and the Body Areas Satisfaction Scales were analyzed.

1.5. The Millon Clinical Multiaxial Inventory-III (Millon, 2006)

The Millon Clinical Multiaxial Inventory-III (MCMI-III) is a psychological assessment tool intended to provide information on psychopathology, including specific disorders outlined in the DSM-IV. It is composed of 175 true-false questions. This instrument helps assess *DSM-IV-TR* related personality disorders and clinical syndromes. The test is modeled on four scales: 14 Personality Disorder Scales, 10 Clinical Syndrome Scales, Correction Scales (which help detect inaccurate responding) 42 Grossman Personality Facet Scales which provide useful diagnostic information regarding the particular realms of functioning on which the patient's difficulties manifest themselves. Each of its Axis II scales is consonant with the DSM-IV diagnostic categories for personality, and measure theory-derived and theory-refined variables directly and quantifiably (Millon and Davis, 1996), and scale elevations can be used to suggest specific patient diagnoses. Therefore, for the present study only the items pertaining to three of the Clinical Personality Patterns scales, Histrionic (17 items), Narcissistic (24 items), and Compulsive (17 items), were used. The Persian version of the MCMI-III possesses acceptable psychometric properties. Test–retest reliabilities range from .82 to .90.

To develop the Persian versions of the above scales, two translators were selected and the "back-translation" method was used; that is, the first translator translated the questionnaire into Persian, and this translation was then translated back into English.

1.6. General Health Questionnaire (Goldberg and Hillier, 1979)

The 28-item General Health Questionnaire (GHQ-28) is a screening instrument for psychiatric disorder in nonclinical populations. As well as a global score, the questionnaire provides subscale measures of more specific domains of psychopathology consisting of 7 items in each case, which are labeled severe depression, anxiety and insomnia, somatization and social dysfunction. Each item is scored on a 4-point Likert type scale of severity ranging from 1 to 4, with a minimum score of 28 and maximum score of 112. The Iranian version of the GHQ-28 has

been used widely and is reported to have good internal consistency (Cronbach α = .90).

1.7. Design

A quasi experimental design was used and data were collected 3 weeks before and 3 months after cosmetic rhinoplasty was performed.

1.8. Procedure

The following questionnaires were administered: Sociodemographic sheet, Multidimensional Body-Self Relations Questionnaire (MBSRQ-AS), Millon Clinical Multiaxial Inventory-III (MCMI-III), and General Health Questionnaire (GHQ-28).

Considering the heterogeneity of patients with body dysmorphic concerns, and in keeping with our assumption that patients with each of the prominent symptoms of body dysmorphic concerns may report differing degrees of psychiatric morbidity, all patients were categorized and compared: using normative cut off scores pertaining to the MBSRQ-AS, patients reporting extreme dissatisfaction with their appearance (mean score < 2 on subscale 1), extreme investment in their appearance (mean score > 3.91 on subscale 2) and extreme dissatisfaction with the size or appearance of body parts (mean score < 2.02 on subscale 3) were identified and labeled as "specifically dissatisfied" or "possible BDD", and individuals scoring within the normal range on all three subscales were considered not to have a problem with any of the indices of body image dissatisfaction and they comprised the "control" group.

1.9. Statistical analysis

The associations between indices of body dysmorphic concerns, personality disorder traits and mental health indices were examined using Pearson's correlation coefficients. Next, the mean scores of the specifically dissatisfied groups on mental health indices and personality disorder traits were compared with those of the control group using independent samples t test and analysis of variance (ANOVA). An alpha error of $<.05$ was considered statistically significant. Finally, 3 months after the surgical intervention, changes in body dysmorphic concerns were examined.

2. Results

All 100 patients who participated in the study were women ranging in age from 24 years to 31 years (M = 26.76, SD = 1.38). Forty-six percent of the patients had high school diplomas, 17% had an associate degree and 37% had a bachelor's degree. Fifty-eight percent of the patients were single, 11% were students and 32% were employed. None of the patients reported using psychotropic medication or undergoing any form of psychotherapy.

In the first step of the analysis, the association between each of the BDD indices and each of the mental health and personality patterns was examined. The obtained correlation coefficients are presented in Table 1. As can be seen, appearance evaluation correlates negatively with total mental health scores and with anxiety and depression in particular, while it correlates positively with histrionic and narcissistic characteristics. However, appearance evaluation is not associated with obsessive–compulsive characteristics or social dysfunction. Appearance orientation is associated positively only with histrionic traits. Satisfaction with body parts correlates negatively with all the indices of mental health as well as with obsessive–compulsive traits.

Next, normative cut off scores were used to identify those patients reporting extreme dissatisfaction with their appearance (mean score < 2 on scale 1), extreme investment in their appearance (mean score > 3.91 on scale 2) and extreme dissatisfaction with the size or appearance of body parts (mean score < 2.02 on scale 3). By taking body dysmorphic concerns and concomitant anxiety, depression or social dysfunction into consideration, the prevalence of BDD in the sample is 22%. As many as 15% report scores within the normal range on all three scales while only 2% report extreme scores on all the three body image scales. The remaining 83% of the patients have extreme scores on one of the three scales, with 5% scoring low on the appearance evaluation scale, 85% scoring high on the appearance orientation scale and 12% scoring low on the body areas satisfaction scale. These three groups of patients are labeled the "specifically dissatisfied" or "possible BDD" groups. Those patients (15%) who score within the normal range on all three scales are considered not to have a problem with any of the indices of body image, and they comprise the "control group".

The data are analyzed into two steps. In the first step, those that score high on scale 2 are compared with the control group (comparison 1). Next, those scoring low on scale 3 are compared with both the control group and with those scoring high on scale 3 (comparison 2). In both comparison sets, mental health indices and personality disorder traits are compared. The two comparisons are outlined below.

Comparison 1: patients with elevated appearance orientation (group 1) vs. patients with no elevation on any scale, using an independent samples t test.

Comparison 2: patients with extreme dissatisfaction with body parts (group 2) vs. patients with normal appearance evaluation or high appearance orientation (group 3) vs. patients with no extreme scores on any scale (control group), using a one-way ANOVA. Those endorsing extreme dissatisfaction with their appearance are too few (5%) to be compared with the control group and are, therefore, not subject to more detailed analysis. The obtained results are tabulated in Tables 2 and 3.

As can be seen, from Table 2 it can be inferred that patients who place high importance on their appearance differ from the control group of patients in that they report greater anxiety, lower mental health scores as well as more compulsive traits. The results of a one-way ANOVA followed by a Bonferroni post hoc test revealed that patients reporting extreme dissatisfaction with body parts report significantly more somatic complaints ($p < .01$), anxiety ($p < .01$), and compulsive traits ($p < .05$) than the control group. Patients expressing extreme dissatisfaction with body parts also report greater somatic complaints and anxiety than patients

Table 1
Correlation coefficients between BDD indices, mental health indices and personality patterns.

	Anxiety	Social dysfunction	Depression	Mental health	Histrionic	Obsessive–compulsive	Narcissistic
Appearance evaluation	−.161*	−.122	−.451**	−.341**	.165*	−.083	.210**
Appearance orientation	.109	−.106	−.010	.030	.178*	.042	.016
Satisfaction with body parts	−.327**	−.163*	−.347**	−.394**	.059	−.169*	.110

* $p < .05$.
** $p < .01$.

Table 2
Comparison between subgroup of patients reporting preoccupation with appearance (group 1) and patients with no elevation on any scale (control group) on indices of mental health and personality disorder traits.

Variables	Group 1 $n=85$ Mean(SD)	Control $n=15$ Mean(SD)	Statistic independent samples t test
Somatic complaints	2.89(1.15)	2.40(.63)	t (98) = 1.61, $p > .05$
Anxiety	5.30(1.28)	4.46(.74)	t (98) = 2.45, $p < .01$
Social dysfunction	5.78(1.10)	5.93(.79)	t (98) = −.48, $p > .05$
depression	1.89(1.14)	1.53(1.12)	t (98) = 1.12, $p > .05$
Histrionic traits	17.43(3.74)	16.46(3.29)	t (98) = .93, $p > .05$
Narcissistic traits	21.81(4.54)	22.00(4.47)	t (98) = −.14, $p > .05$
Compulsive traits	17.60(3.29)	15.73(3.67)	t (98) = 1.99, $p < .05$

Table 3
Comparison between the subgroup of patients reporting dissatisfaction with body parts (group 2), patients reporting satisfaction with body parts (group 3) and patients reporting no elevation (control group) on indices of mental health and personality disorder traits.

Variables	Group 2 ($n=12$) Mean(SD)	Group 3 ($n=73$) Mean(SD)	Control ($n=15$) Mean(SD)	Statistic one way ANOVA
Somatic complaints	3.66(1.66)	2.76(1.00)	2.40(.63)	$F(2, 97) = 5.081$, $p < .05$
Anxiety	6.33(1.37)	5.13(1.19)	4.46(.74)	$F(2, 97) = 8.783$, $p < .01$
Social dysfunction	6.00(1.12)	5.75(1.10)	5.93(.79)	$F(2, 97) = .393$, $p > .05$
Depression	2.50(1.16)	1.79(1.11)	1.53(1.12)	$F(2, 97) = 2.685$, $p > .05$
Histrionic traits	16.33(3.05)	17.61(3.83)	16.46(3.29)	$F(2, 97) = 1.066$, $p > .05$
Narcissistic traits	20.75(4.97)	21.98(4.48)	22.00(4.47)	$F(2, 97) = .393$, $p > .05$
Compulsive traits	19.33(2.01)	17.31(3.38)	15.73(3.67)	$F(2, 97) = 3.963$, $p < .05$

expressing satisfaction with appearance, although in terms of compulsive traits the two groups did not differ significantly ($p > .05$).

In the final step, the outcome of the surgical intervention in terms of changes in body dysmorphic concerns 3 months after the surgical intervention was examined. Dissatisfaction with appearance was reported by 2%, extreme appearance orientation by 95% and body parts dissatisfaction by 1% of the sample. These results indicate that after the surgical intervention, the percentage of patients reporting dissatisfaction with appearance did not change significantly ($z = .77$, $p > .05$), but the percentage reporting increased preoccupation with appearance ($z = 2.12$, $p < .05$) and dissatisfaction with body parts ($z = 2.87$, $p < .05$) changed significantly.

3. Discussion

The prevalence of BDD traits among women seeking cosmetic rhinoplasty is 22% but only 2% report dissatisfaction with overall appearance, preoccupation with appearance as well as dissatisfaction with body parts. These figures are in keeping with prevalence rates reported by other researchers (Andreasen and Bardach, 1977; Sarwer et al., 1998; Carroll and Anderson, 2002; Bellino et al., 2006). When individual dysmorphic traits are considered, prevalence rates differ with lowest rates seen for dissatisfaction with overall appearance (5%), and highest for appearance orientation (85%), with dissatisfaction with specific body parts reported by 12%.

These three predominant features of body dysmorphic disorder are associated with different indices of mental health and personality traits. Preoccupation with appearance is not associated with anxiety, depression or social dysfunction, while decreased satisfaction with both appearance and body parts is associated with increased anxiety and depression and only dissatisfaction with body parts is associated with social dysfunction. These findings imply that preoccupation with appearance may not by itself be associated with psychiatric morbidity. It is only when one's appearance or some part of the body is evaluated negatively and is accompanied by feelings of dissatisfaction that anxiety and depression may also coexist. Several investigators have pointed to the comorbidity of depression and anxiety in BDD (Biby, 1998; Dyl et al., 2006). Others (Stewart et al., 2008) have found comorbid BDD and severe depression in patients with OCD. The findings of the present study may be suggestive of the fact that mild body dysmorphic concerns may not be accompanied by anxiety or depression and that in more severe cases an association of the three morbid conditions may occur.

There are differences in the associations between particular dysmorphic symptoms and personality patterns too. Satisfaction with body parts is negatively associated with obsessive–compulsive patterns. To put it more precisely, patients endorsing greater dissatisfaction with body parts also report greater obsessive–compulsive traits. However, in the absence of an association between ratings for appearance orientation (preoccupation with appearance) and obsessive–compulsive traits, the correlation between dissatisfaction with body parts and obsessive personality patterns might be indicative of rigidity, ritualistic behavior and perfectionistic tendencies in these individuals. These findings are partly concordant with previous investigations reporting the co-occurrence of body dysmorphic disorder with obsessive–compulsive disorder (Cohen and Hollander, 1997; Phillips and McElroy, 2000) and obsessive–compulsive personality disorder (Bellino et al., 2006). In fact, BDD is conceptualized as an OC-spectrum disorder (Cohen and Hollander, 1997).

Satisfaction with and positive evaluations of appearance are associated with histrionic traits, implying that patients who are satisfied with and increasingly preoccupied with their appearance also possess excessive need for approval and display a pattern of excessive emotionality. That is, they are uncomfortable in situations in which they are not the center of attention and consistently use physical appearance to draw attention to themselves. Furthermore, increasingly positive appearance evaluations correlate with narcissistic tendencies, indicating that patients with greater positive evaluations of appearance have a grandiose sense of self-importance and also demand excessive amounts of praise or admiration from others. Considering that body dysmorphic concerns have to do with excessive concerns about and preoccupation with an imagined or minor *defect* in physical features, regarding the association between appearance evaluations and personality patterns, it can be inferred that those

who score low on appearance evaluation tend also to *avoid* the attention of others and are likely to have *decreased* sense of self importance. The findings of the present study appear to conflict with those of previous studies on body image concerns and personality disorders (Grossbart and Sarwer, 2003; Bellino et al., 2006) which have reported a positive association between body dysmorphic disorder and narcissistic personality patterns. In such studies, as the differential associations between the various symptoms of body dysmorphic disorder were not taken into account, it is likely that in benign cases of body dysmorphic concerns, the personality patterns observed in full blown body dysmorphic disorder may not hold true. Furthermore, in the present study categorical diagnoses of body dysmorphic disorder and personality disorders are not made. Instead, the relation between the symptoms and criteria for these disorders has been assessed.

The discordant results obtained could be attributed to this difference in assessment. The axis II diagnoses associated with body dysmorphic concerns in the present study may also be related to cultural factors as in two previous studies conducted on patients seeking cosmetic surgery in Iran, obsessive–compulsive personality traits were observed in 10% (Alamdari Saravi and Ghalebandi, 2004) and 33% (Ghalebandi and Afkham Ebrahimi, 2004). However, in both these previous studies, separate rates for women were not reported. In Iran, specific importance is placed on the physical attractiveness of women. And with the Islamic covering as the public attire of women, only the face is visible to others. As a result, in most cases, an attractive face is considered equivalent to an esthetically pleasing appearance. In attempts to make themselves appear attractive, young women, especially in urban areas, make changes to their facial features by applying make-up, by getting tattoos done and by undergoing various kinds of cosmetic surgery. Such efforts are on the increase and the age range is also widening to include younger girls and women. Therefore, the large percentage (85%) of women endorsing high appearance orientation is understandable, and so is the association of body parts dissatisfaction with obsessive–compulsive traits.

When direct comparisons of patients reporting high preoccupation with appearance and dissatisfaction with body parts and those without any of the symptoms of body dysmorphic disorder were made, they differed only in terms of anxiety experienced and compulsive traits reported. So it can be inferred that patients with abnormal evaluation of appearance, who are dissatisfied with particular parts of the body or preoccupied with appearance experience greater anxiety and display more compulsive patterns of behavior. In addition, patients with self reports of dissatisfaction with particular parts of the body also reported experiencing significantly more somatic complaints. Considering that body dysmorphic disorder is classified as a somatoform disorder, the occurrence of physical complaints along with dysmorphic concerns is not unexpected.

Despite the fact that body dysmorphic disorder and obsessive–compulsive share similarities indicative of a link between them (Bienvenu et al., 2000), differences have also been discovered (Eisen et al., 2004; Frare et al., 2004). These differences might well include physical complaints. Veale and Riley (2001) asserted that compulsions, such as mirror checking, which occur in body dysmorphic disorder "do not seem to follow a simple model of anxiety reduction that occurs in the compulsive checking of OCD". The presence of anxiety along with appearance preoccupations as well as the continued preoccupation with appearance in the majority (95%) of patients undergoing cosmetic rhinoplasty in the present sample appears to confirm this assertion. In conclusion, results of the present study imply that body dysmorphic concerns are more similar to compulsions and are better conceived of either as an obsessive–compulsive spectrum disorder or as morbid manifestations of inflexible perfectionistic tendencies seen in obsessive–compulsive personality disorders. Psychiatric assessment prior to surgical intervention for esthetic reasons might help identify patients unlikely to benefit from the procedure. Furthermore, the fact that fewer patients reported dissatisfaction with body parts might indicate that, at least in the short run, cosmetic rhinoplasty may be beneficial, but the findings that after the surgery, the proportion of patients reporting positive evaluations of their appearance did not change significantly and that a larger percentage of patients reported preoccupation with appearance underscores the need for pre-surgical psychiatric evaluation.

Methodological limitations of the current study should be noted. First, the generalizability of the findings is not certain as participants were recruited only from two clinics. There may also be concerns about sample size, a not so uncommon limitation in studies conducted on samples from clinical settings. Another limitation is that the pre- and post-data were collected only once with a 3-month time lag, so data pertaining to the outcome of the surgical intervention has questionable reliability. Finally, lack of categorical data for BDD and personality disorders and the bias represented by the Islamic covering also restricts the generalizability of the findings.

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