Body dysmorphic disorder and depression symptoms in patients seeking rhinoplasty: The mediating role of self-esteem and anxiety

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SUMMARY

Objective: Body dysmorphic disorder (BDD) is prevalent in patients seeking for rhinoplasty. Yet, psychological assessment of rhinoplasty patients is often dismissed in clinical practice. Findings on depression and anxiety, the two conditions that are highly comorbid with BDD, as well as possible associations between depression and self-esteem are however mixed in the very same group. This study aimed to test a model that explains the relationship between BDD and depression symptoms mediated by self-esteem and symptoms of anxiety.

Method: 50 rhinoplasty-planned patients and 42 healthy participants were recruited (Age range: 18-54 years, M=28). Demographic information, scores of BDD, depression and anxiety symptoms and self-esteem were collected.

Results: Study groups did not differ significantly in terms of age, gender, level of education/income, marital/work status and history of psychiatric treatment. BDD symptom scores, on the other hand, were significantly higher in the rhinoplasty group compared to control group ($p<.001$). Symptom scores of BDD, depression and anxiety were correlated significantly in both study groups ($p<.001$-$.05$). The mediation model tested showed that self-esteem and anxiety symptoms significantly mediated the relationship between BDD and the depressive symptoms.

Discussion: The model holds promise not only for explaining the mixed results of anxiety and depression in rhinoplasty patients but also for drawing inferences about the role of self-esteem and anxiety on the relationship between BDD and depression

Key Words: Rhinoplasti, body dysmorphic disorder, depression, self-esteem, anxiety

INTRODUCTION

Body dysmorphic disorder (BDD) is a psychopathology characterized by excessive preoccupation with unreal or exaggerated body-related defects (1). This excessive preoccupation has led to the classification of BDD as a disorder related to obsessive-compulsive disorders with recent regulations (1). It is known that genetic factors (approximately 43%) as well as environmental effects such as exposure to bullying and abuse in childhood play a role in the emergence of BDD (2). Although it is more common in women (2.1%-1.6%), higher prevalence of BDD is reported in various clinical groups compared to the general population (1.9%): For example, 7.4% in psychiatric patients and 9.2-13.2% in general cosmetic surgery patients (3). It is noteworthy that prevalence values are considerably higher in rhinoplasty clinics (20.7%), and these results suggest that this clinical sample is an important population to be studied in relation to both BDD and other related processes (3).

The fact that the face is the most visible body region in social interactions may explain why people with BDD prefer surgical interventions related to the face and aesthetic operations for the nose more among these interventions (4). This situation may cause clinically unfavorable surgical results and problems. Rhinoplasty patients with BDD may request inappropriate additional interventions, which may lead to legal problems and/or

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these patients may exhibit various forms of violent behavior against specialists (5,6). In addition to all these potential problems, the operations may also have negative psychological consequences for patients (5). Furthermore, when the clinical profiles of individuals with BDD are examined, it is observed that other psychopathologies frequently co-exist. In particular, comorbid anxiety disorders and depression with BDD may prevent the diagnosis of BDD and the application of appropriate treatment protocols. These individuals are mostly diagnosed with social anxiety disorder, major depressive disorder and obsessive-compulsive disorder by overlooking the underlying BDD (7).

In addition to the fact that comorbid psychopathologies may mask the diagnosis of BDD, they may also have negative effects on the clinical presentation of BDD. In particular, the relationship of BDD with anxiety and depression stands out in studies conducted on both clinical and non-clinical samples and its possible effects are examined (7, 8). For example, it has been observed that comorbid anxiety with BDD is a risk factor for impaired functionality of individuals and increase the risk of major depressive disorder (9,10). Anxiety has also been reported to be associa-ted with poor quality of life and high depression scores accompanying BDD (11). These findings are similar in cosmetic surgery patients. High anxiety and depression scores were recorded in cosmetic surgery patients diagnosed with BDD and a more significant relationship was observed between these scores compared to non-clinical comparison groups (4). However, it is known that these results are mixed in rhinoplasty patients although the prevalence of BDD is quite high. More studies are needed to understand the relationship between BDD and depression and anxiety symptoms (12).

It may be thought that the role of self-esteem may be enlightening in examining the relationship between depression and anxiety symptoms comorbid with BDD. Previous studies examining the effect of shame on BDD (13) indicate that comorbid depression, suicidal tendency and impairments in functionality are more common in cases where shame exceeds body image and characterizes the self as worthless or defective. A similar situation may also explain the relationship between BDD, anxiety and depression; therefore, self-esteem may explain the complex comorbidity profile seen in this group. Indeed, the relationship between high BDD symptom severity and low self-esteem shows that people with BDD evaluate not only their bodies but also their selves negatively. Moreover, it seems that the relationship between BDD and self-esteem cannot be explained only by possible depression symptoms (14). Studies conducted in non-clinical samples also draw attention to the relationship between high BDD symptoms and high anxiety/depression and low self-esteem (15, 16).

This study aims to test a model explaining the relationship between BDD and depression symptoms through self-esteem and anxiety symptoms in a sample of rhinoplasty patients and a non-clinical control group of healthy participants. The hypotheses of the study are that the symptoms of BDD are higher in rhinoplasty patients compared to healthy participants and that the relationship between BDD and depression symptoms can be explained by the mediating role of self-esteem and anxiety symptoms. It is thought that the results of the study will contribute to the inconsistent literature on the psychopathological profiles of rhinoplasty patients. The possible mediating role of self-esteem may help to understand the complex relationship between depression and anxiety symptoms associated with BDD and guide treatment approaches for this group.

METHOD

Within the scope of the study, which was reviewed and approved by the Ethics Commission of Gazi University Faculty of Medicine, 50 patients who were planned to undergo rhinoplasty between February 2022 and February 2023 and 42 healthy participants to be included in the control group were reached. The rhinoplasty group consisted of people who applied to Ankara Gazi University Faculty of Medicine Hospital Otorhinolaryngology outpatient clinic for rhinoplasty surgery on the specified dates and gave written voluntary consent to participate in the study. Exclusion criteria for the rhinoplasty group were patients with pathologies other than septonasal deformity (nasal and paranasal sinus neoplasms, other surgical indica-

Table 1. Demographic profiles of rhinoplasty and control groups: Mean (sd) / number of people (%)

		Rhinoplasty (n=50)	Control (n=42)	x^2	df	*p*
Age[a]		28.06(7.87) 18-54	28.10(7.24) 18-44	-	-	.99
Gender	Female	23 (%46)	18 (%43)	0.09	1	.84
	Male	27 (%54)	24 (%57)			
Level of education	Primary/Secondary School	11 (%22)	10 (%24)	0.17	2	.93
	High school	15 (%30)	11 (%26)			
	University/above	24 (%48)	21 (%50)			
Marital status [b]	Single (never married)	28 (%56)	26 (%62)	-	-	.88
	Married	19 (%38)	14 (%33)			
	Divorced/Separated	3 (%6)	2 (%5)			
Job Status	Working	33 (%66)	29 (%69)	0.10	1	.83
	Not working	17 (%34)	13 (%31)			
History of psychiatric treatment	Yes	4 (%8)	8 (%19)	2.46	1	0.13
	No	46 (%92)	34 (%81)			

[a]$t(90)=0.02$, $d=.01$ (Bootstrapped t-test); [b]Fisher s exact test

tions related to the paranasal sinus, nasopharyngeal pathologies causing nasal obstruction, etc.) and known psychiatric or neurological disorders. The healthy control group who had no nasal symptoms, had not undergone rhinoplasty or similar plastic surgery before, and had no known psychiatric or neurological disorders voluntarily participated in the study via social media and announcements made at Ankara Haci Bayram Veli University and Social Sciences University of Ankara. Demographic information of the participants is presented in Table 1.

Scales

All participants were given a demographic information form prepared by the researchers asking information such as age, education level, employment status, marital status and psychiatric history. The Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS) was used to measure BDD symptoms (17, 18). Consisting of 12 items and having a semi-structured structure, the BDD-YBOCS is a Likert-type scale in which BDD symptoms are evaluated between 0 and 4. According to the results of the Turkish validity and reliability study, the scale has high validity and reliability values (18). The Hospital Anxiety and Depression Scale (HADS) was used to measure anxiety and depression symptoms of the participants (19, 20). It is known that the scale, which has good/very good Turkish validity and reliability, has been used in the literature to measure anxiety and depression symptoms in both clinical and non-clinical samples. The questions about anxiety and depression symptoms, which are seven items each, are evaluated with 4-point Likert-type options. In the measurement of self-esteem, the Self-Esteem subscale of the Rosenberg Self-Esteem Scale (RSES), which consists of the first ten questions and has a 3-point Likert-type scoring, was used (21, 22). In the Turkish validity and reliability study of the RSES, which has long been used in the literature to measure self-esteem, it was reported that the relevant values were at a good level (21). 'Participants also completed a one question subjective assessment of nasal appearance on a scale of 0 (very unpleasant) to 7 (very pleasant), which allowed them to evaluate their own noses.

Statistical analysis

SPSS 25 program and PROCESS Macro plug-in were used for data analysis. The demographic information, self-esteem, anxiety and depression scores of the participants in the rhinoplasty and control groups were compared using Chi square/Fisher's Exact test and t-test (by applying Bootstrap in nonparametric cases). Pearson's r or Spearman's rho values were used to examine the relationships between variables. Hayes' model number 6 was applied to test the mediating role of self-esteem and anxiety scores in the relationship between BDD and depression.

Table 2. Scores of BDD (BDD-YBOCS), anxiety and depression (HADS), self-esteem (RSES), and subjective nasal appearance assessment of the rhinoplasty and control groups: Mean (sd) / number of people (%)

	Rhinoplasty (n=50)	Control (n=42)	*t*	*df*	*p*	*d*
BDD	14.64 (8.54)	9.38 (7.10)	-3.18	90	.002**	.67
Anxiety	7.44 (4.19)	7.33 (3.71)	-0.13	90	.90	.03
Depression[a]	5.90 (3.27)	5.48 (3.61)	-0.59	90	.58	.12
Self-esteem[a,b]	0.99 (0.69)	1.08 (0.74)	0.61	90	.54	.13
Subjective evaluation of nasal appearance[c]	3.18 (1.49)	4.45 (1.69)	3.84	90	<.001	.80

[a] Bootstrapped t-test; [b] Higher score=Lower self-esteem

RESULTS

There was no significant difference between the rhinoplasty and control groups in terms of demographic characteristics (Table 1).

It was observed that the BDD-YBOCS scores of the rhinoplasty group were significantly higher than those of the control group (p=.002). As expected, the rhinoplasty group found their noses subjectively uglier than the control group (p<.001). There was no significant difference between the anxiety (p=.90), depression (p=.58) and self-esteem (p=.54) scores of the study groups as assessed by the HADS and RSES-Self Esteem subscale, respectively (Table 2).

When the relationships between the variables were examined, significant correlation values were found between BDD, anxiety, depression and self-esteem scores in both rhinoplasty and control groups (Table 3). Accordingly, in both groups, high BDD symptom levels seem to be associated with high anxiety and depression scores and low self-esteem.

The mediation model examining the mediating role of self-esteem and anxiety level on the relationship between BDD and depression scores was found to be significant independent of the study group ($F(4,87)=8.69$, $p<.001$, $R^2=.47$). All variables in the model were significantly related as expected (Figure 1). However, the significant relationship between BDD and depression symptoms ($t(89)=4.29$, $p<.001$), which was found when the effect of mediating variables was not controlled, became insignificant with the mediating role of self-worth and anxiety scores, respectively ($t(87)=1.11$, $p=.27$). The results suggest that low self-esteem in relation to symptoms of BDD may be associated with high anxiety symptoms and thus high depressive symptoms (Figure 1).

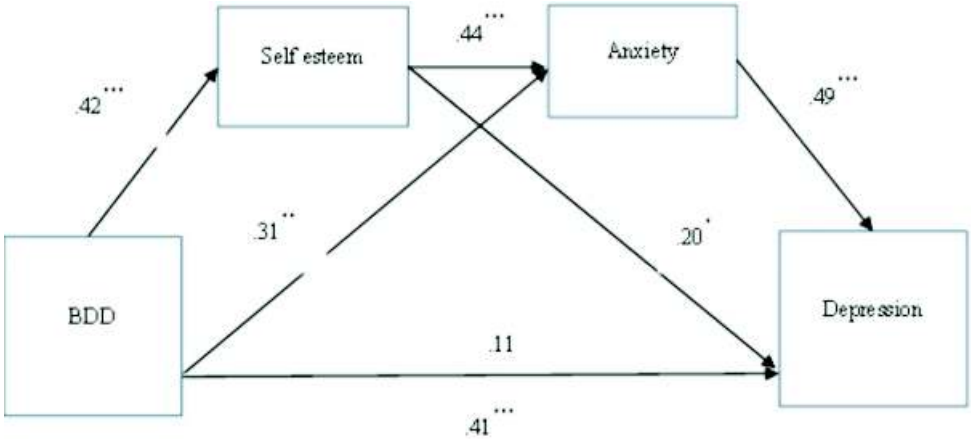

Figure 1. Standardized regression coefficients for the model explaining the mediating role of self-esteem (RSES) and anxiety (HADS) symptoms in the relationship between BDD (BDD-YBOCS) and depression (HADS) symptoms. *p<.05, **p<.01, ***p<.001

Table 3. Correlations between BDD (BDD-YBOCS), anxiety and depression (HADS), and self-esteem (RSES) scores of the rhinoplasty and control groups: Pearson s r / Spearman s rho

		BDD	Anxiety	Depression	Self-esteem[a]
		Rhinoplasty / Control	Rhinoplasty / Control	Rhinoplasty / Control	Rhinoplasty / Control
BDD	Rhinoplasty / Control	-	.44** / .56***	.28* / .49**b	.36*b / .37*b
Anxiety	Rhinoplasty / Control	-	-	.58*** / .67***b	.40**b / .62***b
Depression	Rhinoplasty / Control	-	-	-	.42**b / .50***b
Self-esteem[a]	Rhinoplasty / Control	-	-	-	-

[a] High score = low self-esteem; [b]Spearman s rho.

DISCUSSION

This study provides significant results that the relationship between BDD and depression symptoms can be explained by the mediating role of self-esteem and anxiety symptoms. In addition to helping to understand the relationship between symptoms of BDD and depression, these results indicate that anxiety symptoms, which are frequently associated with BDD, may be related to an experience of self-worthlessness beyond the body in these individuals.

As expected, the results confirmed that rhinoplasty patients had higher levels of BDD symptoms compared to the control group. In a recent systematic review study, it was suggested that inconsistent results regarding anxiety and depression findings in rhinoplasty patients seen in the literature may be related to the effect of possible BDD symptoms (12). This suggestion is also supported by the results of the present study. The relationship of BDD symptoms, which are highly likely to be present especially in rhinoplasty patients, with anxiety and depression symptoms through low self-worth as well as loss of body-related self-confidence may facilitate the understanding of the psychiatric clinical profile in this group.

The findings of the study are consistent with the results of Weingarden and colleagues (13), who previously examined the mediating role of shame in the relationship between BDD and depression, suicide risk and functioning. In the aforementioned study, the researchers suggested that a body-oriented shame may be more highly associated with BDD as expected, while a generalized sense of shame may be more highly associated with some of the negative psychosocial outcomes associated with BDD. It is conceivable that such generalized shame may be associated with low self-esteem, thereby explaining the comorbidities that often accompany BDD, such as anxiety and depression. As a matter of fact, the model proposed in this study supports a relationship mechanism in which low self-esteem accompanying symptoms of BDD is associated with higher anxiety and depressive symptoms. Thus, the findings point to important implications regarding the role of anxiety disorders besides depression in the relationship mediated by a worthlessness schema that extends beyond the body.

It can be seen that this model, which helps to understand the relationship between BDD and comorbid psychopathologies such as anxiety and depression, which are frequently seen together, is similar to the vulnerability model of depression (23). According to this model, beliefs that the self is worthless for some reason predict susceptibility to depressive symptoms. Orth and Robins (23) suggest that negative outcomes related to interpersonal relationships (social avoidance, etc.), one of the possible mediating variables in the relationship between low self-worth and depression, should be included in the vulnerability model and the model

in question should be examined in more detail. All these findings and suggestions indicate that there is a need for further studies on the mechanism of anxiety symptoms that mediate the relationship between BDD and depression together with low self-worth.

The results of the study also draw attention to a number of implications that can be used in clinical practice. The predisposition of rhinoplasty patients to BDD and related additional psychopathological symptoms points to the importance of including psychiatric evaluations in clinical protocols. Adding interventions aimed at improving self-worth to clinical practices for individuals with low self-esteem in BDD groups may be helpful in combating anxiety and depressive symptoms (24). In particular, working with the beliefs of individuals with BDD with low self-worth about subjective devaluation with compassion-based practices may have positive effects on appearance-related comorbidity and functioning (6). Randomized controlled studies on this subject are needed.

There may be several reasons why the proposed model is valid in both rhinoplasty and control groups. For example, it is seen that the control group included in the study was quite similar to the rhinoplasty group except for the symptoms of BDD. In addition, participants in the rhinoplasty group did not undergo any psychiatric evaluation. In other words, although the symptoms of BDD were significantly higher, the participants in the rhinoplasty group did not represent any clinical diagnostic group. This suggests that the self-esteem and anxiety symptoms-mediated model explaining the relationship between BDD and depression may be a generally valid model. Consistent results from non-clinical samples regarding the relationship between BDD, self-esteem and depression make this inference highly probable (14). Future studies may contribute to the literature on the extent of its validity by testing the model in different sample groups, both clinical and non-clinical.

The cross-sectional design, relatively small and non-clinical sample in terms of psychopathology can be considered among the limitations of the study. Future studies can test the validity of the results on clinically diagnosed groups, preferably with longitudinal designs. Furthermore, the role of other possible mediators pointed out in the literature (e.g., shame, 25) in the relationship between BDD and depression could be investigated using more complex models. The results of the study also suggest that suicidality observed with or alongside depression (26, 27), which may be explained by similar models in BDD groups, could be examined by future studies with groups of appropriate size and quality. The theory that symptoms of BDD and the accompanying generalized self-devaluation perception may lead to depressive symptoms through avoidance of social relationships and activities, as pointed out by previous shame studies (11, 13), suggests whether the anxiety symptoms included in the model can rather be explained by social anxiety symptoms. The possible effects of demographic characteristics such as age and gender can also be tested with customized models and designs thus contribute to testing the validity of the relevant model. Longitudinal designs can be considered as quite appropriate especially for the investigation of age and accompanying psychosocial factors. In the literature, the need for longitudinal studies especially on symptoms of BDD and self-esteem draws attention. There is a need for such studies to test models that will make a great contribution to the field by including other possible factors.

In conclusion, understanding the symptoms of depression and anxiety that can be seen together with symptoms of BDD in high-risk groups such as rhinoplasty patients is valuable in terms of developing and implementing efficient treatment protocols as well as being useful in dealing with possible problems in clinical practice. In groups with high BDD symptoms, the predisposition of individuals to high anxiety with a perception of worthlessness that extends from the body to the self and ultimately to comorbid psychopathologies such as depression, which have a negative impact on quality of life and functionality, reveals the importance of carefully evaluating these findings and putting them on the agenda.

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