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# Body Dysmorphic and Narcissistic Personality Disorder in Cosmetic Rhinoplasty Candidates

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## Abstract

**Background** Body dysmorphic disorder (BDD) and other psychological problems are more common in cosmetic surgery applicants.

**Objective** The aim of this study was to investigate the frequency of the symptoms of BDD and narcissistic personality disorder in rhinoplasty candidates.

**Materials and Methods** This descriptive cross-sectional study was performed on rhinoplasty applicants. All subjects were evaluated by BDD and narcissistic personality questionnaires (NPI-16).

**Results** A total of 380 patients were studied. Our findings showed that the prevalence of mild, moderate, and severe BDD symptoms was 31.6%, 43.4% and 25%, respectively. The mean BDD scores were not significantly different in variables such as gender, age, marital status, history of cosmetic surgery, education, place of residence, and income. 29.5% of the subjects had symptoms of narcissism. There was no significant relationship between the symptoms of narcissism and variables such as gender, age, marital status, history of cosmetic surgery, place of residence, and income. Higher education was associated with

higher rates of narcissistic personality disorder ( $p$ -value = 0.021).

**Conclusions** According to the results of the study, there was no statistically significant relationship between BDD score and demographic parameters. Also, association between narcissistic personality disorder and demographic characteristics was not significant except for education.

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**Keywords** Rhinoplasty · Plastic surgery · Body dysmorphic disorder · Narcissistic personality disorder · Personality disorders

## Introduction

Cosmetic surgeries have become much more popular during the last decades. The fourth most common cosmetic surgery is rhinoplasty which is more popular among Asians. Research has shown that the highest rate of rhinoplasty can be attributed to Iranians [1, 2].

According to DSM-5, body dysmorphic disorder (BDD) can be defined as mental conflicts of a person about having one or more defects in his/her physical appearance which are slight or cannot be seen by others [3], so in order to improve their self-image they undergo cosmetic surgeries [4]. Mental health status also plays an important role in post-operative satisfaction, and the patients' dissatisfaction cause problems for their surgeons [5]. Research has shown that although cosmetic surgery could improve these

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patients' self-esteem, their body image orientation did not differ significantly after the surgery [6].

Some studies have shown that psychological disorders such as BDD are more prevalent among rhinoplasty candidates. Previous studies have reported that the rate of BDD is about 0.7% to 3% in normal population, whereas in cosmetic surgery seekers the rate is 6 to 15% [7]. Ramos et al. concluded that 48% of people who applied for cosmetic rhinoplasty had BDD, which is a higher rate of BDD than the normal population [8]. A study in 2020 reported that although BDD prevalence in normal population (control group) was 3.2%, 35.1% of rhinoplasty applicants had BDD [9].

Narcissistic personality disorder is another mental illness which is related to the increased attempt for rhinoplasty [10]. It is characterized by the need for admiration, grandiosity, jealousy, and lack of empathy. Such people also believe that they are special [11]. Even though they continuously try to gain external self-affirmation in order to protect their grandiosity, they become more fragile over time [12]. A research has shown that the prevalence of narcissism in candidates of aesthetic procedures is 34.5% [13].

Till now, the focus has been on post-operative issues and preoperative psychiatric disorder diagnosis has not been considered sufficiently. The screening for personality disorders before performing cosmetic operation is essential since patients with personality disorders who seek cosmetic procedures may need psychiatric treatments before the intervention. Consequently, pre-op diagnosis of psychiatric disorders is important due to the possibility of pre-op treatment [13, 14].

In this study, we have evaluated the prevalence of preoperative BDD and narcissistic personality disorder among rhinoplasty applicants.

## Materials and Methods

Our study was a prospective cross-sectional study which was conducted on 380 cases who underwent rhinoplasty in Dastgheib hospital affiliated to Shiraz University of Medical Sciences, Shiraz, Iran, during 2018–2019.

All patients signed an informed consent prior to their participation in the study. The study protocol was approved by the institutional review board (IRB) of Shiraz University of Medical Sciences and the approval of the Ethics Committee was obtained before the study was commenced (Ethic code: IR.SUMS.MED.REC.1397.438).

The inclusion criteria were minimum age of 18 years old, negative history of any nasal defects due to trauma, and ability to write and read. Patients were excluded if they did not fill out the questionnaire completely.

In this study, we used a three-part questionnaire; the first part was the demographic questionnaire which consisted of some questions about gender, age, marital status, education, economic status, place of residence, previous cosmetic surgery, history of psychiatric disorder, and psychiatric drug consumption or drug abuse.

The second part was evaluation of BDD symptoms which consisted of 31 questions. Each question could get a score from 1 to 5. A total score between 31 and 62 showed mild BDD, between 62 and 93 moderate BDD, and more than 93 was severe BDD [15].

The third part was the narcissistic personality disorder questionnaire, NPI-16, and the scores could vary from 0 to 16; scores more than 7 were considered as having narcissistic personality disorder [16].

In the descriptive analysis, the available data for the numerical variables were expressed as the mean ( $\pm$  standard deviation), and the categorical variables were expressed as frequencies and percentages. The relationship between the two categorical variables was determined using the Chi-square test or the Fisher's exact test. All statistical analyses were performed using SPSS software, version 23 (SPSS Inc. Chicago, IL). A *p*-value of  $< 0.05$  was considered statistically significant.

## Results

Of 380 participants, 210 (55.3%) were female. Table 1 shows demographic and clinical data of the participants of the study. As shown, 76.1% of the patients had undergone cosmetic surgery for the first time. Ninety-five percent of the participants had no history of any psychiatric disorders. Among people with positive history of psychiatric disorder, depression was the most prevalent disorder.

The mean ( $\pm$  SD) of BDD score was 77.81 ( $\pm$  27.72). The results showed that 31.6% of the patients (120 patients) suffered from mild BDD. Moderate BDD was the most prevalent type of BDD among our study group with a prevalence of 43.4%. The rest of the patients (25%, 95 patients) were diagnosed with severe BDD symptoms. The results of narcissistic personality questionnaire showed that its prevalence among our study group was 29.5% (112 patients). Chi-square results showed no statistically significant relationship between BDD score and demographic parameters (Table 2). Also, no statistically significant relationship was observed between narcissistic personality disorder and demographic characteristics, except for education (*p*-value = 0.021) (Table 3).

**Table 1** Demographic and clinical data of the participants

Variables		Number	Prevalence
Gender	Male	170	44.7
	Female	210	55.3
Age (years)	18–25	145	38.2
	26–35	225	59.2
	> 35	10	2.6
Marital status	Single	162	42.6
	Married	218	57.4
Education	Diploma or below	151	39.7
	Associate's degree	94	24.7
	Bachelor's degree	72	18.9
	Master's degree or above	63	16.7
Place of residence	Center of province	276	72.6
	Other cities	104	27.4
Income (per month)	500\$>	184	48.4
	500–1000\$	166	43.7
	1000–1500\$	24	6.3
	> 1500\$	6	1.6
Previous cosmetic surgery	Yes	90	23.7
	No	289	76.3
History of psychiatric disorder	Yes	19	5
	No	360	95
Psychiatric disorder	Anxiety	3	15.8
	Depression	16	84.2
Psychiatric drug consumption	Yes	18	4.7
	No	361	95.3

## Discussion

In this study, we assessed the prevalence of preoperative BDD and narcissistic disorder among cosmetic rhinoplasty applicants. Moderate BDD was the most prevalent type of BDD among our study group with a prevalence of 43.4%. The prevalence of narcissistic personality was 29.5%.

Our results showed that the number of women (55.3%) that had undergone surgery was slightly more than men (44.7%). This was in contrast to the result of ASPS National Clearinghouse of Plastic Surgery Procedural Statistics, in which about 23.9% of rhinoplasty seekers were men [2]. Women comprised 78% of rhinoplasty candidates in Ramos et al.'s study [8]. In a study by Rabaioli et al., 59.5% of the participants were female [17].

In our study, the majority of the rhinoplasty applicants were 26 to 35 years old, followed by the 18- 25-year-old group. This is in the same line with the study of Borujeni et al. which reported the age group of 20 to 24 years old to be the most prevalent age group among their patients [18].

While 43.4% and 25% of our patients suffered moderate and severe BDD, respectively, in Kashan et al.'s study, 16.7% of facial cosmetic procedure seekers were classified

as high risks for BDD [19]. In a review article written by Sarwer, it was mentioned that the rate of BDD in cosmetic surgery seekers in international studies varied from 2.9 to 53% and the validity of higher rates were doubtful, but the prevalence between 3.2 and 16% was achieved using rigorous methods [20]. In the investigation by Rabaioli et al., 38% of the cases had symptoms of BDD and 8% of them presented severe BDD [17]. In Bulut et al.'s study, 5 out of 51 patients (9.8% of the functional septorhinoplasty seekers) were categorized into BDD group, using BDD Concern Questionnaire (BDDQ) and Dysmorphic Concern Questionnaire (DCQ) [21]. In another study by Saeed et al., 41.8% of the rhinoplasty candidates were marked as BDD cases by using DCQ [22].

Similar to our results, Rabaioli et al. in 2020 concluded that no statistically significant relationship could be found between the presence or severity of BDD and age, gender, educational status and previous nasal surgery [17]. Our results were consistent with those of Saeed et al.'s study in 2021 which concluded that the majority of aesthetic rhinoplasty candidates were single, young, and were suffering psychiatric problems such as BDD or narcissistic personality disorder. They showed most of the patients

**Table 2** Relationship of demographic variables with different stages of BDD

Variables		Stage of BDD			<i>p</i> -value
		Mild	Moderate	Severe	
Gender	Male	68 (32.4)	89 (42.4)	53 (25.2)	0.896
	Female	52 (30.6)	76 (44.7)	42 (24.7)	
Age	18–25 y/o	46 (31.7)	61 (42.1)	38 (26.2)	0.878
	26–35 y/o	72 (32)	100 (44.4)	53 (23.6)	
	> 35 y/o	2 (20)	4 (40)	4 (40)	
Marital status	Single	70 (32.1)	94 (43.1)	54 (24.8)	0.973
	Married	50 (30.9)	71 (43.8)	41 (25.3)	
Education	Diploma or below	37 (24.5)	72 (47.7)	42 (27.8)	0.410
	Associate's degree	35 (37.2)	38 (40.4)	21 (22.3)	
	Bachelor's degree	26 (36.1)	28 (38.9)	18 (25)	
	Master's degree	22 (34.9)	27 (42.9)	14 (22.2)	
Place of residence	Center of province	87 (31.5)	119 (43.1)	70 (25.4)	0.508
	Other cities	20 (27.8)	36 (50)	16 (22.2)	
	Village	13 (40.6)	10 (31.3)	9 (28.1)	
Income (per month)	< 500\$	57 (31)	86 (46.7)	41 (22.3)	0.652
	500–1000\$	51 (30.7)	70 (42.2)	45 (27.1)	
	1000–1500\$	10 (41.6)	7 (29.2)	7 (29.2)	
	> 1500\$	2 (33.3)	2 (33.3)	2 (33.3)	
History of previous cosmetic surgery	Yes	32 (35.6)	40 (44.4)	18 (20)	0.393
	No	88 (30.4)	124 (42.9)	77 (26.7)	
History of psychiatric disorder	Yes	10 (52.6)	7 (36.8)	2 (10.6)	0.102
	No	110 (30.6)	157 (43.6)	93 (25.8)	
Psychiatric drug consumption	Yes	9 (50)	7 (38.9)	2 (11.1)	0.190
	No	111 (30.7)	156 (43.5)	93 (25.8)	

were single, with an education above diploma, and between 24 and 28 years old. The statistical analysis showed a significant relationship between BDD and the age group of 24 to 28 years old ( $p$ -value = 0.0001) [22].

The mean of the BDD score was 77.81 in our study, which represents the intermediate status of the body dysmorphia. This is in contrast to Khosravi et al.'s study which concluded that BDD score among rhinoplasty seekers was 99.8 [23].

According to the low income of most of the participants in our study, it can be postulated that the high expenses of the surgery have not prevented them from doing it. Similarly, Borujeni et al. in 2020 reported that unemployed people and students made a larger proportion of rhinoplasty applicants than other groups [18]. In contrast, the study of Pirahari et al. in 2018 concluded that the tendency toward undergoing rhinoplasty was increased by their income [24].

In our study, about 29.5% of the cases were diagnosed with narcissistic personality disorder. It was in the same line with the study of Loron et al. which concluded that 34.5% of aesthetic procedure seekers had narcissistic personality disorder [13]. In the study by Zojaji et al,

narcissistic personality disorder was the most common (26.7%) psychological characteristics that provoke individuals to undergo rhinoplasty surgery [25]. Fitzpatrick et al. concluded that narcissism was not related to increased tendency toward cosmetic surgery, but it could cause an increased cosmetic surgery interest if it was accompanied by perfectionism [26]. Babuccu et al, investigated the relation of psychological and demographic characteristic of patients with satisfaction rate. The results showed no significant correlation between Minnesota Multiphasic Personality Inventory results and post-operative satisfaction [27]. Another study showed narcissistic trait was linked with positive appearance evaluation [28]. As mentioned above, what causes narcissistic people to do aesthetic surgeries is their desire for external self-affirmation in order to protect their grandiosity [12].

Post-operative patients' satisfaction is a multi-factorial variable in patients undergoing rhinoplasty. It depends not only on the post-operative shape and form of the nose, but also it depends on olfactory function and degree of nasal obstruction. According to our experience, we believe that patients with BDD or narcissistic personality disorders,

**Table 3** Relationship of demographic variables with narcissistic personality disorder

Variables		Normal	Narcissist	<i>p</i> -value
Gender	Male	118 (69.4)	52 (30.6)	0.734
	Female	150 (71.4)	60 (28.6)	
Age	18–25 y/o	102 (70.3)	43 (29.7)	0.861
	26–35 y/o	158 (70.2)	67 (29.8)	
	> 35 y/o	8 (80)	2 (20)	
Marital status	Single	154 (70.6)	64 (29.4)	0.954
	Married	114 (70.4)	48 (29.6)	
Education	Diploma or below	119 (78.8)	32 (21.2)	0.021
	Associate's degree	65 (69.1)	29 (30.9)	
	Bachelor's degree	46 (63.9)	26 (36.1)	
	Master's degree or above	38 (60.3)	25 (39.7)	
Place of residence	Center of province	199 (72.1)	77 (27.9)	0.553
	Other cities	48 (66.7)	24 (33.3)	
	Village	21 (65.6)	11 (34.4)	
Income (per month)	< 500\$	122 (66.3)	62 (33.7)	0.346
	500–1000\$	122 (73.5)	44 (26.5)	
	1000–1500\$	19 (79.2)	5 (20.8)	
	> 1500\$	5 (83.3)	1 (16.7)	
History of previous cosmetic surgery	Yes	63 (70)	27 (30)	0.915
	No	204 (70.6)	85 (29.4)	
History of psychiatric disorder	Yes	12 (63.2)	7 (36.8)	0.606
	No	255 (70.8)	105 (29.2)	
Psychiatric drug consumption	Yes	11 (61.1)	7 (38.9)	0.428
	No	256 (70.9)	105 (29.1)	

more likely remain unhappy with the outcome of rhinoplasty. But in some cases, with severe nasal obstruction, post-operative reduction in nasal obstruction scores makes the patients satisfied. Based on our experience, preoperative psychiatric evaluation and consultation of patients could be helpful for surgeons to refrain from operating on these patients and minimize contacts between patients and surgeons and also legal issues. But it may lead to a low rate of operation in cases with true indications of septorhinoplasty including discomfort from nasal obstruction, nasal septal deformity, and possible nose bleeding. Discrimination of the cases with real indications of surgical treatment from those affected by psychiatric disorders, capable of interfering in the body self-perception is important to avoid unnecessary operation with unsatisfactory outcomes. Surgeons should be able to assess psychological motivations and patients' expectations in the preoperative visits. Therefore, we recommend precise preoperative assessment of patients for determining the indication of septorhinoplasty. We recommend against the operation of patients who had more complaints about the shape of his/her nose without indications of septorhinoplasty such as patients with minimal nasal obstruction. On the other hand,

operating patients with severe nasal obstruction and poor nasal function may lead to more satisfactory results and patient's acquiescence.

It is recommended that similar studies should be conducted among adolescents and young people, using larger sample sizes. Also, by considering the relationship of the patients' personality disorder and their post-op satisfaction, more comprehensive results could be obtained.

## Conclusion

According to the results of the study, there were no statistically significant relationship between BDD score and demographic parameters. Also, association between narcissistic personality disorder and demographic characteristics was not significant except for education. It seems that most of the rhinoplasty applicants have moderate BDD symptoms and this personality disorder is related to increased attempt and referral for cosmetic rhinoplasty. The frequency of narcissistic personality disorder among these applicants was not relatively high. It could be

concluded that body dysmorphia acts as a more potent trigger for rhinoplasty.

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#### Declarations

**Conflict of interest** The authors have no conflicts of interest to disclose.

**Ethical Approval** The study protocol was approved by the institutional review board, and approval of the ethics committee was obtained before the study began.

**Informed Consent** Informed consent was obtained from all participants.

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