Indian Journal of Otolaryngology and Head & Neck Surgery (2024) 76:1549–1553
https://doi.org/10.1007/s12070-023-04355-3

ORIGINAL ARTICLE

Comparison of the Prevalence of Body Dysmorphic Disorder in Rhinoplasty Patients and its Influence on its Surgical Outcomes

Vahid Aghsaghloo[1] · Saba Sadeghi Meibodi[2] · Sevil Nasirmohtaram[3] · Ali Faghih Habibi[1] · Roghie Zare[4] · Adele Isanazar[5] · Ali Ashraf[6]

Received: 17 June 2023 / Accepted: 12 November 2023 / Published online: 19 December 2023

Abstract

Introduction Body dysmorphic disorder (BDD) in the Diagnostic and Statistical Manual of Mental Disorders 5th Edition, is defined as one of pseudo-obsessive disorders; a class of obsessive-compulsive disorders. Whereas BDD has been weakly investigated among the Middle east population and there are little data about the prevalence of BDD in Iran especially in the northern part, in this study we tend to investigate the prevalence rate of BDD and its relationship with demographic factors and post-operative satisfaction in a sample of candidates for cosmetic and non-cosmetic surgery in Rasht.

Method During an analytical cross-sectional study, we investigated the prevalence of BDD in 100 applicants for cosmetic surgery (rhinoplasty) and 100 applicants for non-cosmetic surgery (including septoplasty and FESS) who were referred to Amir Al-Momenin Hospital in 2022. The modified Yale-Brown Obsessive Compulsive Questionnaire was used to examine BDD. Also, postoperative satisfaction (3 months later) was evaluated and compared in these two groups through telephone calls. SPSS software version 22, Fisher's test, chi-square test, independent t-test, and multiple logistic regression analysis were used for statistical analysis of the collected data.

Results The frequency of BDD in rhinoplasty applicants is significantly higher than the non-cosmetic surgery applicants (P-value = 0.005). The chance of BDD in rhinoplasty applicants is 4 times more than in non-cosmetic surgery applicants (P-value = 0.001, OR = 4.03). There is no significant difference in post-operative satisfaction between cosmetic and non-cosmetic surgery applicants (P-value = 0.975).

Conclusion It is recommended that all applicants for cosmetic surgeries be examined with appropriate tools in terms of mental health before being accepted by surgeons so that they can be referred to psychiatrists if needed and unnecessary cosmetic surgery should be avoided.

Keywords Body dysmorphic disorder · Body mass index · Obsessive-compulsive disorder · Rhinoplasty

✉ Ali Ashraf
ashraf_adr@yahoo.com

Vahid Aghsaghloo
dr.vahiiiiid@gmail.com

Saba Sadeghi Meibodi
sabasadeghiw@yahoo.com

Sevil Nasirmohtaram
sevil198@yahoo.com

Ali Faghih Habibi
dr.faghih.habibi@gmail.com

Roghie Zare
r.zare88@yahoo.com

Adele Isanazar
Adele.Isanazar@yahoo.com

[1] Department of Otolaryngology and Head and Neck Surgery, School of Medicine, Amiralmomenin Hospital, Guilan University of Medical Sciences, Rasht, Iran

[2] Guilan University of Medical Sciences, Rasht, Iran

[3] Department of otolaryngology and head and neck surgery, Department of Otolaryngology and Head and Neck Surgery, School of Medicine, Amiralmomenin Hospital, Guilan University of Medical Sciences, Rasht, Iran

[4] Neuroscience Research Center, Guilan University of Medical Center, Guilan, Iran

[5] Kavosh Cognitive Behavior Sciences and Addiction Research Center, Department of Psychiatry, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran

[6] Clinical Research Development Unit of Poursina Hospital, Guilan University of Medical Sciences, Rasht, Iran

Introduction

According to the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), BDD is classified as an obsessive-compulsive and related disorder. The predominant feature of this relatively common disorder is a sense of deficiency in body image and body shame causing compulsory behaviors to fix the deficits or flaws in physical appearance [1]. A preoccupation with this perceived defect, typically accompanied by time-consuming behaviors such as repeated mirror-watching and ineffective attempts to 'improve' or "cover" the defect, leads to significant distress and functional impairment e.g. high rates of occupational impairment, with avoidance behaviors leading to unemployment, social dysfunction and isolation [2]. A prevalence rate of 1.7–2.4% for BDD has been reported in the general population; but based on Lai et al. study which investigated BDD prevalence among patients who sought cosmetic surgery, 7.7% of patients had BDD, of which 85.7% were diagnosed at preoperative evaluation. However, 14.3% of patients went undiagnosed and all had a bad outcome after cosmetic surgery [3]. The prevalence of BDD was 2.4% which was 2.5% for women and 2.2% for men in Koran et al. study [4]. Men and women with BDD have different concerns about their bodies. Men were more likely to obsess about their genitals, body build, and thinning hair/balding; excessively lift weights; and have a substance use disorder. In contrast, women were more likely to obsess about their skin, stomach, weight, breasts/chest, buttocks, thighs, legs, hips, toes, and excessive body/facial hair, and they were excessively concerned with more body areas [5]. BDD usually began during adolescence and it was accompanied by poor insight, high comorbidity rates, high rates of functional impairment, suicidal ideation, and suicide attempts [6]. The American Society of Plastic Surgeons (ASPS, 2011) reported that there were 19.3 million cosmetic and reconstructive surgery procedures performed annually in the United States. The majority of these were cosmetic surgeries (72%), elective procedures performed to improve appearance and self-esteem, and the majority of these were performed by women (91%); and there's been a 90% increase in such enhancements since 2000. The top five procedures were breast augmentation, facelifts, nose, liposuction, and tummy tucks [7]. Patients with BDD can be effectively treated with cognitive behavioral therapy or a serotonin reuptake inhibitor, but most of them are convinced that cosmetic surgery is the only answer. Surgery outcome is often disappointing, so Mulkens et al. suggest that cosmetic surgery patients should be screened psychologically to detect whether they have BDD [8]. As we had a few studies about BDD among patients' candidates for cosmetic surgery in Asian society and especially in Iran, in this study we were about to compare the prevalence of BDD among patients who sought cosmetic and non-cosmetic surgery and compare the demographic data between these groups.

Patients and Methods

In this study, we compared the prevalence of BDD among two groups of patients who attended Amir Al-Momenin Hospital for cosmetic surgery and non-cosmetic surgery (septoplasty or endoscopic sinus surgery (FESS)). Based on the Ehsani et al. study which reported the prevalence of BDD at 33.3% and 1–3% among patients who volunteer for cosmetic surgery and the general population respectively [9], with the power of 80% and type I error (α error of 5%), the sample size for each group was calculated as 25 patients but we enrolled 100 patients in each group. We compared the demographic data (age, sex, marital status), education level, Body Mass Index (BMI), respiratory problems, history of psychological disorders, and the satisfaction rate after surgery between the two groups. As we did not enroll the patients with previous cosmetic surgery in the non-cosmetic group, we did not compare this factor between the two groups. We used Psychometric Evaluation of the Yale-Brown Obsessive-Compulsive Scale Modified for Body Dysmorphic Disorder (BDD-YBOCS) for assessing the BDD in these two groups. An ENT specialist examined all patients in terms of respiratory problems. The satisfaction after surgery was evaluated by telephone call 3 months after surgery based on a five-degree Likert scale (from very low = 1, very much = 5). This cross-sectional study was approved by the ethical committee of Guilan University of Medical Sciences (REC.1401.082) and the study adhered to the tenets of the World Medical Association Declaration of Helsinki. After obtaining written informed consent, patients enrolled and filled BDD-YBOCS questionnaire. All personal data of patients will remain confidential.

Statistical Analysis

All data were analyzed by SPSS software version 22 (IBM Corp., Armonk, NY, USA). The numeric variables were described as means ± standard deviation (SD) and the quantitative variables were described as numbers and percentages. The Chi-square test, Fisher's exact test, independent t-test, and multiple logistic regression analysis were used to analyze the data. A P-value < 5% is considered as significant.

Results

In this study, we compared the prevalence of BDD between those who were candidates for cosmetic and non-cosmetic surgery. Each group consisted of 100 patients. 133 (66.5%) of patients were female. In the cosmetic sutgery group, 68% of patients were female while in the non-cosmetic group, it was 65%, which was not statistically significant (p-value = 0.653). The mean age of patients in cosmetic surgery was 29.37 ± 8.21 whereas it was 31.98 ± 7.67 in the non-cosmetic group, which had a meaningful difference (p-value = 0.021) and shows that younger patients are more volunteer for cosmetic surgery (Table 1). In terms of educational level, there was no significant difference between the two groups (p-value = 0.074). In terms of marital status, there was a statistically significant difference between the two groups (p-value = 0.019). 45% of patients in the cosmetic group were single while 26% of patients in the non-cosmetic group were single. In terms of BMI, there was a meaningful difference between the two groups. 28% of patients in the cosmetic group had BMI > 25 while it was 49% in the non-cosmetic group (p-value = 0.003). There was no statistically significant difference between the two groups in terms of previous history of psychological disorder (p-value = 0.836). 9 patients in the cosmetic surgery group had a past medical history of cosmetic surgery. As mentioned earlier, the patients in the non-cosmetic group should have been not having any previous cosmetic surgery history. In terms of the prevalence of respiratory problems, it was 21% and 53% in cosmetic and non-cosmetic groups respectively, which was significant statistically (p-value < 0.001). BDD was much more detected in the cosmetic group as its rate was 28% in the cosmetic group versus 12% in the non-cosmetic group, which was considered significant (p-value = 0.005). 22 patients had BDD under the age of 30, 14 in the cosmetic group and 8 in the non-cosmetic group, which was not statistically significant (p-value = 0.255); while 18 patients with BDD were above 30 years old, as 14 in the cosmetic group and 4 in the non-cosmetic group, which was statistically significant (p-value = 0.004). The difference in BDD rate between those who were under the age of 30 (14 patients (25.5%)) and those who were above 30 (14 patients (31.1%)) in the cosmetic group, was not considerable (p-value = 0.531). There was not any significant difference in BDD prevalence among male patients between the two groups (11 patients (34.4%) in the cosmetic group and 6 patients (17.1%) in non-cosmetic patients with p-value = 0.105) but it was a statistically significant difference between female patients with BDD of two groups (17 patients (25%) in cosmetic group and 6 patients (9.2%) in non-cosmetic patients with p-value = 0.016). In terms of marital status, BDD was more common among single patients in the cosmetic group (11 patients (24.4%)) and 0 patients in the non-cosmetic group. There was no statistically significant difference in BDD prevalence among married or separated patients between the two groups (p-value = 0.999 and p-value = 0.793 respectively). In terms of education, in patients with academic education, there was not any statistically significant difference in BDD prevalence between the two groups (p-value = 0.711) while BDD prevalence was more common among patients without academic education in the cosmetic group (24 patients (38.1%) in cosmetic group and 4 patients (10.8%) in non-cosmetic group with p-value = 0.003). In terms of body weight among patients with BDD, BDD was more common among patients with normal BMI ($18.5 \leq BMI < 25$) or over-weight ($25 \leq BMI < 30$) in the cosmetic group (10 (17.9%) and 14 (50%) patients respectively) in comparison with a non-cosmetic group (2 (4.7%) and 10 (20.4%) patients respectively) (p-value = 0.046 and p-value = 0.007 respectively). BDD among patients with BMI over 30, had no meaningful difference between the two groups (p = 0.477). In terms of previous psychological disorders and satisfaction after surgery, there were not any significant differences between the two groups (p-value > 0.05). After multiple logistic regression analysis, we found that likely hood of BDD in cosmetic patients was almost 4 times of patients in the non-cosmetic group (p-value = 0.001 and odds ratio = 4.03). Also, only BMI and educational level were related to BDD. Patients who were overweight had a 3.8 times more chance of having BDD in comparison with normal BMI patients (group (p-value = 0.002 and odds ratio (OD) = 3.81). Patients without academic education had 3.6 times more chance of having BDD in comparison with patients who had academic education (group (p-value = 0.002 and OD = 3.56) (Table 2).

Table 1 Demographic data of patients in two groups

variables		Cosmetic group	Non-cosmetic group	P-value
Sex	Female	68	65	0.653
	Male	32	35	
Marital status	Single	45	26	0.019
	Married	47	62	
	Separated or widow	8	12	
BMI	< 18.5	6	0	0.003
	18.50 ≤ BMI < 25	56	43	
	25 ≤ BMI < 30	28	49	
	≥ 30	10	8	
Respiratory problems	Yes	21	53	< 0.001
	No	79	47	
Previous psychiatric disorder	Yes	13	14	0.836
	No	87	86	

BMI: Body Mass Index

Table 2 Multiple regression analysis data

Model	Estimate	SE	P-value	OR	95% CI	
					Lower bound	Higher bound
Cosmetic surgery/ non-cosmetic surgery	1.39	0.43	0.001	4.03	1.75	9.31
BMI			0.003			
Overweight / normal	1.34	0.43	0.002	3.81	1.61	9.00
Fat / normal	-0.41	0.84	0.623	0.66	0.13	3.43
Without academic / academic	1.27	0.50	0.01	3.56	1.35	9.40

OR: Odds Ratio, CI: Confidence Interval, SE: Standard Error

Discussion

BDD is more common among patients who seek cosmetic surgery than the normal population [3] so unnecessary surgeries burden huge costs for the health care system of countries. In this study, we enrolled 100 patients who wanted to perform cosmetic surgery (rhinoplasty); and 100 patients who were candidates for non-cosmetic surgery (FESS and septoplasty) and did not have previous cosmetic surgery history. The mean age of patients was 30.67 ± 8.01, while patients in the cosmetic group were younger than patients in the non-cosmetic group, which was statistically significant. 68% of patients in the cosmetic group were female but there was no significant difference between the two groups. In terms of education, there was no significant difference between the two groups. Most patients in the cosmetic group were single. Khanjani et al. reported that more than half of patients who seek cosmetic surgery were single [10]. It seems that single patients think that an attractive face is one of the important factors in getting married, and because of that cosmetic surgery is more common among single patients than married ones. Morgan et al. reported that psychological problems were more common among patients who asked for cosmetic surgery than the normal population [11]. Anxiety disorders, depression, and OCD were more common among cosmetic surgery volunteers [10]. In our study, we did not find any significant difference between the two groups in terms of previous psychological problems. Different cultures and self-reporting systems can be an explanation for differences between studies. Most patients are afraid of explaining their psychological problems openly and sometimes they resist seeking advice from psychiatrists and their problems remain undiscovered. BDD is more common among patients in the cosmetic group than the non-cosmetic group (28% vs. 12%). Mehriar et al. reported that patients who asked for rhinoplasty had higher scores in a tendency for fitness and lower scores in body shape satisfaction than the normal population [12]. Based on Khosravi et al. BDD and narcissistic personality disorder were more prevalent among cosmetic surgery patients than in the normal population. A more negative picture of the body makes the tendency for cosmetic surgery higher [13]. In our study, we found that the probability of BDD is 4 times more in cosmetic surgery patients than in the non-cosmetic surgery group. This is similar to the Khosravi et al. study which reported that every 1 higher score in body dysmorphic grade increases the likely hood of cosmetic surgery by 1.218 times [13]. Social media and peer group pressure can influence people's self-esteem and their tendency for cosmetic surgery. In our study, BDD was more common among patients who were above 30 years of age or female patients in the cosmetic group than in the non-cosmetic group. These findings are similar to Kiani et al. study, which reported that BDD is more common among females who asked for cosmetic surgery [14]. But we found no difference in BDD prevalence between male and female patients in the cosmetic group. Mehriar et al. reported no difference between male and female patients of rhinoplasty in terms of body imagination [12]. Academic Education was one of the factors that had a relationship with BDD in cosmetic surgery patients. BDD rate was higher among patients without academic degrees in the cosmetic group than those in the non-cosmetic group. After multiple logistic regression analysis, the OR was 3.6 in patients without academic degrees. This is similar to Ehsani et al. study which found that patients with lower education degrees had more chance to have BDD [9]. We think that patients with higher educational degrees have a more realistic image of their body and so they have a lesser tendency for cosmetic surgery. Patients with normal or overweight BMI in the cosmetic group had more chance of having BDD than those in the same BMI range in the non-cosmetic group. In the cosmetic group, patients with overweight BMI had a higher rate of BDD than normal or fat patients. After multiple logistic regression analysis, the OR was 3.8 in patients with overweight BMI than normal BMI patients. It seems that patients with overweight BMI are more sensitive about fitness and their body while fat patients have lesser enthusiasm to reach their idealists. In terms of previous psychological disorders, previous respiratory problems, and satisfaction after surgery, there were not any significant differences between patients in cosmetic and non-cosmetic groups. It seems that in terms of satisfaction after surgery, multiple factors including pain, hemorrhage, respiratory problems, and the level of surgeon skill can be involved, which requires more detailed

investigation. One of the innovations in our study was the comparison of BDD between cosmetic rhinoplasty and non-cosmetic septoplasty. Also, BDD is 4 times more common in the rhinoplasty group, still, the prevalence of BDD was high in the septoplasty group in comparison with the normal population (12% vs. 3% respectively). So we think that in any nasal surgery (rhinoplasty or septoplasty), despite having any structural problem, BDD should be considered. As mentioned earlier, most patients with BDD do not have insight into their problems.

Conclusion

Our study revealed that BDD is more common among patients who ask for cosmetic surgery. BMI and educational level are the factors that influence BDD prevalence. We suggest that patients for rhinoplasty be evaluated in terms of BDD before cosmetic surgery.

Recommendation for Further Studies

As social media and culture can influence BDD, we think that a multicenter study to compare the results and also a more detailed satisfaction after surgery investigation (with analysis of multiple factors involved in this issue) is required. One of the limitations of our study is that we compared patients who required rhinoplasty (cosmetic group) and septoplasty or FESS (non-cosmetic group). So we have to take caution in extending our results to other surgeries or the whole of society. On the other hand, as mentioned earlier, we performed this study in a limited geographic area (North of Iran) which cannot be extendable to other geographic places or cultures.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s12070-023-04355-3.

References

1. Ahmadvand Shahverdi M, Besharat MA (2021) Body dysmorphic disorder. Rooyesh-e-Ravanshenasi J (RRJ) 10(4):181–196
2. Sjogren M An update on psychopharmacological treatment of Body Dysmorphic Disorder (BDD)
3. Lai CS, Lee SS, Yeh YC, Chen CS (2010) Body dysmorphic disorder in patients with cosmetic Surgery. Kaohsiung J Med Sci 26(9):478–482
4. Koran LM, Abujaoude E, Large MD, Serpe RT (2008) The prevalence of body dysmorphic disorder in the United States adult population. CNS Spectr 13(4):316–322
5. Phillips KA, Menard W, Fay C (2006) Gender similarities and differences in 200 individuals with body dysmorphic disorder. Compr Psychiatr 47(2):77–87
6. Phillips KA, Menard W, Fay C, Weisberg R (2005) Demographic characteristics, phenomenology, comorbidity, and family history in 200 individuals with body dysmorphic disorder. Psychosomatics 46(4):317–325
7. Thornton B, Ryckman RM, Gold JA (2013) Competitive orientations and women's acceptance of cosmetic Surgery. Psychology 4(01):67
8. Mulkens S, Jansen A (2006) Changing appearances: cosmetic Surgery and body dysmorphic disorder. Neth J Psychol 62:34–40
9. Ehsani A, Fakour Y, Gholamali F, Mokhtari L, Sadat Hosseini M, Khosrovanmehr N, Noormohammadpour P (2013) Prevalence of body dysmorphic disorder in patients referred to Razi hospital cosmetic clinic with complaints of cosmetic disorders. Tehran Univ Med J. ;71(3)
10. Khanjani Z, Babapour J, Saba G (2012) Investigating mental status and body image in cosmetic Surgery applicants in comparison with non-applicants. SSU_Journals 20(2):237–248
11. Morgan KP (1991) Women and the knife: Cosmetic Surgery and the colonization of women's bodies. Hypatia 6(3):25–53
12. Mehriar O, Asghari F, Nemati S, Sadeghi A, Salehpoor G (2019) Body images of the rhinoplasty definitive candidates before Surgery: findings from a case-control study and based-gender. Shenakht J Psychol Psychiatry 5(6):85–99
13. Khosravi M, Nazari M (2015) The study of relationship between narcissistic disorder and body dysmorphic between applicants and non-applicants for nose cosmetic Surgery. J Shahrekord Univ Med Sci. ;17(3)
14. Kiani MK, Mardmor A (2019) Evaluation of body dysmorphic disorder and social anxiety between women with plastic Surgery with women who do not; a non-interventional comparative study. Health Res 4(3):152–158