

# Comparison of Patterns of Psychopathology in Aesthetic Rhinoplasty Patients versus Functional Rhinoplasty Patients

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## Abstract

**Objectives.** To determine whether candidates for aesthetic rhinoplasty show more severe symptoms of psychopathology in comparison with functional rhinoplasty patients.

**Study Design.** Case-control study. Aesthetic rhinoplasty candidates were taken as cases and functional rhinoplasty patients comprised the control group.

**Setting.** A surgical center for rhinoplasty.

**Subjects and Methods.** Forty-two patients seeking either aesthetic rhinoplasty ( $n = 21$ ) or functional rhinoplasty ( $n = 21$ ) were included in this study in winter 2012 using a convenience sampling method. All patients were asked to complete the Symptom Check List-90-Revised (SCL-90-R) preoperatively. An independent  $t$  test was performed for each subscale of the instrument. Cohen's  $d$  was calculated as a measure of effect size. Pearson's correlation was also performed between the subscales.

**Results.** Independent  $t$  test verified that aesthetic rhinoplasty patients scored significantly higher in 8 subscales of the SCL-90-R in comparison with functional rhinoplasty patients as control group. Aesthetic rhinoplasty seekers showed more severe symptoms in obsessive-compulsive disorder ( $P < .01$ ), depression ( $P < .01$ ), interpersonal problems ( $P < .01$ ), psychoticism ( $P < .05$ ), paranoia ( $P < .05$ ), hostility ( $P < .05$ ), phobia ( $P < .01$ ), and general psychopathology ( $P < .01$ ). All subscales were correlated strongly in the current sample.

**Conclusion.** This study demonstrated that a sample of patients seeking aesthetic rhinoplasty had higher symptoms in various components of psychopathology compared with a control group. Therefore, preoperative psychological screening of aesthetic rhinoplasty candidates may be useful.

## Keywords

aesthetic rhinoplasty, functional rhinoplasty, psychopathology

## Introduction

Novel advances in surgical technology, paired with increased messages involving beauty in mainstream media, have caused the number of aesthetic surgery procedures to soar since the modern emergence of aesthetic surgery at the beginning of 20th century.<sup>1</sup>

Considering the omnipresence of mass media, it may be understandable that people make an effort to achieve higher standards of bodily attractiveness; however, media ideals of physical attractiveness may be biased and unrealistic.<sup>2</sup> Psychological research into satisfaction with body image has indicated that mass media standards of attractiveness can aggravate dissatisfaction and eating disorders<sup>3</sup> in viewers. People who have certain personality traits exhibit body dissatisfaction more often after viewing unrealistic media messages.<sup>4</sup>

An indirect result of media messages is said to occur via body dissatisfaction, appearance investment, and anxiety. With increased public and media attention on body weight and appearance,<sup>5</sup> negative body image in women has been psychologically related to depression,<sup>6</sup> anxiety,<sup>7</sup> and lowered level of self-esteem.<sup>8,9</sup>

Furthermore, physical attractiveness is usually overvalued in nearly all societies.<sup>10</sup> The features of facial beauty, such as facial proportions, seem to be universally

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recognized.<sup>11</sup> One study<sup>12</sup> found the belief that “what is beautiful is good,” and this was neuropsychologically supported by a separate research study in neuroaesthetics.<sup>13</sup>

Efforts to achieve these standards have brought about a considerable increase in cosmetic surgeries. In 2012, 1.6 million cosmetic procedures were carried out in America.<sup>14</sup> From the patients’ point of view, the most crucial reason for undergoing cosmetic surgery is body dissatisfaction, their bodily appearance constituting an important component of their self-esteem.<sup>15</sup> Research suggests that people whose self-esteem highly depends on their appearance and who have significant body dissatisfaction will consider cosmetic surgery more frequently.<sup>15</sup>

Preoperative psychological distress in the form of anxiety and depression tends to be more common than physical complications in aesthetic surgery patients and more common in those with preoperative psychological symptoms.<sup>16</sup> Some psychopathological characteristics have been studied within cosmetic surgery seekers. Body dysmorphic disorder (BDD) is recognized to be one of the most prevalent disorders within this population.<sup>17</sup> Some studies have found evidence that preoccupation with the nose is the most common complaint in BDD, making cosmetic rhinoplasty the most common surgical correction sought by patients with BDD.<sup>18,19</sup> 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.<sup>20</sup> The estimated prevalence of BDD patients within medical settings varies from 5% to 15% in the United States.<sup>21</sup> Among female cosmetic surgery patients, psychopathology symptoms were found to be higher in those with higher BDD scores.<sup>22</sup>

Aesthetic rhinoplasty is one of the most common cosmetic procedures in Iran and the United States.<sup>14</sup> Psychopathological dimensions of aesthetic rhinoplasty have been studied in several studies. Meyer et al<sup>23</sup> found that 16 of 30 patients who sought rhinoplasty had psychological problems. In another study,<sup>24</sup> rhinoplasty candidates had higher scores for anxiety, insomnia, social dysfunction, depression, and somatic symptoms. Various studies indicate that body image of aesthetic rhinoplasty candidates is significantly lower than that of control groups.<sup>25,26</sup> Another study in Iran indicated that 71.6% rhinoplasty seekers have psychological disturbances.<sup>27</sup> Hypochondria,<sup>27</sup> anxiety, and compulsive traits<sup>28</sup> have been found to be more common in aesthetic rhinoplasty seekers.

Recognition of patients with psychological problems that may result in unfavorable postoperative outcomes is essential.<sup>29</sup> Problems encountered by patients can lead to requests for repeated procedures, depression, adjustment problems, social isolation, familial dysfunction, self-destructive behaviors, and anger toward the surgeon.<sup>30</sup>

The purpose of the present study was to comprehensively compare the dimensions of psychopathology between aesthetic rhinoplasty candidates and functional rhinoplasty patients. It was hypothesized that aesthetic rhinoplasty

patients would have higher indices of psychopathology in comparison with functional rhinoplasty patients.

## Methods

### Participants

A total of 42 patients (28 females and 14 males) were included in this study using a convenience sampling method. Approval from the ethics committee of Tehran University of Medical Sciences and informed consent were obtained. All patients had been scheduled for surgery in winter 2012 at one specific clinic. Patients were placed in groups regarding their chief complaint. Those with aesthetic concerns ( $n = 21$ ) were included as cases, while patients with primarily functional complaints ( $n = 21$ ) were placed in control group. Those with functional and aesthetic purposes ( $n = 7$ ) were categorized regarding their primary objective.

### Measures

All participants completed a demographic questionnaire and validated Persian form of the Symptom Check List (SCL-90-R) preoperatively. A questionnaire consisting of information about the patient’s age, sex, marital status, educational background, and subjective socioeconomic status was developed. The SCL-90-R is a well-known self-report instrument to assess the psychological symptoms of an individual from “healthy controls” to “disordered ones.”<sup>31</sup> It consists of 90 items defined in 9 symptom dimensions (depression, anxiety, phobia, hostility, obsessive-compulsive disorder, interpersonal sensitivity, somatization, paranoid ideation, and psychoticism). There is also 1 subscale with 7 items that measures general psychopathology and is used in calculating different indices of the SCL-90-R.<sup>32</sup> Internationally, satisfactory levels of internal consistency and test-retest reliability have been reported for the SCL-90-R. Validity of the SCL-90-R has been reported differently. One study in Iran investigated the psychometric properties of the SCL-90-R and developed a shorter form called the SCL-25.<sup>33</sup> There have been problems in replicating the original dimensions in factor analytical studies.<sup>34</sup> This scale can be completed in 12 to 15 minutes. Higher scores correspond to greater severity of symptoms. The 90 items in the questionnaire are scored on a 5-point Likert scale, indicating the rate of occurrence of the symptom during the time reference. Internal consistency of this instrument ranges from 0.71 to 0.84 across all 9 subscales. In this study, Cronbach’s alpha ranged from 0.68 (phobia subscale) to 0.87 (depression subscale) within 9 subscales. Its test-retest reliability coefficients range from 0.67 to 0.91.<sup>31</sup> Internal consistency of this scale in an Iranian sample ranged from 0.77 for psychoticism to 0.9 for depression. Depression (DE), anxiety (AN), phobia (PH), hostility (AH), obsessive-compulsive disorder (OC), interpersonal sensitivity (IN), somatization (SO), paranoid ideation (PA), psychoticism (PS), and added items (AD) were used as distinct subscales in this study. Internal consistency of AD subscale was found to be relatively low in this study ( $\alpha = 0.63$ ).

### Inclusion Criteria

All first-time patients seeking rhinoplasty for aesthetic or functional purposes were asked to join the study. All participants were Iranian; thus, ethnicity did not vary within participants. Three patients refused to participate in the study for unknown reasons.

### Exclusion Criteria

Patients who had undergone any kind of rhinoplasty were excluded, as their psychological assessment may need different instruments with distinct research purposes. Patients who were taking psychotropic medications were excluded in order to acquire original responses from participants in self-report questionnaires. Participants who left more than 20% of the subscales blank were also excluded.

### Statistical Analysis

Data entry and analysis were performed in a blinded manner by personnel who were not involved in the process of data collection. All tests were 1-tailed due to the hypothesis, and  $P < .05$  was considered significant. Levene's test was performed for assessment of equality of variances. Statistical analysis was performed using SPSS software (version 21.0; SPSS Inc, Chicago, Illinois).

### Results

After inclusion and exclusion criteria were met, 21 patients seeking aesthetic rhinoplasty and 21 patients seeking functional rhinoplasty participated in this study. Mean age in the functional rhinoplasty group was 27.48 years (SD = 10.40 years) and that of the aesthetic rhinoplasty group was 25.57 years (SD = 7.06 years). No significant difference was observed between means ( $P > .05$ ). Demographic information of patients is summarized in **Table 1**.

All 10 subscales of SCL-90-R were compared between both groups. An independent  $t$  test was performed for each subscale. A measure of effect size was also included to support the findings of statistical significance tests. Cronbach's alpha of each subscale was calculated to assess internal consistency of subscales. The results are presented in **Table 2**.

Scores of aesthetic rhinoplasty seekers on the AD, AH, PA, and PS subscales were significantly higher than those of functional rhinoplasty patients at the  $P < .05$  significance level. The 2 groups' means differed significantly for the subscales OC, IN, DE, and PH at the  $P < .01$  level of significance. Cohen's  $d$  was incorporated into the study as a measure of effect size. As shown in **Table 2**, the highest effect size belonged to the OC subscale ( $d = 0.88$ ); however, the smallest effect size belonged to the SO subscale ( $d = 0.16$ ).

The correlation coefficients between subscales were also calculated, for 2 reasons. First, the relationship between various psychopathological subscales in the rhinoplasty patient population can be observed. Second, high correlation coefficients suggested the unidimensionality of the factor structure of the instrument in the rhinoplasty population, similar

**Table 1.** Demographics.

	Aesthetic Rhinoplasty Patients	Functional Rhinoplasty Patients
N (%)	21 (50%)	21 (50%)
Mean age, years	25.57	27.48
Gender, n		
Male	5	9
Female	16	12
Marital status, n		
Single	11	14
Married	9	6
Separated	1	1
Educational level, n		
Low	9	8
Medium	11	12
High	1	1
Socioeconomic status, n		
Low	2	3
Medium	15	15
High	4	3

to other populations.<sup>33</sup> Pearson's correlation coefficients between subscales are presented in **Table 3**.

Relatively, all subscales of the SCL-90-R were significantly correlated in this study. Correlation coefficients were calculated considering all participants' scores. Correlations between SO and PA subscales and between SO and PS subscales were not significant ( $P > .01$ ). The strongest correlation coefficient was observed between DE and IN subscales. The lowest correlation was between SO and PA subscales.

### Discussion

This study aimed to compare patterns of psychopathology between aesthetic rhinoplasty patients and functional rhinoplasty patients. Technically, functional rhinoplasty is fairly similar to aesthetic nasal surgery. Therefore, functional rhinoplasty patients were selected as a control group for the aesthetic surgery group. The main significant difference between these groups was their intention. Aesthetic surgery candidates were not satisfied with their nose and sought better appearance; however, functional rhinoplasty patients were primarily trying to overcome a nasal breathing disorder through surgical procedure. For that reason, functional patients were considered a suitable control group.

Results of **Table 2** indicate that aesthetic rhinoplasty patients had higher scores in 8 of 10 subscales of the SCL-90-R. Aesthetic rhinoplasty seekers showed more severe symptoms of psychopathology in subscales pertaining to obsessive-compulsive symptoms, interpersonal sensitivity, depression, hostility, phobia, paranoia, and psychoticism. These findings are consistent with other studies.<sup>27,28</sup> The highest difference belonged to symptoms of obsessive-compulsive disorder, as its effect size was the strongest.

**Table 2.** Comparison of SCL-90-R Subscales between Aesthetic Rhinoplasty Patients and Functional Rhinoplasty Patients.

Variable	Group	Mean (SD)	t Test Statistic	df	P Value <sup>a</sup>	Cohen's d	Cronbach's $\alpha$
AD	Aesthetic	7.57 (3.87)	2.162	40	.019 <sup>b</sup>	0.64	0.63
	Functional	4.85 (4.26)					
SO	Aesthetic	9.05 (6.48)	0.515	40	.305	0.16	0.83
	Functional	7.95 (7.28)					
OC	Aesthetic	11.76 (5.70)	3.152	40	.002 <sup>c</sup>	0.88	0.84
	Functional	6.10 (5.95)					
IN	Aesthetic	10.10 (5.89)	2.549	40	.008 <sup>c</sup>	0.74	0.87
	Functional	5.52 (5.73)					
DE	Aesthetic	11.71 (8.49)	2.496	40	.009 <sup>c</sup>	0.72	0.87
	Functional	6.14 (5.70)					
AN	Aesthetic	6.57 (5.43)	1.556	40	.064	0.47	0.79
	Functional	4.24 (4.22)					
AH	Aesthetic	5.38 (3.51)	1.691	40	.049 <sup>b</sup>	0.51	0.73
	Functional	3.62 (3.23)					
PH	Aesthetic	5.24 (3.53)	2.511	40	.008 <sup>c</sup>	0.73	0.68
	Functional	2.62 (3.22)					
PA	Aesthetic	7.81 (4.81)	1.952	40	.029 <sup>b</sup>	0.58	0.77
	Functional	5.14 (4.00)					
PS	Aesthetic	7.38 (5.62)	2.149	40	.019 <sup>b</sup>	0.64	0.70
	Functional	4.14 (4.02)					

Abbreviations: AD, added items; AH, hostility; AN, anxiety; DE, depression; IN, interpersonal sensitivity; OC, obsessive-compulsive disorder; PA, paranoid ideation; PH, phobia; PS, psychoticism; SO, somatization.

<sup>a</sup>One-tailed P values.

<sup>b</sup>P < .05.

<sup>c</sup>P < .01.

**Table 3.** Pearson Correlation Coefficients of the SCL-90-R Subscales.

	SO	OC	IN	DE	AN	AH	PH	PA	PS
SO									
OC	0.644 <sup>a</sup>								
IN	0.636 <sup>a</sup>	0.817 <sup>a</sup>							
DE	0.594 <sup>a</sup>	0.795 <sup>a</sup>	0.853 <sup>a</sup>						
AN	0.684 <sup>a</sup>	0.705 <sup>a</sup>	0.700 <sup>a</sup>	0.758 <sup>a</sup>					
AH	0.605 <sup>a</sup>	0.685 <sup>a</sup>	0.679 <sup>a</sup>	0.704 <sup>a</sup>	0.637 <sup>a</sup>				
PH	0.460 <sup>a</sup>	0.660 <sup>a</sup>	0.792 <sup>a</sup>	0.761 <sup>a</sup>	0.675 <sup>a</sup>	0.568 <sup>a</sup>			
PA	0.344	0.543 <sup>a</sup>	0.641 <sup>a</sup>	0.537 <sup>a</sup>	0.620 <sup>a</sup>	0.494 <sup>a</sup>	0.516 <sup>a</sup>		
PS	0.352	0.544 <sup>a</sup>	0.575 <sup>a</sup>	0.560 <sup>a</sup>	0.702 <sup>a</sup>	0.577 <sup>a</sup>	0.583 <sup>a</sup>	0.690 <sup>a</sup>	
AD	0.577 <sup>a</sup>	0.720 <sup>a</sup>	0.739 <sup>a</sup>	0.683 <sup>a</sup>	0.640 <sup>a</sup>	0.735 <sup>a</sup>	0.500 <sup>a</sup>	0.734 <sup>a</sup>	0.714 <sup>a</sup>

Abbreviations: AD, added items; AH, hostility; AN, anxiety; DE, depression; IN, interpersonal sensitivity; OC, obsessive-compulsive disorder; PA, paranoid ideation; PH, phobia; PS, psychoticism; SO, somatization.

<sup>a</sup>P < .01.

Since  $d > 0.8$  suggests a large effect size,<sup>35</sup> obsessive-compulsive symptoms may be considered much more severe within aesthetic rhinoplasty patients in comparison with functional rhinoplasty patients. This finding is consistent with some previous studies.<sup>17</sup> The groups' means for the AN subscale did not differ significantly; however, the effect size was moderate. This could be due to 2 reasons. First, the AN subscale of the SCL-90-R may not be as reliable as other

questionnaires primarily designed to measure anxiety (eg, the Beck Anxiety Inventory).<sup>36</sup> Furthermore, sample size may be another reason for statistical insignificance. Analyzing Cohen's  $d$  can resolve the issue of sample size. Both significance analysis and effect size analysis showed an insignificant difference between groups in the SO subscale. The AD subscale may be an indicator of general psychopathological symptoms as it does not directly pertain to a certain psychological disorder.

Scores for the AD subscale were significantly higher in those who sought aesthetic rhinoplasty.

Using the scores of all participants, we evaluated correlation coefficients between subscales. Results showed strong correlations between subscales of the SCL-90-R in this study. This may be explained by the fact that the SCL-90-R usually fails to derive various factors in factor analysis studies.<sup>27</sup> In several studies,<sup>34,37</sup> only one single factor has been derived. This single factor is sometimes referred to as the “general psychopathological symptom.” The high correlation coefficients found in this study indicate that one main factor may be underlying this instrument within the present population.

The findings of this study illustrate that aesthetic rhinoplasty patients in this sample had more severe psychopathological symptoms in comparison with functional rhinoplasty patients as the control group. Therefore, evaluating the psychological condition of aesthetic rhinoplasty candidates preoperatively may play a crucial role in screening possible psychological disorders within this population. Surgeons can collaborate with psychologists in order to recognize psychologically disturbed patients. Undoubtedly, more studies with larger samples are required to draw a general conclusion because of the preliminary nature of this study; however, current findings from the present sample suggest stronger psychopathological symptoms in aesthetic rhinoplasty group.

Several limitations of this study are worth noting. First, the sample size and sampling method could have been more satisfactory. Larger samples and random sampling methods decrease the probability of errors and are essential to improve the external validity. Second, participants were not diverse enough in ethnicity, gender, and socioeconomic status. Third, the questionnaire we used lacks some psychometric properties in factor structure. This was considered the primary reason for the high correlation coefficients in this study.

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### Author Contributions

**Mohsen Naraghi**, substantial contributions to conception and design, acquisition of data, preserving the data, critical revising of the paper to be published, final approval of the paper to be published; **Mohammad Atari**, substantial contributions to research design, methodological suggestions for accuracy, statistical analysis and interpretation of data, data screening, drafting the paper, and final approval of the paper.

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