

# Research Paper: The Study of Psychological Characteristics, Body Image, Quality of Life, and General Health of Rhinoplasty Applicants



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## ABSTRACT

**Introduction:** Considering the increasing number of rhinoplasty applicants, lack of information regarding the psychological characteristics of these applicants, and specific cultural, social, and religious features in Iran.

**Objectives:** the present study aimed at assessing the psychological characteristics of rhinoplasty applicants.

**Materials and Methods:** This study was performed on 137 rhinoplasty applicants (surgery group) and 167 people reluctant to perform surgery (control group). After obtaining the subjects' informed consent, the questionnaires (including standardized and normalized tests of quality of life, self-esteem, body image, and general health) were distributed between the surgery and control groups (before and after the operation). The obtained data were analyzed in SPSS.

**Results:** The general health of both male and female in the control group was far better than those in the surgery group. Life quality scores in the surgery group were significantly lower at some indices compared to the control group. Positive body image scores of the control group exceeded those of the surgery group. Also, there was a significant difference between the studied groups in terms of general health such that its scores were higher in the control group.

**Conclusion:** Based on the findings, cosmetic surgery applicants have more psychological problems than people uninterested in cosmetic surgery.

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## 1. Introduction

**R**hinoplasty is a cosmetic surgery often performed for correcting nasal deformities such as the big or crooked nose and sometimes for treating nasal functional problems. Rhinoplasty may be aimed at reconstructing defects occurred following the surgery of tumors in this area or infection. It has been long since rhinoplasty surgery is being done around the world; however, in recent years, the number of applicants for this surgery has increased greatly. According to the American Society of Plastic Surgeons report, the number of rhinoplasty operations has increased by nearly 47% from 1997 to 2005 [1].

### First generation studies

Preliminary studies of psychological characteristics of cosmetic surgery patients were carried out by John Hopkins University during the 1950s and 1960s. In the beginning, the group of researchers consisting of plastic surgeons and psychiatrists used clinical interviews to evaluate the psychological characteristics of the applicants before and after the surgery. Patients' responses were interpreted from the psychodynamic perspective (the then prevailing theory). These studies reported a high degree of psychopathology among these patients [2, 3]. For example, one study showed that out of 98 patients applied for cosmetic surgery, 70% had psychological problems. The most common problem was neurotic depression or passive-dependent personality disorder [3]. Postoperative assessment of the patients showed conflicting results. Some studies reported favorable changes and depression symptoms reduction [2], while the others reported that psychological distress had remained in a number of patients even after the operation [3, 4].

### Second generation studies

In the 1970s and 1980s, researchers began to introduce standard psychometric tests into their studies. The studies that adopted the Minnesota Multiphasic Personality Inventory (MMPI) personality test found normal profiles among breast augmentation [5], facelift [6], and rhinoplasty [7] applicants, while the ones used California personality test reported trivial differences between breast augmentation and normal control groups with a score falling between normal limits [8].

The other studies which applied standardized paper-pencil tests only found moderate evidence of psycho-

pathology [9, 10]. Several second-generation studies suggested that patients experience better psychological status after the operation. These studies reported depression symptoms reduction and self-esteem improvement in patients undergoing breast reduction [11] and breast augmentation [12] surgeries. Studies conducted on rhinoplasty patients showed anxiety, obsessiveness, and paranoia reduction [10] as well as self-understanding improvement [13]. Other studies did not report any postoperative changes in psychological characteristics [14, 15].

### Third generation studies

The research was continued using clinical interviews and psychometric investigations in the 1990s. These studies considered some of the methodological limitations of previous generation studies. Clinical interview was, in particular, one of the regular diagnostic indices in psychopathology assessments. Psychometric studies which were composed largely of both pre-operative and post-operative psychological evaluations were also used.

Napoleon studied postoperative psychopathology in 133 patients using clinical interview and behavioral counseling. In approximately 20 patients, Diagnostic and Statistical Manual of Mental Disorders-5<sup>th</sup> Edition (DSM-5) was observed for Axis I, primary anxiety, and mood disorders, while in 70% of patients Axis II was diagnosed [16]. Similarly, neurotic disorders or hypochondria were detected in 48% of 415 Japanese patients applied for cosmetic surgery (based on the international classification of diagnostic marker of diseases) [17].

At least two psychometric studies showed postoperative improvement in psychological functioning. In one study, several self-report questionnaires were used which demonstrated improvement in the quality of life and reduction in depression symptoms after cosmetic surgery among 105 patients [18]. In another study performed on 79 rhinoplasty applicants, a decrease in anxiety and neuroticism was observed 66 months after the surgery [19]. Overall, it is difficult to reach a definitive conclusion about these studies. Results of clinical interviews were sometimes in conflict with psychometric investigations. The first generation studies that have reported high rates of psychopathology were essentially based on psychodynamic nature of clinical interviews.

Concerns regarding patients' appearance were frequently interpreted as an intrapsychic symbolic shift, therefore, inherently reflected as psychopathology.

Thus, high levels of reported psychopathology may be due to the research theories. Second-generation studies which relied mainly on psychometric assessments reported much less psychopathology. However, methodological problems of these studies such as lack of adequate pre- and post-operative examinations and proper control group have limited the value of these findings [20].

Third-generation studies have sought to resolve many of these methodological problems. Despite these methodological shortcomings and conflicting findings, at least two definitive conclusions can be drawn about the body of research [20]. First, cosmetic surgery applicants exhibit a variety of psychological symptoms. Second, although a large number of studies report postoperative psychological improvement, they cannot conclusively state that cosmetic therapies result in psychological improvements in most patients. Though there are no statistics on the number of rhinoplasty surgeries in Iran in the published articles, the number of applicants has considerably increased in the last decade. With the new surgical techniques with higher quality and fewer side effects, massive advertisements about cosmetic surgeries in the media, i.e. satellite TVs, and easier communications, people are more than ever encouraged to undergo cosmetic surgery. The success of a cosmetic surgery depends not only on diagnostic and technical skills of the surgeon but also on the psychological characteristics of the patient.

One of the most important decisions of a surgeon is to properly select cosmetic surgery applicants based on their psychological perspectives. Those who have no idea of the range of anatomical changes that can be surgically created for them or see the deformity of their nose worse than what it really is and thus expect too much from surgery are not good candidates for cosmetic surgery.

Awareness of patients' preoperative psychological status helps physicians to identify patients who may want to have rhinoplasty for unrealistic or unscientific reasons and therefore need psychological counseling before any surgical treatment. This would lower patients' dissatisfaction with surgery outcomes and legal disputes between doctors and patients. In this regard, several studies have conducted on the psychological characteristics of cosmetic surgery candidates in different parts of the world [21, 22]. However, the lack of research in this field in Iran is evident. Increasing rhinoplasty applicants, lack of information about psychological characteristics of these applicants, and the specific cultural, social and

religious features of Iranian people have prompted us to do the present research. This study aimed to investigate the psychological characteristics (body image, self-esteem, depression, quality of life and general health) of rhinoplasty applicants.

## 2. Materials and Methods

The present study was a descriptive study. The study population was rhinoplasty applicants referred to a private clinic and the control group comprised non-applicants who had no history of this type of surgery and matched with the surgery group in terms of age, gender, education, and occupation.

### Study tools

#### Body Image Inventory (BII)

The Multidimensional Body-Self Relations Questionnaire (MBSRQ) consists of 68 questions. It is a self-report questionnaire and designed to assess the individual's attitude about various aspects of the body image structure [23]. The questionnaire consists of three scales. All Body-Self Relationship Questionnaire (BSRQ) questions are scored from 1 to 5 (1= absolutely disagree; 2= somewhat disagree; 3= no opinion; 4= somewhat agree; and 5= totally agree). Its reliability was reported to be 0.81 [24].

Zar-Shenas et al. reported the total reliability value of this tool in Iran as 0.87. The subscales reliabilities were 0.87 for the knowledge of appearance, 0.85 for the assessment of the appearance, 82.2 for the concern about weight gain, 0.79 for the satisfaction of various parts of the body, and 0.75 for the weighting of the individual's vision [25].

#### Self-Esteem Inventory (SEI)

Cooper Smith compiled this questionnaire to measure the students' feelings and values in social and educational fields. It consists of five topics that include teaching assignments, social relationships, family, self, and future, with four subscales. The validity of this test has been confirmed by numerous studies. Hoveinor-pour Shafe'i (1992) using the two-half-coefficient of 0.83 and philosophical race (1993) and petal (1994) by using a reciprocal method found a coefficient of the validity of 80%. Sharia Nia, Aqadadashi, Najbali and Constant, using the Cronbach alpha coefficient, respectively obtained the test validity values of 0.80, 0.79, 0.84, and 0.89 [26].

### General Health Inventory (GHI)

This questionnaire consists of four subtests, each with 7 questions related to the physical symptoms. All questions have 4 options that scored from 0 to 3. A higher score indicates higher overall health and the score of each person varies from 0 to 84. The reliability of this was 82% and Cronbach's alpha was reported 96%. [27].

### Quality of Life Questionnaire (QoLQ)

Quality of Life Questionnaire is a modified form of the SF-36 questionnaire type. This questionnaire assesses physical functioning, physical role difficulty, social functioning, physical pain, mental health state, emotional role difficulty, and validity of the general health state. Its internal consistency ranges from 0.77 to 0.99 and its convergent validity is 0.65 [28].

### Sample size

Assuming that 48% of patients have psychological problems [17], the required sample size was determined to be 196 using the following formula which was selected from the applicants visited the study clinic during the one-year period of study:

$$n = \frac{(z_{\alpha/2} + z_{\beta})^2 p(1-p)}{(p-p_0)^2}$$

Where  $Z_{\alpha/2}$  refers to upper  $\alpha/2$  quantile of the normal distribution,  $Z_{\beta}$  denotes upper  $\beta$  quantile of the normal distribution,  $P$  is equal to 0.48,  $(p-p_0)=0.1$  as error of disease prevalence estimation,  $\alpha$  is equal to 0.05, and  $1-\beta$  equals 0.8 test exponent.

### Study method

The study was carried out on 167 subjects as the control group and 137 applicants who visited a specify the clinic for rhinoplasty in 2010 as the surgery group. After explaining the study objectives and obtaining informed consent from the applicants, the questionnaires were distributed among studied subjects. These questionnaires included standardized and normalized tests of quality of life, self-esteem, body image, and general health.

Questionnaires were also distributed among 167 subjects who were not interested in cosmetic surgery (the control group), had no history of any type of cosmetic surgeries, and matched the study group in terms of age, gender, education, and occupation. After completing and collecting the questionnaires, the data were analyzed in SPSS. The Independent samples t test was used for data analysis.

### 3. Results

The Mean $\pm$ SD of age in participants are shown in Table 1. According to Table 2, the emotional role difficulty and vitality quality of life in the control and surgery groups were significantly different. With regard to the P values, there are statistically significant differences between surgery and control groups in terms of emotional role difficulty and vitality in women (Table 3). The general health score in the control and surgical group in men was significant. The general health score of men in the control group is more than that in the surgery group (Table 4). According to P-

**Table 1.** Mean $\pm$ SD of the participants' age (year) of both sexes and groups

Sex	Group	Mean $\pm$ SD	n
Male	Surgery	22.21 $\pm$ 6.17	28
	Control	23.98 $\pm$ 6.83	64
	Total	23.44 $\pm$ 6.66	92
Female	Surgery	25.02 $\pm$ 5.08	109
	Control	23.40 $\pm$ 6.54	103
	Total	24.23 $\pm$ 5.88	212
Total	Surgery	24.45 $\pm$ 5.42	137
	Control	23.62 $\pm$ 6.64	167
	Total	23.99 $\pm$ 6.13	304

**Table 2.** Comparing the 8 aspects of quality of life in surgery and control groups by t-test

The Results of the T-Test for Equality of Means						
Variables	T	df	P	Mean Differences	95% Confidence Interval for Mean Differences	
					Lower Bound	Upper Bound
Physical functioning	0.1840	315	0.854	0.34	-3.28	3.96
Physical role difficulty	0.6230	308	0.534	0.84	-1.80	3.47
Social functioning	-0.290	319	0.772	-0.76	-5.95	4.42
Physical pain	1.801	306	0.073	7.46	-0.69	15.61
Mental health state	1.308	290	0.192	3.83	-1.93	9.60
Emotional role difficulty	4.246	316	0.000	8.83	4.74	12.92
Vitality	2.512	308	0.013	3.81	0.83	6.80
General health state	1.145	297	0.253	1.76	-1.26	4.78

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values, the general health scores in both men and women enrolled in the control group are higher than those in the surgery group (Table 5).

#### 4. Discussion

Our modern world with its technological and intellectual developments has now focused its attention on human personality issues that perhaps were regarded as

trivial and unimportant 100 years ago. There has been always a lot of discussion about body image. It represents one's attitude toward one's self, including feelings and thoughts that can cause positive or negative changes in one's behavior. This image could be affected by various factors such as physical growth, interaction with the social environment, and accidents and physical injuries. These factors may bring more concerns about body image. These concerns have been increased to

**Table 3.** Comparing the 8 aspects of quality of life by sex for surgery and control groups by t-test

Female Gender						
The Results of the T-Test for Equality of Means						
Variables	t	df	P	Mean Differences	95% Confidence Interval for Mean Differences	
					Lower Bound	Upper Bound
Physical functioning	0.432	207	0.667	0.99	-3.54	5.53
Physical role difficulty	0.167	203	0.867	0.27	-2.89	3.42
Social functioning	-0.320	210	0.749	-1.05	-7.55	5.44
Physical pain	1.447	200	0.150	7.58	-2.75	17.92
Mental health state	1.176	189	0.241	4.15	-2.81	11.12
Emotional role difficulty	3.521	209	0.001	8.79	3.87	13.72
Vitality	2.317	203	0.021	4.31	0.64	7.98
General health state	0.599	199	0.550	1.06	-2.44	4.56

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**Table 4.** Comparing body image and general health by sex for surgery and control groups by t-test

The Results of the T-Test for Equality of Means						
Variables	t	df	P	Mean Differences	95% Confidence Interval for Mean Differences	
					Lower Bound	Upper Bound
General health state	-2.48	81	0.015	-6.01	-10.82	-1.19
Body image	-0.81	55	0.420	-7.12	-24.70	10.44

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**Table 5.** Comparing the 8 aspects of quality of life by sex for surgery and control groups by t-test

Female Gender						
The Results of the T-Test for Equality of Means						
Variables	t	df	P	Mean Differences	95% Confidence Interval for Mean Differences	
					Lower Bound	Upper Bound
General health state	-2.252	187	0.025	-4.17	-7.83	-0.52
Body image	-1.382	123	0.169	-9.83	-23.91	4.25

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such an extent that have obsessed many people, especially the youth.

Now more than ever, much time and money are spent on the appearance and the ways of changing it. The people fantasize about their body image and try to cover their defects by makeup and or wearing different costumes mainly because of their own subjective impression of their bodies. It seems that satisfaction with body image among young people requires 5 body factors, including: 1. Fitness; 2. Beauty; 3. Physical health; 4. Skin and hair cleanliness, health, and beauty; and 5. The ability of weight control.

Any sort of dissatisfaction with body image may result in anxiety, depression, social isolation, mental disorders, self-concept, and self-esteem undermining. Body image is a fluctuating and multi-dimensional concept. Many researchers now agree that body image is a multi-dimensional subject that involves perceptual, attitudinal and behavioral components. In fact, body image is a complex concept that incorporates internal biological and psychological factors along with external social factors.

The combination of perceptual, attitudinal and behavioral assessments in body image provides a better predictor for disorders related to body image, weight-loss attempts, and eating disorders than any of these evalu-

ations, separately. The results of the studies performed in the last few decades have shown that many people, especially females sought to change their body image.

Women like to have a better complexion than their peers and tend to do face and neck cosmetic surgeries more than men. Cafri and Thompson (2004) found that women like to be slimmer in their assessment of body image and get a higher score in terms of facial beauty. While the researchers found no considerable concern about low weight in men. In general, these findings indicate that both men and women have body image concerns. One of the characteristics of body image is one's perception of own body as being fat, slim, short, or tall [29].

Logi Kristjánsson (2010) reported that people with a high body mass index are dissatisfied with their body image and there was a relationship between body mass index, body image, and self-concept [30]. They also reported that fat people have an unfavorable body image of themselves and their self-concept is lower than those with a low body mass index. In addition, the individuals with low body mass index consider themselves more physically attractive and have better social functioning than those with high body mass index. Therefore, it can be said that having an ideal body image and satisfaction with body and body mass index





results in positive self-concept while discontent over body image leads to individual's dissatisfaction with his/her own body and pathological behaviors such as eating disorders and depression.

Many variables are psychologically related to body image and body mass index, including self-concept, self-esteem, general health, depression, and lifestyle. Each of these variables can influence or be influenced by body image and body mass index in different ways and ultimately an impaired body image can lead to problems such as anorexia, bulimia, unbalanced weight change, sleep disturbance, lack of energy, anxiety, mental distress, slow response, self-blame, and feeling guilty for no reason. These disorders can increase under certain circumstances, particularly in situations where there are rigid cultural norms about fitness and weight loss. Unfavorable body image and high body mass index might also reduce self-confidence and undermine self-concept [30].

The results of a three-year longitudinal study revealed that derisive memories of body image in the past reinforces negative self-concept and body image dissatisfaction. This study also showed that social and cultural views reflect the widespread impact of social and cultural support on body image development and this effect is apparently stronger in Western societies [31]. Following body image dissatisfaction and negative self-concept formation, one seeks a change in one's own body image to get closer to his or her ideal body image. It seems that diets and weight loss programs are the first attempts used to change the body image; however, since most of those participating in such activities fail to reach the ideal weight, they inevitably experience anxiety and depression which lead to social isolation, feeling guilty, dissatisfaction with themselves, and eventually put their general health at risk [32].

In a study on issues related to cosmetic surgery, body image, and lifetime attitudes of men and women by Frederick et al. (2007), it was concluded that people interested in cosmetic surgery had poorer body images than uninterested ones and particularly overweight individuals with high body mass index showed more interest in liposuction cosmetic surgery and their body images were poorer compared to the others [33]. Comparison of pre-operative and post-operative dissatisfaction with body image and disorders related to physical deformity in those who had undergone cosmetic surgeries revealed that body image, body mass index, and physical self-concept were related to interest in cosmet-

ic surgery and those with a high body mass index had a poor body image of themselves [33].

Bisaga (2005) in a study on the level of depression and anxiety of female students and employees of Pennsylvania University showed no significant difference between the level of anxiety and depression in the group who had cosmetic surgery and normal group who lacked any type of cosmetic surgery but he also found that the members of the surgery group report less dissatisfaction with their body image than normal group [34]. Badiba and his colleagues (2008) found a relationship between body mass index and self-concept in students and found that overweight subjects had a lower self-concept. According to the findings of this study, low self-concept is aggravated by several factors, the most stressed one was the impact of society and media. The subjects believed that their body size limited their social activities and made them feel frustrated by experiencing failure in society [35].

In a study conducted on 368 men in Ohio University, a correlation was found between dissatisfaction with body image and general health and those dissatisfied with their body image were under psychological pressure and their general health is worse than the others [35]. The results of a study conducted on the effect of gender on body image and self-concept indicate that physical activity improves the body image and self-concept in men, while it has no significant effect on women [36]. Based on the Behzadianezhad (2007) study on social, economic, and personality traits of cosmetic surgery applicants in Tehran, the commonest reason for undergoing cosmetic surgery was to change the body image and become beautiful. Mohammadi and Sajjadi Nejad confirmed the relationship between self-esteem and dissatisfaction with body image by evaluating psychometric indices, body image, physical body index, and dissatisfaction with body image and self-esteem [37].

The results of Ebrahimi study which examined the personality patterns of cosmetic surgery applicants showed a relationship between psychological symptoms and the demand for cosmetic surgery [38]. A possible explanation for these findings is that those undergoing cosmetic surgery are dissatisfied with the appearances of the target organs (not a medical problem). Thus, if cosmetic surgery can provide the least satisfaction with the target organ and its respective body image, they will naturally be content. The findings of the present study showed a difference between the subjects seeking cosmetic surgery and normal people in terms of body image. It was also revealed that the general health of those undergo-

ing cosmetic surgery and the normal ones are statistically different ( $P=0.0001$ ).

These results are consistent with the findings of Creland et al. [39], Morgan (1991) [40], Harvey and Robinson [41]. Based on the Sarwer [42] reports, 7% of the subjects had symptoms of general health disorder. In addition, Masoudzadeh et al. [43] acknowledged the relationship between the demand for cosmetic surgery and general health disorder.

These findings might be explained by the people's dissatisfaction with their body image, influenced by culture and peer groups. This dissatisfaction leads to inappropriate evaluations, negative thoughts, emotions, and finally reduces their self-confidence. In such situations, people limit their social relationships and may even become isolated and get anxious in their social encounters. Social isolation and avoiding peers could result in depression and negative assessments so that people experience body dysmorphic disorder and even consider one or more organs to be deformed and hateful which consequently lowers their self-esteem.

These general health-weakening factors can encourage individuals to change the appearance of the organs considered as deformed and derisive. The combination of these reasons makes the majority of cosmetic surgery applicants to feel at least one impairment in general health factors and subtypes. For this reason, the demand for cosmetic surgery is related to psychological symptoms and if people are satisfied with their postoperative changes they will experience less depression, better social functioning, reduced physical disability, and improvement in general health. Moreover, the findings showed a significant difference between cosmetic surgery applicants and normal people in terms of quality of life.

## 5. Conclusion

The majority of those seeking cosmetic surgery are dissatisfied with their appearances. In addition, mental disorders can affect their tendency to undergo cosmetic surgery. This dissatisfaction of cosmetic surgery applicants leads to inappropriate evaluations and negative thoughts and emotions and reduces their self-confidence. In such situations, people limit their social relationships and may even become isolated and get anxious in their social encounters.

Social isolation could result in depression and negative assessments development so that people feel body

dysmorphic disorder and even consider one or more organs to be deformed and hateful which consequently lowers their self-esteem. These general health-weakening factors can encourage individuals to change the appearance of the organs considered to be deformed and derisive and if cosmetic surgery gives them the least content with the target organ they might be more satisfied with their appearance.

The mean score of positive body image in both men and women was almost the same, but in the control group, the positive body image score was higher than the surgery group. The mean score of general health in women was higher in both control and surgery groups than in men. In other words, women enrolled in both control and surgery groups had lower general health. In addition, the general health score of the control group was higher than that of the surgery group. Different aspects of quality of life in men and women were similar, but the mean scores for men were higher than women. There was also a similar trend in the control and surgery group in both genders.

## Ethical Considerations

### Compliance with ethical guidelines

This study was approved by the Ethics Committee of Hamadan University of Medical Sciences (Code: IR.UMSHA.REC.1390.112).

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### Authors contributions

Study design, protocol writing, cell preparation, data collection, analysis interpretations, writing and reviewing: Mohammad Ahmadpanah, Saeed Mosavi, Mohsen Dallband, Mohammad Zandi, Majid Saleh; and Interpretation, writing and reviewing: Marzieh Nazaribadie, Mohammad Ahmadpanah; and Reading and approving the final manuscript: All authors.

### Conflict of interest

The authors declared no conflict of interest.

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