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**Title:** Personality Disorders among Individuals Seeking Cosmetic Botulinum Toxin Type A (BoNTA) Injection, a Cross-Sectional Study

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## ABSTRACT

**Objective:** Body dysmorphic disorder, narcissistic personality disorder, and histrionic personality disorders are the most frequent personality disorders in patients seeking cosmetic interventions. Botulinum toxin type A (BoNTA) injection for cosmetic purpose is the most popular among non-surgical cosmetic procedures and is also the second common aesthetic treatment in Iran. The current study aimed to assess personality disorders in people who were referred for BoNTA injection in Ardabil, Iran.

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To the best of our knowledge, this is the first study on personality disorders in applicants for cosmetic BoNTA injection in Iran.

**Materials and Methods:** In a descriptive cross-sectional study, 200 eligible applicants for cosmetic BoNTA injection were selected by non-probability sampling. Firstly, the participants' demographic data were recorded in data gathering forms. Then their personality characteristics were evaluated via the Milton Clinical Multiaxial Inventory 3rd edition, which is a standardized self-report questionnaire for the assessment of personality disorders and clinical syndromes.

**Results:** Narcissistic personality trait was the most common (34.5%) followed by histrionic personality trait (27%), and obsessive personality trait was the least common personality trait (4%) in patients seeking BoNTA injection. Anxiety disorder had the highest frequency of clinical syndromes (46%) among the participants in this study, somatization had 25.5%, and dysthymia had the lowest frequency (11%).

**Conclusion:** The current study concluded that narcissistic and histrionic personality traits and anxiety and somatization symptoms are higher in applicants for cosmetic BoNTA injection.

Keywords: Botulinum Toxins, Type A, Surgery, Plastic, Personality Disorders

## Introduction

Study on correlation between cosmetic procedures and psychological problems in patients has increased in the recent years because of a remarkable increase in such procedures worldwide [1].

Results of various studies have shown that dissatisfaction with body image, low self-esteem, insecurity, and embarrassment in some women leads to more people seeking cosmetic procedures [2].

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Although body image dissatisfaction is the main motivation for aesthetic surgeries, it seems that media figures and television shows are very effective in popularizing such treatments [1-2]. From 2005 to 2006, cosmetic interventions have increased to 34% in the United States (US), and these increases are mainly correlated to non-surgical cosmetic procedures, such as botulinum toxin type A (BoNTA) injection, lipotransfer, dermal fillers injection [1].

According to American Society for Aesthetic Plastic Surgery, in 2012, an increase of 300% was observed in surgical and non-surgical cosmetic treatments [3]. In the past seven years, an increase in suicide risk has also been reported in women who underwent breast augmentation surgery in the US. The prevalence of body dysmorphic disorder (BDD) is about 1% in general population, but results of several studies revealed that BDD is more common among patients who seek cosmetic surgery with a prevalence rate of 7%–15% [1].

BDD, narcissistic personality disorder, and histrionic personality disorders have been reported in many studies as the most frequent personality disorders in patients seeking cosmetic interventions [3-6]. Also, results of various researches have revealed that anxiety disorders and depression are significantly higher among individuals who are applicants for cosmetic procedures [3, 4, 7].

Although aesthetic interventions are growing worldwide, our knowledge regarding motivations that leads the patients to seek such treatments is still inadequate [2]. Hence, the screening for personality disorders before performing cosmetic procedures is necessary because patients with personality disorders who seek cosmetic interventions may need psychiatric treatments before any cosmetic

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procedure [8]. As inferiority feeling is very common in patients who are after aesthetic surgeries, alternative treatments such as self-acceptance methods are suggested instead of such interventions [9].

BoNTA injection is the most popular non-surgical cosmetic procedure because it gives a young-looking appearance, positive facial expressions, and higher self-esteem to the patients and also has few side effects and a high degree of satisfaction in the patients [7, 10]. During the past two decades, the rate of cosmetic surgeries has increased in Iran as well. Such fast-growing popularity of aesthetic interventions in Iran has ranked it, along with Brazil and Turkey, among the first three countries to have the highest rate of cosmetics procedures in the world. BoNTA injection is the second common aesthetic procedure after rhinoplasty in Iran [11].

Hence, according to popularity of BoNTA injection and reports of several studies about increase in the prevalence of psychological disorders in Iran [12], the aim of this study was to assess personality disorders among people who were referred for BoNTA injection in Ardabil, Iran. To the best of our knowledge, this is the first study on personality disorders in applicants for cosmetic BoNTA injection in Iran.

## **Materials and Methods**

This was a descriptive cross-sectional study on individuals who referred a cosmetic clinic for BoNTA injection during a one-year (2016–2017) period in Ardabil, Iran. Inclusion criteria included individuals older than 18 years who referred to cosmetic clinic for BoNTA injection and accepted to participate.

Exclusion criteria were: keloid scarring, pre-existing motor neuron disease, myasthenia gravis, Eaton–

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Lambert syndrome, neuropathies, BDD, history of reaction to toxin or albumin, dermatoses of the treatment area, pregnancy, lactation, and unwillingness to participate in the study.

A total of 200 eligible subjects were selected using the non-probability sampling technique (non-randomized selection). **The study protocol was approved by the Ethic Committee of Islamic Azad University, Ardabil Branch, Iran**, and written informed consents were obtained from all participants before the study.

At first, demographic data, including gender, age, education, marital status, and occupation, of the participants were recorded in data gathering forms. Then, the patients' personality characteristics were evaluated via the Milton Clinical Multiaxial Inventory 3<sup>rd</sup> edition (MCMI-III), which is a standardized self-report questionnaire for the assessment of personality disorders and clinical syndromes. MCMI-III includes 175 true/false questions, which require 25 to 30 min to complete. This questionnaire has 27 scales including 14 clinical personality scales, 10 clinical syndrome scales, and three correction scales [5, 12].

According to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-VI), personality disorders are divided into three groups: group A (paranoid, schizoid, and schizotypal), group B (antisocial, borderline, histrionic, and narcissistic), and group C (avoidant, dependent, and obsessive-compulsive).

There are 14 personality disorder scales in MCMI-III, which include: 1, schizoid; 2A, avoidant; 2B, depressive; 3, dependent; 4, histrionic; 5, narcissistic; 6A: antisocial; 6B, aggressive (sadistic); 7,

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compulsive; 8A, passive-aggressive (negativistic); 8B, masochistic and severe personality disorders (Schizotypal); 8C, borderline; and P, paranoid.

The 10 clinical syndromes include: A (anxiety), H (somatoform), N (bipolar, manic), D (dysthymia), B (alcohol dependence), T (drug dependence), R (post-traumatic stress disorder) and severe clinical syndromes: SS (thought disorder), CC (major depression), and PP (delusional disorder).

Scoring system in MCMI-III is as follows:

Base rate score of 60 (BR60) indicates the median score. BR0 is the lowest and BR115 is the highest possible score.

For personality disorders: BR 70–74 (having some personality traits), BR 75–84 (having clinically significant personality traits), and BR≥85 and above (personality disorder).

For clinical syndromes: BR 60–74 (having some symptoms of clinical syndrome), BR 75–84 (having a syndrome), BR≥85 (prominent clinical syndrome).

In the current study, the Farsi version of MCMI-III was used, the validity of which has been assessed in several studies in Iran and reported as a validated and accurate diagnostic tool for the assessment of personality disorders.

The positive predictive power of MCMI-III has been reported to be between 0.92 and 0.97, and the negative predictive power between 0.93 and 0.99 [4, 11].

### **Statistical analysis**

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After completing both the data gathering forms and the MCMI-III questionnaires for all participants, collected data were analyzed using SPSS 21 for windows (SPSS, Inc., Chicago, IL, USA). Descriptive analysis was conducted using mean and standard deviation for quantitative variables and frequency and percentage for qualitative variables.

## Results

Of the 200 participants, 74% (n=148) were females and 26% (n=52) were males. The mean age of the patients was  $43.28 \pm 7.39$  years (range: 29–58 years). About 58.5% (n=117) of participants were single and 41.5% (n=83) were married. Also, 28% (n=56) did not have a high school diploma, 37.5% (n=75) had a high school diploma, and 34.5% (n=69) were university graduates.

Nearly 43% of our subjects (n=86) were employed and 57% (n=114) were unemployed or were housewives. Results of the current study showed that narcissistic personality trait was the most common personality trait (34.5%) followed by histrionic personality trait, and obsessive personality trait was the least common (4%) among patients seeking BoNTA injection (Fig. 1).

As shown in Fig. 2, anxiety disorder had the highest frequency of clinical syndromes (46%) among the participants in this study, somatization was 25.5% and dysthymia had the lowest frequency (11%).

## Discussion

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The results of the current study revealed that the most common personality trait in patients seeking BoNTA injection is narcissism, which was reported in 34.5% of the participants. Zojaji et al. [5] also reported narcissism as the most common personality trait in patients seeking cosmetic rhinoplasty (26.7%), which is close to our results.

Gazize et al. [4]-reported the same result in applicants for cosmetic surgeries. According to a systemic review by Shridharani et al. [14], narcissism was also the most common personality disorder in patients undergoing cosmetic plastic surgeries.

**Higher frequency of narcissistic disorders among individuals who seek cosmetic procedures is predictable because such patients like to be the center of attention and more beautiful than others which can be achieved by a cosmetic surgery in their opinion.**

Histrionic was the second most common personality trait (27%) in our participants. Shridharani et al. [14] reported histrionic disorder as the second common personality disorder in applicants for cosmetic surgeries which is the same as our results.

Our findings are close to the results of Zojaji et al. [5] study (histrionic trait: 10%), although sample sizes are different (200 vs. 30). Findings of Gazize et al. [4], Mulkens et al. [6], and Malik et al. [15] also showed that histrionic personality disorder is more common in people seeking cosmetic procedures than in normal population.

**Patients with histrionic personality disorder need more attention than the others, like to be seductive, and have more tendencies toward aesthetic surgeries.**

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Dependent personality trait was ranked the third common personality trait (18%) in the current study, which is the same as what is reported in studies conducted by Zojaji et al. [5] and Gazize et al. [4].

Depressive personality trait (8.5%) was the fourth one observed in our participants, which is consistent with the results reported by Zojaji et al. [5]. In the present study, obsessive personality trait (4%) was the least common among individuals referred for BoNTA injection. Gazize et al. [4] demonstrated that obsessive-compulsive personality disorder is the third common personality disorder in applicants for cosmetic surgeries, which is inconsistent with our results. This difference may be due to different study designs (descriptive vs. case-control), sample size (200 vs. 62), and questionnaires. In this study, we only used MCMI-III, but Gazize et al. [4] used SCL-90-R questionnaire and physical self-description questionnaire as well.

Kucur et al. [3] concluded that compared with controls, patients who seek rhinoplasty have higher scores of avoidant traits, but we did not report avoidant trait in our participants. This huge difference in results may be due to difference in sample sizes (75 vs. 200), study designs (case-control vs. descriptive), assessment tools (Hospital Anxiety and Depression Scale, Leibowitz Social Anxiety Scale, Quality of Life Scale Short Form, and Rosenberg Self-Esteem Scale vs. MCMI-III), and cosmetic procedures (rhinoplasty vs. BoNTA injection).

Borderline personality trait was the least frequent trait in the study conducted by Gazize et al. [4], but we did not find any borderline trait among our subjects. Anxiety was the most common clinical syndrome (46%) among individuals seeking BoNTA injection in the

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current study, which is consistent with the reports reported in the studies conducted by Gazize et al. [4], Javanbakht et al.[16], and Carter Singh et al. [7].

Kucur et al. [3] also found that social anxiety is more common in patients seeking rhinoplasty. Findings from the studies conducted by Gazize et al. [4] and Javanbakht et al. [16] revealed symptoms of depression in patients seeking cosmetic procedures, but we did not observe the clinical syndrome of depression in applicants for BoNTA injection.

Somatization was the second common clinical syndrome in our participants. Gazize et al. [4] reported that somatization is more frequent in candidates for cosmetic procedures than in non-candidates, which is close to our results. Zahiruddin et al. [17] reported that depression, anxiety, and somatization are less common in patients seeking rhinoplasty than in controls, which is completely different from abovementioned findings. Their study [17] used two different assessment tools (General Health Questionnaire-28 and Roger's Self-Concept questionnaire), which could have caused these differential results [23].

Dysthymia was the least common clinical syndrome in applicants for BoNTA injection in our study.

Our study had limitations like descriptive design instead of case-control design and use of only one assessment tool (MCMII-III). MCMII-III is more sensitive in detecting narcissistic personality trait and less accurate in detecting obsessive-compulsive

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compared with Minnesota Multiphasic Personality Inventory [4], which can affect the results, and lack of a psychiatrist in research team for the assessment of personality traits and clinical syndromes in the participants.

To the best of our knowledge, the present study is the first study on the prevalence of personality disorders among individuals seeking BoNTA injection for cosmetic purposes in Iran and probably one of the first studies that assesses personality disorders in applicants for aesthetic BoNTA injection in literature.

This study concluded that narcissistic and histrionic personality traits and anxiety and somatization symptoms are higher among individuals seeking cosmetic BoNTA injection, which is consistent with the results of several previous studies on patients seeking different cosmetic interventions. We did not detect personality disorders in our participants according to the MCMI-III questionnaire.

More studies concentrating solely on personality disorders in aesthetic BoNTA injection applicants using a combination of personality assessment tools are suggested.

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Figure 1. Frequency distribution of personality traits in patients seeking BoNTA injection

Figure 2. Frequency distribution of clinical syndromes in patients seeking BoNTA injection

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