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Comparison of Depression and Anxiety Levels Before and After Rhinoplasty: A longitudinal study

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Abstract

Background: Rhinoplasty is a common cosmetic procedure in which the nasal shape is changed and reconstructed. It can be done for both reconstructive and cosmetic purposes. Evaluating the success of the procedure involves traditional measures as well as the patient's perspective, both of which are important for their psychological well-being.

Aim: This research was conducted to evaluate the mental health changes after rhinoplasty in different populations. Understanding the level of anxiety and depression in rhinoplasty patients before and after the operation is important for achieving positive outcomes.

Methods: In this study, 200 patients over 18 years of age who underwent rhinoplasty surgery were selected. Anxiety levels were checked using Hamilton questionnaire prior to the operation and the depression level via Beck questionnaire. Then, after six months, the anxiety and depression levels were examined again. The differences before and six months after the operation were evaluated by paired t-test. A P-value less than 0.05 was considered statistically significant.

Results: 200 patients underwent rhinoplasty for a study. The average patient age was 28.14 ± 10.21, and 83.5% were women. Most patients did not have a history of depression. The Beck questionnaire showed a significant reduction in depression scores post-surgery (p=0.032). Anxiety levels showed no significant difference before and after rhinoplasty (p=0.862).

Conclusion: The level of depression in patients after rhinoplasty decreased significantly. Rhinoplasty did not affect the anxiety level of the patients.

Conflicts of Interest: The Authors declare no conflicts of interest.
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Introduction

Rhinoplasty is a plastic surgery procedure used to reconstruct and change the shape of the nose (1). Every year, more patients seek plastic surgeons to change the appearance of their noses. As a result, rhinoplasty has become one of the most common cosmetic procedures performed today. However, this technique is also regarded as one of the most technically challenging cosmetic treatments (2). Two types of plastic surgery are utilized for the nose: reconstructive surgery and cosmetic surgery. Reconstructive surgery focuses on restoring the

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shape and function of the nose following injuries from various traumas such as blunt force, penetrating injuries, or trauma caused by explosions. In comparison, cosmetic surgery aims to enhance the appearance of the nose. This may involve reducing or increasing its size, altering the shape of the tip or bridge, narrowing the nostrils, or changing the nasolabial angle (3). Traditional evaluations of the success of a surgical procedure focus on mortality, complications, revision rates, the need for reoperation, as well as function and form (4). Studies have also examined the outcomes of medical interventions when evaluating their success. However, an important factor in assessing the surgical results, particularly in cosmetic procedures, is the patient's perception of the outcome (5). This perspective can significantly impact the psychological outcomes following surgery, making it crucial to consider. The World Health Organization defines health as a complete physical, mental, and social well-being, rather than merely the absence of disease or infirmity (6). Therefore, the feeling of individual well-being is the ultimate goal of doctors, and this feeling is not only related to the physical health of people but also the mental, emotional, and social aspects of health (7).

Numerous studies have evaluated changes in mental health following rhinoplasty across various populations (8-10). There is limited information regarding the mental state of individuals who undergo rhinoplasty, as well as the psychological changes they may experience after the surgery. Issues related to mental health, such as depression and anxiety, can impact the outcomes of the procedure and lead to negative results for both the patient and the surgeon (11). In this study we investigate the levels of anxiety and depression experienced by patients undergoing rhinoplasty. This evaluation involves measuring specific psychological indicators both prior to the surgical procedure and after its completion, allowing for a comprehensive assessment associated with changes in the mental health related to the surgery.

Methods

Two-hundred consecutive patients who underwent rhinoplasty were included in this study. The study was conducted in accordance with the principles outlined in the Declaration of Helsinki, ensuring that all ethical considerations were thoroughly upheld. Prior to the commencement of the research, the protocol received approval by the ethical committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.RETECH.REC.1403.355).

Each patient involved in the study was provided with comprehensive information regarding the research procedures, objectives, and potential risks. Subsequently, written consent was obtained from all individuals, confirming their willingness to participate in the study.

All patients aged 18 and older who sought rhinoplasty at Lughman-Hakim hospital are included in the study from March 2023 to December 2023.

During the preoperative physical assessment, symptoms of nasal blockage and significant septal misalignment were noted. Patients exhibiting these conditions were excluded from the study. Additionally, individuals who were currently taking psychiatric medication, had a history of depression, anxiety, or other psychiatric disorders, or had previously undergone rhinoplasty were also excluded. Besides, patients who score 30 or above on the Hamilton Anxiety Scale and those who score between 29 and 63 on the Beck Depression Inventory will be excluded.

To gather comprehensive information from the personal information questionnaire, we aim to assess anxiety levels using the Hamilton Rating Scale for Anxiety (HAM-A) (12). This scale provides a total score that ranges from 0 to 56, reflecting varying degrees of anxiety severity. Specifically, a score of 18 indicates the presence of mild anxiety, suggesting that the

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individual may experience occasional feelings of nervousness or apprehension. A score of 25 signifies moderate anxiety, where the individual is likely facing more persistent anxiety symptoms that can interfere with daily activities. Finally, a score of 30 or higher is indicative of severe anxiety, where the individual may find it challenging to function effectively due to overwhelming feelings of anxiety and distress. To assess the level of depression in individuals, the Beck Depression Inventory (BDI) (13) is a widely used questionnaire developed by Aaron T. Beck. This instrument categorizes scores into various ranges that indicate the severity of depression. Specifically, a score between 0 and 13 suggests the individual is experiencing normal mood or exhibits the lowest level of depressive symptoms. If a person scores between 14 and 19, this indicates mild depression, which may reflect some occasional feelings of sadness or a lack of interest in activities. Scores ranging from 20 to 28 signify moderate depression, where individuals may experience more persistent symptoms that can interfere with daily life. Finally, a score between 29 and 63 is indicative of severe depression, suggesting the presence of debilitating symptoms that significantly impact an individual's overall functioning and wellbeing.

Demographic information, along with levels of depression and anxiety, were recorded before and six months after the surgery. We compared the levels of depression and anxiety in patients before and after the surgery. Additionally, postoperative levels of depression and anxiety were assessed during follow-up using the previously mentioned questionnaires.

Data analysis was conducted using R. A paired t-test was utilized to compare pre-operative and post-operative levels of depression and anxiety.

Results

The study included 200 patients who underwent rhinoplasty. The average age of the participants was 28.14 years, with a standard deviation of 10.21.

The majority of the patients were women, comprising 167 individuals or 83.5% of the total. Demographic information for the patients is presented in Table 1.

Table 1: The demographic data of patients.

Variable		Frequency (percentage)
Education	Diploma or less	98(49%)
	Bachelor's degree	59(29.5%)
	Master's degree	33(16.5%)
	Ph.D	10(5%)
History of depression	Positive	16(8%)
	Negative	184(92%)

As shown in Table 1, most of the patients did not have a history of depression.

The level of depression among patients was assessed using the Beck questionnaire, both before the rhinoplasty and six months after the procedure. The average scores on the questionnaire were 23.68 ± 12.42 before surgery and 17.96 ± 4.32 six months' post-surgery. Chart 1 illustrates the frequency of depression severity among patients based on the Beck questionnaire results.

After conducting the paired t-test, it was found that the patients' scores significantly decreased after the operation (p-value = 0.032). The

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average level of anxiety before rhinoplasty was 22.31 ± 6.87, compared to 8.91 ± 24.21 six months after the procedure.

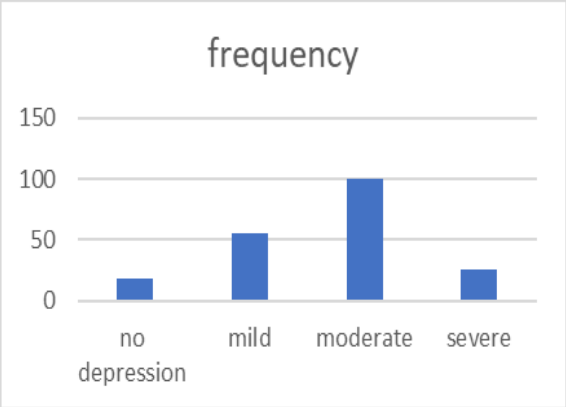

Figure 1: The severity of depression.

After conducting a paired t-test, it was determined that there was no significant difference in anxiety levels before and six months after rhinoplasty (p-value = 0.862).

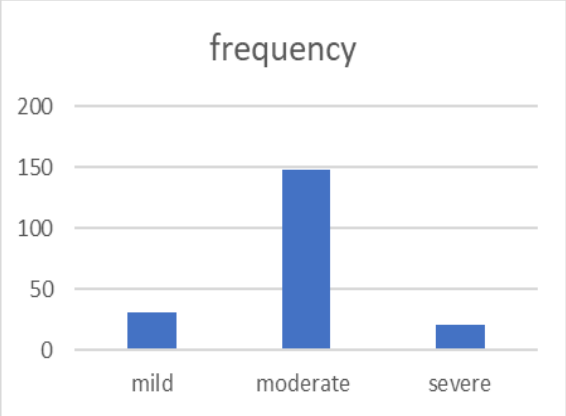

Figure 2: The frequency of anxiety among patients.

Discussion

Rhinoplasty is one of the most commonly performed surgeries worldwide. This nose surgery aims to correct anatomical abnormalities while preserving the cartilage, thus regulating the function of the nose and its mucous structures (14,15). Rhinoplasty is often performed for aesthetic reasons, rather than for any functional issues. Research shows that patients may experience social appearance anxiety related to their rhinoplasty (16-18).

Appearance anxiety refers to the feelings of anxiety individuals experience regarding how others perceive their physical appearance. This includes concerns about characteristics such as height, weight, muscle structure, skin color, and facial shape. Social appearance anxiety can significantly impact self-esteem as well (19).

It has also been observed that patients who undergo rhinoplasty may experience depression.

In this study, we investigated the impact of rhinoplasty on the levels of depression and anxiety in patients. We assessed the mental well-being of 200 patients before and six months after the surgery. Our findings demonstrated a substantial reduction in depression among the patients following the operation. There have been limited similar studies conducted in this domain.

A study conducted by Yildirim and his colleagues in 2024 examined 76 participants, comprising 27 controls and 49 patients who underwent rhinoplasty surgery. The findings revealed that individuals who underwent rhinoplasty exhibited higher levels of social anxiety compared to the control group (20). The findings of this study closely align with our research. Our recent investigation revealed that a substantial number of patients experience moderate anxiety before undergoing surgical procedures. This anxiety can arise from various factors, such as concerns about the surgery itself, potential outcomes, and the overall health implications. Recognizing this emotional state is essential, as it can influence both the patient's experience and their recovery process.

In a multicenter study conducted by Hohenberger and his colleagues in 2023, 259 patients who underwent septorhinoplasty were analyzed. The study found that levels of depression and anxiety were notably high among these patients, and their quality of life did not improve following the surgery (21).

This finding stands in stark contrast to our findings in this study. In the recent research, it was observed that the level of depression experienced by patients following surgery showed a significant decline.

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In a similar study conducted by Hashemi and his colleagues in Iran, researchers examined the psychological outcomes of patients who underwent rhinoplasty. The findings revealed that, irrespective of age, gender, education level, or marital status, these individuals experienced a significant boost in self-esteem following the surgery. The improvement in self-esteem was accompanied by a notable reduction in symptoms of depression and anxiety. This suggests that rhinoplasty not only enhances physical appearance but also contributes positively to the overall mental well-being of patients. The study underscores the broader psychological benefits that can accompany cosmetic surgery, highlighting its impact on emotional health and self-perception (7).

In a prospective study led by Papadopoulos and his colleagues, a group of patients who had undergone rhinoplasty were carefully examined for the outcomes of the procedure. The study aimed to evaluate both the physical and psychological effects of rhinoplasty on patients' lives. The findings revealed that a significant number of participants reported a marked improvement in their quality of life following the surgery. This enhancement was attributed not only to physical changes in their appearance but also to increased self-esteem and social interactions post-operation. The research underscores the potential benefits of rhinoplasty beyond aesthetic enhancements, highlighting its positive impact on overall well-being (22).

It is essential to acknowledge the limitations of this study. The small sample size and the presence of confounding variables may limit the applicability of the findings.

Conclusion

Following rhinoplasty, there was a notable reduction in the levels of depression among patients. This improvement in mood suggests that the surgical procedure positively impacted their overall emotional well-being. However, it is crucial to emphasize that the anxiety levels of the patients remained largely unchanged, suggesting that while rhinoplasty may enhance satisfaction and alleviate depressive symptoms, it has a minimal impact on anxiety.

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Conflicts of Interest

The authors declare no conflicts of interest.

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Ethics

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