



Relationship Between Personality Traits and Physical - Social Anxiety in Obese Women who are Applying for Bariatric Surgery: A Cross-Sectional Study

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Abstract

Background: Obesity is a multifactorial disease defined by excessive adiposity, posing a health risk by increasing the risk of noncommunicable diseases. We aimed to investigate the relationship between personality traits and physical-social anxiety in overweight women seeking bariatric surgery.

Methods: An applied and descriptive-correlational design was used in this cross-sectional study. The participants were overweight women who had applied for bariatric surgery and went to the hospital; a total of 110 people were selected through convenience sampling. The participants completed questionnaires on demographic characteristics, personality (neuroticism-extroversion-openness [NEO] personality inventory), and physical-social features. Data were analyzed using SPSS software via regression and correlation analysis at a significance level of $P < 0.05$.

Results: We found a positive relationship between neuroticism and physical-social anxiety ($P \leq 0.01$). Conversely, extraversion, agreeableness, openness, and conscientiousness exhibited negative associations with physical-social anxiety ($P \leq 0.01$).

Conclusion: Our study indicates that neuroticism is a positive and significant predictor of physical-social anxiety, while extraversion, agreeableness, conscientiousness, and openness are negative predictors of physical stress. These findings highlight the importance of considering personality traits in understanding the physical-social anxiety of overweight women seeking bariatric surgery.

Keywords: Bariatric Surgery, Personality, Anxiety, Obesity

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Introduction

Obesity is a complex multifactorial disease defined by excessive adiposity, posing a health risk. It has been identified as a serious public health challenge globally and a major determinant of disability and death in the WHO European Region. Obesity increases the risk of noncommunicable diseases (1). As one of the most pressing problems in the world, epidemiologists have reported obesity's upward trend in Europe, America, Asia, and the Middle East (2). One solution for reducing obesity is bariatric surgery (3, 4), which induces a long-term diminution in weight (5, 6).

Psychology is a scientific field that focuses on behavior, with a particular emphasis on human behavior. Psychologists have devoted considerable attention to the concept of personality, considered the ultimate objective of all psychological research. Personality is critical in identifying and describing an individual's behavior. It serves as an evaluative framework through which individuals assess their thoughts, emotions, and actions (7). Personality is an essential inherited and acquired factor affecting social behavior; it is described across five main dimensions: neuroticism, extraversion, openness, agreeableness, and responsibility (8). Various studies have shown that human personality is the key determinant of behavior and performance (9). Previous research has also shown that the level of physical-social anxiety is higher in women than in men (10), and women who are overweight experience such anxiety to a greater extent, related to dissatisfaction with the shape of the body (11).

Anxiety disorders are one of the most common psychiatric disorders (12). Recognizing and treating social and physical anxiety is very important in maintaining public mental health (13). Left untreated, anxiety activates the physiological system, increasing the heart rate, blood pressure, body temperature, and sweating (14). Anxiety sensitivity, worry, and difficulty in regulating emotions have significant effects on anxiety disorder (15). Eating behaviors also change with increased levels of irritability and depression (16), though studies examining such relationships among those seeking bariatric surgery are limited. Hence, in an unprecedented undertaking, the present study investigated the relationship between personality traits and physical-social anxiety in obese women applying for bariatric surgery.

Methods

The present study was a cross-sectional investigation, and the target population consisted of all obese women seeking weight loss surgery who visited Mother and Child Ghadir Hospital in Shiraz, Iran, during the first half of 2022. The sample for this study included 110 obese people with body mass index (BMI) >30 kg/m² who were selected via convenience sampling. The

institutional ethics committee approved the study protocol (code: IR.IAU.SHIRAZ.REC.1401.020). Written informed consent was obtained from all participants.

Research Tools

NEO (Neuroticism-Extroversion-Openness) Personality Inventory Questionnaire: This scale was compiled for the first time with 185 questions by McCree and Costa (17). The revised 60-question test is a validated tool that measures five personality traits, each using 12 questions. These traits include neuroticism (N), extroversion (E), openness (O), agreeableness (A), and conscientiousness (C). Gholami (18), in his research on the personality characteristics of people with physical disabilities in Baghmelek city, calculated the reliability coefficients of five factors of the NEO test using Cronbach's alpha method, finding an alpha coefficient of 0.639.

The answer sheet of the NEO test is based on a Likert scale (completely disagree, disagree, indifferent, agree, and completely agree). In the short form of the NEO test, a score of 4 is assigned to completely disagree, 3 to disagree, 2 to indifferent, 1 to agree, and 0 to completely agree, though some items are scored in reverse.

Socio-physical anxiety: The Social Body Anxiety Questionnaire is a 12-item scale created by Hart to assess body social anxiety. This tool measures the anxiety a person has regarding the shape of their body in social situations (19). It is quantified based on a five-point Likert scale; a score of 12 indicates minimum anxiety and a score of 60 indicates maximum anxiety. Studies have shown that this questionnaire combines two dimensions: feeling uncomfortable with your physical appearance and expecting negative evaluation from others. The time reliability of this test is reportedly 0.94 based on the test-retest method (19). The internal reliability of 0.85 for girls and 0.81 for boys indicates acceptable reliability of this scale's Iranian form, for which the reported Cronbach's alpha coefficient is 0.801 (20).

In this questionnaire, each item is answered using five options, scored from 1 (not at all) to 5 (severely). Items 1, 8, and 11 are scored in reverse. The minimum total score is 12, and the maximum is 60. The higher a person's score, the higher their anxiety about their appearance:

- A score of 12–24 indicates mild physical-social anxiety.
- A score of 25–35 indicates average physical-social anxiety.
- A score >36 indicates high physical-social anxiety.

First, a list of women applying for bariatric surgery who referred to the hospital was prepared, from which 110 people willing to participate in the research were selected by available sampling. Participants reported their demographic characteristics in a pre-designed form and then completed the NEO Personality Inventory (17) and Social-Physical Anxiety Questionnaire (19).

Data Analysis

Descriptive statistics (mean and standard deviation), correlation, and regression were used to analyze the data to show the effect of personality traits on physical-social anxiety in obese women. SPSS version 22 software for Windows (Chicago, IL, USA) was used to analyze the data. The confidence interval was set at 95% for all statistical tests, and $P < 0.05$ was considered significant.

Results

Table 1 shows the frequency table of demographic variables of the participants by age and education level.

Table 2 shows the summary of descriptive statistics (mean and standard deviation) related to the personality dimensions of the participants.

Table 3 shows the results of the Pearson correlation test on the relationship between research variables. We detected a positive relationship between neuroticism

and social-physical anxiety. However, extroversion, openness, agreeableness, and responsibility had negative relationships with social-physical anxiety.

Table 4 presents the results of our regression test to predict social-physical anxiety based on personality traits. Accordingly, personality traits explained nearly 36% of the variance of social-physical anxiety scores. Also, the neuroticism component could positively and significantly predict social-physical anxiety ($P = 0.001$, $\beta = 0.341$). The extroversion component could negatively and significantly predict socio-physical anxiety ($P = 0.001$, $\beta = -0.313$). The openness component could also negatively and significantly predict social-physical anxiety ($P = 0.005$, $\beta = -0.265$).

Discussion

The present study investigated the relationship between personality traits and physical-social anxiety in 110 obese women scheduled for bariatric surgery at

Table 1: Descriptive statistics of the demographic variables of the participants

Variable	Participants	Number	Percent
Age	20-30	34	30
	31-40	42	38
	>41	34	32
Education level.	Diploma	52	47
	Bachelor's degree	38	34
	Above bachelor's degree	30	19

Table 2: Descriptive statistics related to the personality dimensions of the participants

Variable	Average	Standard deviation	Min	Max
Neuroticism	23.56	7.10	8	37
Extroversion	27.32	5.95	13	49
Openness	26.17	3.87	15	34
Agreeableness	25.46	5.61	16	41
Conscientiousness	32.99	6.90	18	45
Social-physical anxiety	39.98	5.53	26	58

Table 3: Pearson correlation matrix table between research variables

	Neuroticism	Extroversion	Openness	Agreeableness	Conscientiousness	Social-physical anxiety
Neuroticism	1					
Extroversion	-0.422	1				
Openness	-0.437	0.575	1			
Agreeableness	-0.354	0.497	0.637	1		
Conscientiousness	-0.411	0.493	0.573	0.592	1	
Social-physical anxiety	0.276*	-0.235	-0.235	-0.289	-0.325	1

** $P \leq 0.01$; * $P < 0.05$

Table 4: Regression test to predict social-physical anxiety based on personality traits

Criterion variable	Predictor variable	R	R ²	F	P	β	T	P value
Social-physical anxiety	Neuroticism	0.600	0.360	30.168	0.001	0.341	3.657	0.001
	Extroversion					-0.313	3.438	0.001
	Openness					-0.265	2.764	0.005
	Agreeableness					-0.109	1.198	0.098
	Conscientiousness					-0.127	1.436	0.076

our center. The findings of our study show a significant relationship between physical-social anxiety and personality traits such as neuroticism, extroversion, openness, agreeableness, and conscientiousness. From this point of view, we compared our findings with a study on the relationship between childhood adversities and cardiometabolic health in overweight or obese Dutch women of reproductive age. The researchers considered potential mediators such as health behaviors, psychological distress, mood symptoms, and personality traits. Findings showed that childhood adversity was associated with poorer behaviors, including sleep and eating habits, as well as more stress-related symptoms. However, there was no significant association between childhood adversity and women's cardiometabolic health (21).

Additionally, another study demonstrated a significant relationship between personality traits and eating behavior. The affective component was positively correlated with neuroticism and agreeableness, while the externalizing component was correlated with extraversion/introversion (22). This is consistent with the findings of our research. In another investigation, weight pressures and physical-social anxiety in figure skaters were explored. The results showed that low weight and appropriate levels of physical-social anxiety were encouraging factors for the desire to progress among these athletes (23).

Several studies have explored the relationship between personality characteristics and physical-social anxiety in obese women (24, 25). Since physical-social anxiety has a direct relationship with the neurotic personality character, such individuals react to normal events with strong negative emotions. While others may not be affected as much, their reaction is often characterized by feeling threatened, depressed, anxious, stressed, angry, guilty, etc. They feel dissatisfied with themselves and their lives. This situation may be distressing due to the negative attention to events for the person and those around them (26).

After traumatic events, a person tries to overcome their negative feelings, but it is usually difficult for them to even think of ways to solve that problem. Their weak problem-solving ability is because when they feel danger, they withdraw from the situation instead of facing it, or instead of solving the problem, they use inefficient solutions such as rumination and

fantasization. Having these undesirable features is one side of the coin. On the other hand, these people have positive characteristics. For example, listening to their alarm to find danger prevents them from engaging in dangerous behavior and ensures their safety. Also, they consider the consequences of the behaviors they want to do more, so the possibility of engaging in delinquent and criminal activities decreases. In addition, due to the threat, they pay more attention to their physical condition, and it is reported that this issue causes better physical health in these people (27).

Conclusion

The current research indicates that neuroticism has a positive correlation with physical-social anxiety, while extroversion, agreeableness, conscientiousness, and openness have a negative correlation with physical-social anxiety. By improving personality factors, physical and social complications in overweight women applying for surgery can be addressed, potentially reducing anxiety related to obesity and bariatric surgery, as suggested by previous studies. It is recommended that similar research be conducted in other societies to achieve generalized findings.

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Author' Contribution

ShR, ZS, MJEA: substantial contributions to conception and design, acquisition of data, and analysis and interpretation of data; HK, AF: data interpretation and drafting the article and revising it critically for important intellectual content; all authors reviewed and approved the final version and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of interest: None declared.

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