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Predicting the severity of obsessive-compulsive symptoms based on attachment styles: The mediating role of health anxiety

Mostafa Rostami[1]; Ali Naeemi Nezam Abad[2]; Milad Shirkhani[1]; *Amirhosein Sadeghi[4]

[1]M.Sc. in general psychology, Faculty of Psychology and Education Science, Allameh Tabataba'i University of Tehran, Tehran, Iran.

[2]M.Sc. in general psychology, Faculty of Psychology and Education Science, University of Zahedan, Zahedan, Iran.

[3]M.Sc. in clinical psychology, Faculty of Psychology and Education Science, Ferdowsi University of Mashhad, Mashhad, Iran.

[4]M.Sc. in clinical psychology, Faculty of Behavioral Science and Mental Health (Tehran Institute of Psychiatry), Iran University of Medical Sciences, Tehran, Iran.

Abstract

Introduction: Obsessive-compulsive disorder is the fourth psychiatric disorder that reduces the quality of life. Therefore, it is important to investigate the causes of the formation and persistence of these symptoms. The main goal of this study is to predict obsessive-compulsive symptoms based on attachment styles through the mediating role of health anxiety.

Materials and Methods: The present study used descriptive-correlational and path analysis. The statistical population of this study includes Iranian adults, of which 370 people were selected as the research sample by the convenient sampling method. Data were collected online using the Yale-Brown Obsessive Scale (Y-BOCS), Collins and Reed Attachment Styles (RAAS), and Health Anxiety Scale (HAI-18). Pearson correlation, multiple regression, and path analysis using SPSS software version 26 and AMOS version 24 were used in analyzing data.

Results: A significant correlation has been observed ($P< 0.01$) between the styles of secure attachment (r= -0.10), anxiety attachment (r= 0.28), avoidant attachment (r= -0.20), and health anxiety (r= 0.42) with the severity of obsessive-compulsive symptoms. In addition, the results of Bootstrap indicate that the mediating role of health anxiety in the relationship between anxiety insecurity and avoidance insecure attachment styles with the severity of obsessive-compulsive symptoms is significant ($P= 0.001$).

Conclusion: Based on the findings, insecure anxiety, and insecure avoidance attachment styles are able to not only predict the severity of obsessive-compulsive symptoms by interacting with health anxiety but also, they do affect it.

Keywords: Attachment styles, Health anxiety, Obsessive-compulsive symptoms

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***Corresponding Author:**

Faculty of Behavioral Science and Mental Health (Tehran Institute of Psychiatry), Iran University of Medical Sciences, Tehran, Iran.

sadeghiamirhosein.ahs@gmail.com

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Introduction

Obsessive-Compulsive Disorder (OCD) is characterized by involuntary and repetitive thoughts, impulses, and actions, as well as compulsive behaviors in response to these thoughts. Obsessive-compulsive disorder is the fourth most common psychiatric disorder and has a lifetime prevalence of 1.3% (1-3). The most common co-occurring disorders with obsessive-compulsive disorder are major depressive disorder (15%), social anxiety disorder (14%), and generalized anxiety disorder (13%), respectively (4).

Various markers, including physical and psychological indications, influence the development of OCD. Obsessive-compulsive disorder is biologically characterized by abnormalities in the serotonergic and dopaminergic brain systems, elevated brain activity in the orbitofrontal, caudate, and anterior cingulate cortexes, and the striatal-thalamic cortical circuit (5-7).

On the other hand, in viewpoint of psychology, factors such as early life experiences, parenting, family dynamics, and attachment styles have been considered in the formation of obsessions (8,9). Secure, anxiety attachment and avoidant attachment are the three attachment styles that Ainsworth and his colleagues identified to describe infants' relationships with their parents. A child who has grown up secure can use his/her parents as safe support and create a belief about him/herself as lovable and about his/her parents as a sensitive responder and available (10).

However, when the primary caregiver is inconsistent, unavailable, and unresponsive, it can create a negative internal working model and insecure attachment. This insecure attachment is currently done in two ways: anxiety and avoidant. An anxiety attachment style (i.e., having high attachment anxiety) is characterized by hyperactivity of the attachment system, leading to a constant need to seek support and comfort. On the other hand, an avoidant attachment style is characterized by a deactivated attachment system, which leads to continual inhibition of psychological and social relationship needs, self-reliance, and a considerable distance from others (11).

Numerous studies have investigated the relationship between attachment styles and obsessive-compulsive syndrome: For example, a research showed that both anxiety and avoidant attachment methods significantly predict obsessive-compulsive symptoms. Also, some studies showed that anxiety attachment greatly affects obsessive-compulsive symptoms (11-13).

On the other hand, one of the most important indicators that play an important role in the formation and continuation of obsessive-compulsive symptoms is health anxiety (14). Anxiety is an illness-like condition associated with an excessive fear of contracting or having a disease, usually a medical condition. In this type of anxiety, people constantly monitor their health and examine their bodies. They constantly search the Internet for indicators of this disease (15,16).

Studies have shown that physical symptoms caused by health anxiety affect between 14 and 34% of obsessive-compulsive indicators in adults (17). Also, Rachman stated that health concerns, especially in the field of pollution, often lead to washing. Hands are washed a lot to prevent sickness and obsession (18). Hedman et al. showed that a health anxiety index is a significant predictor of OCD in the future (19).

Also, the researchers showed that interpersonal relationships in childhood could predict health anxiety; for example, seeing a loved one's illness in childhood is a risk factor for health anxiety in adulthood (20). One of the most determining relationships in childhood is the method of attachment formed in relation with parents because early intimate relationships with parents are influential in the future interactions of a person (21). In this regard, Reiser et al. showed that parental misbehavior and insecure attachment (especially anxiety attachment) predict health anxiety in adulthood (22). In addition, the Lewczuk et al. revealed that the anxiety-insecure attachment method has a significant relationship with anxiety symptoms (23).

Therefore, it can be said that the results of previous studies show that each of the variables of attachment methods and health anxiety has a decisive role in predicting obsessive-compulsive disorder. Considering the high prevalence of obsessive-compulsive symptoms, it feels a need for more studies on its formation and continuation. However, the mediating role of health anxiety about attachment styles and obsessive-compulsive symptoms had not been examined in Iranian and foreign research. Therefore, this research looks into whether health anxiety and obsessive-compulsive disorder can be related to attachment styles.

Materials and Methods

The present study has been done by descriptive-correlational and path analysis. The statistical population of this research included all Iranian adults from 18 to 50 years living in the city of Mashhad in 2021-2022 (Iranian year of 1400) who had adequate access to the Internet and social media at the time of sampling. Based on the type of statistical method used in the research, taking into account 25% dropout, 15% effect size, and 0.95 test power through G-power software, the minimum sample size of 300 people was determined; however, with the aim of increasing the similarity of the current sample with the target population, improving the power of the test and increasing the generalizability of the results, 370 people were selected through the convenient sampling method. Also, because this research was conducted during the outbreak of the coronavirus, sampling was done through an online questionnaire.

Research instruments

A) Demographic Characteristics Checklist: In this section, personal information, including gender, age, level of education, marital status, history of physical and psychological problems, and the way to re-establish communication for sending the research findings, were collected.

B) Yale-Brown Obsessive Scale (Y-BOCS): This scale was developed in 1989 by Goodman et al. This 10-item clinical index measures obsessive-compulsive symptoms. Each item is graded from 0 to 4 of severity, frequency, and duration of the symptoms and the patient's resistance to performing the procedures. Items 1 to 5 examine obsessive thoughts, and items 6 to 10 examine obsessive behavior. The reliability coefficient between different evaluators in 40 patients was 0.98, and the internal consistency coefficient was reported as 0.89 through Cronbach's alpha coefficient (24). Deacon and Abramowitz also found the correlation coefficient of the Yale-Brown scale with the Revised Obsessive-compulsive Questionnaire to be 0.45, the Brown Beliefs Scale to be 0.34, the Beck Depression Questionnaire to be 0.46, the Zong Anxiety Scale to be 0.38, and the Sheehan Disability Scale to be 0.55 (25). These coefficients indicate the good and high validity of this scale. In Iran, Esfahani et al. investigated the validity and reliability of the Persian version. They reported that Cronbach's alpha was 0.95, and the correlation coefficient for the two halves of the test was 0.89 (26).

C) Health Anxiety Scale (HAI-18): This scale measures health anxiety. The long form of this scale was first designed by Salkovskis and Warwick in 1989, based on which the cognitive model of health anxiety and self-morbidity was developed. The short form was designed in 2001 by Salkovskis and Warwick. This questionnaire contains 18 items with answers based on a four-point Likert scale. Each item has four options, and each option includes a description of the person from the components of health and illness in the form of a new sentence, and the respondent must choose one of the sentences that best describe him/her. Scoring for each item is from 0 to 3, and a high score indicates health anxiety. This questionnaire has three subscales: 1- getting the disease, 2- consequences of the disease, and 3- general health concerns. Salkovskis and Warwick obtained the test-retest reliability of this questionnaire at 0.90 and reported Cronbach's alpha coefficient from 0.70 to 0.82. These researchers used the illness belief scale and obtained the validity of the health anxiety questionnaire at 0.63 (27). In Iran, Nargesi et al. obtained the Cronbach's alpha for total questionnaire equal to 0.75. Also, Cronbach's alpha was 0.59 for the factor of general health concerns, 0.60 for disease, and 0.70 for the consequences of the disease, which indicates acceptable reliability for this questionnaire. Also, confirmatory factor analysis was used to check the validity of this questionnaire, which showed that health anxiety is a three-dimensional construct, and the existence of disease dimensions, disease consequences, and general health concerns are confirmed in it (28).

D) Collins and Read Attachment Scale (RAAS): This questionnaire was designed and validated in 1990 based on the theory of Hazan and Shaver (1987). The initial version of this questionnaire had 21 items, which was later reduced to 18. These 18 items examine three subscales in a five-point Likert scale: 1- Anxious style (A) that corresponds to ambivalent insecure attachment style, 2- Closeness style (C) that corresponds to secure attachment style, and 3- Style Dependence (D) which corresponds to the avoidant insecure attachment style. This scale includes self-evaluation of the skills of creating relationships and self-describing how to form relationships about close attachment pictures (29). In Collins and Read's research, Cronbach's

alpha coefficient of this questionnaire was 0.85 for the anxiety style, 0.81 for the closeness style, 0.78 for the dependency style, and 0.83 for the total questionnaire. Also, the test-retest coefficient for anxiety style is 0.52, for closeness style is 0.68, and for dependency, style is 0.71 (29). In Iran, the validity of the test is determined by using a retest as a correlation between two performances. This questionnaire was administered to 100 boys and girls in the second grade of high school who were randomly selected. The results of two implementations of this questionnaire with a time interval of one month from each other showed that this test is 95% reliable. In addition, the validity of the questionnaire was evaluated by the retest method in a group of 20 people with an interval of 10 days, and the correlation coefficient was 0.76, indicating the good validity (30). Also, in Hosseinzadeh Taghvayi et al.'s research, Cronbach's alpha coefficient was reported as 0.62 for the closeness style, 0.82 for the anxiety style, and 0.54 for the dependency style (31).

The data were collected from all interested adults who volunteered to participate in the research through an online questionnaire (Google form between November and December 2021) that was shared on Instagram, Telegram, and WhatsApp. The inclusion criteria included having at least elementary education, not suffering from acute medical and psychiatric problems, and willingness to participate in the research. The exclusion criteria included incomplete questionnaires. Therefore, the link to the research was distributed nationwide. Then it was sent to the people who expressed their desire and also had the necessary criteria to participate in the research so that they could complete the questionnaire whenever they had the opportunity. It took 10 to 15 minutes to answer all the questions. Then the collected data were entered into statistical software. To maintain the principle of confidentiality, the information obtained from the questionnaires was collected without the name and address of the subjects so that the identity of the subjects is preserved and only available to those involved in this research. Also, gaining the trust and confidence of the subjects to participate in the research and being free to answer the questionnaires were among other considerations that this study tried to observe. Descriptive statistics, including mean, frequency and standard deviation, minimum and maximum score, and Pearson correlation, were used to analyze the research data, and structural equation analysis was used to analyze the research hypotheses. Data were analyzed using SPSS version 26 and AMOS version 24.

Results

Among the 370 participants, 178 were men (48.1%) and 192 were women (51.9%). The participants' mean age was 29.73 ±10.74 years, respectively. Among these participants, 14.1% had a diploma, 3.2% had a post-diploma, 48.6% had a bachelor's degree, and 34.1% had a master's degree or higher. Two-hundred fifty six people (69.2%) were single, and 114 (30.8%) were married. The correlation coefficient matrix of research variables is presented in Table 1.

Table 1. Correlation coefficient matrix of research variables

Research variables	1	2	3	4	5
1. Secure attachment style	1				
2. Insecure anxiety attachment style	-0.11*	1			
3. Insecure avoidant attachment style	0.24**	-0.26**	1		
4. Health anxiety	-0.08	0.35**	-0.22**	1	
5.Severity of obsessive-compulsive symptoms	-0.10*	0.28**	-0.20**	0.42**	1

As Table 1 shows, there are significant correlations between the severity of obsessive-compulsive symptoms with secure attachment style (r= -0.10), anxiety attachment style (r= 0.28), avoidant attachment style (r= -0.20), and health anxiety (r= 0.42) ($P< 0.01$). Also, there is a significant correlation between health anxiety with anxiety attachment style (r= 0.35) and avoidant attachment style (r= -0.22).

Before analyzing the data, the assumptions of path analysis were first evaluated. The normality of single-variable distribution was investigated through the values of Skewness and Kurtosis and the assumption of multiple collinearities of the variables using the tolerance statistic and the variance inflation factor (Table 2). The results showed that there are no multiple collinearities between the

variables. The assumption of normality is invalid because there is no one of the variables is not outside the limit of ±2; it can be said that this assumption is valid.

Therefore, path analysis was used. Figure 1 shows the final model, and Table 3 shows the fit indices of the final model in the target sample.

Table 2. Descriptive indicators and path analysis assumptions

Variables	Mean	Standard deviation	Skewness	Kurtosis	Tolerance	Variance Inflation Factor (VIF)	Watson Camera
Secure attachment style	12.34	2.98	-0.11	-0.64	0.93	1.06	1.19
Anxiety attachment style	13.53	1.77	0.14	-0.72	0.83	1.20	
Avoidant attachment style	13.16	2.17	-0.09	0.14	0.86	1.15	
Health anxiety	15.83	5.07	0.13	-0.26	0.85	1.17	
Severity of obsessive-compulsive symptoms	18.64	6.86	0.60	-0.79	Criterion variable	Criterion variable	

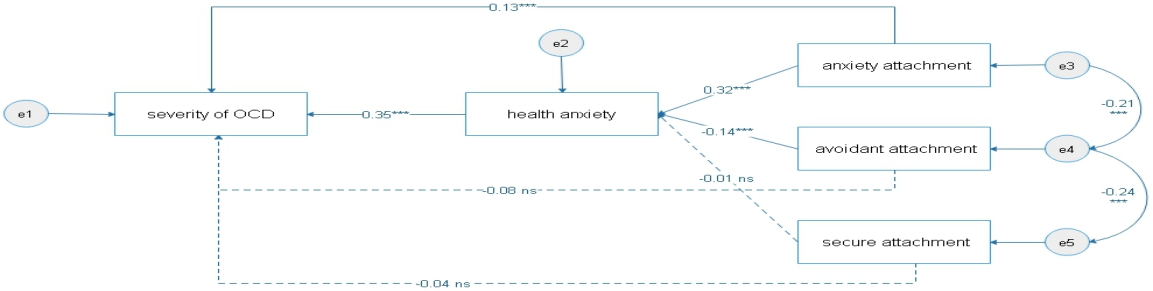

Figure 1. The final model

Table 3. Fitness indicators of the final model

Fit index	χ2	df	χ2/df	RMSEA	GFI	AGFI	IFI	CFI	TLI	NFI
Acceptable fit			≤ 3	≤ 0.08	≥ 0.09	≥ 0.9	≥ 0.9	≥ 0.9	≥ 0.9	≥ 0.9
Model estimation value	5.95	2	2.97	0.07	0.99	0.95	0.98	0.97	0.89	0.97

Table 3 shows that the fit indices of the final model include the Chi-square index (χ2= 5.95), relative Chi-square (df/χ2= 2.97), Goodness-of-Fit Index (GFI= 0.99), Goodness-of-Fit Index Adaptability (AGFI= 0.95), Comparative Fit Index (CFI= 0.97), Incremental Fit Index (IFI= 0.98), Tucker-Lewis Fit Index (TLI= 0.89) and Root Mean Square Error of Approximation (RMSEA= 0.07), the Root Mean Square of the Standardized Residual (SRMR= 0.02), indicates the fit of the final model.

To determine whether health anxiety has a mediating role in the relationship between attachment styles and the severity of obsessive-compulsive symptoms, the indirect method was used in the program of Macropreacher and Hayes (2008). Table 4 presents the direct and indirect effects of each path of the model.

Table 4. The results of direct and indirect relationships

Paths	Non-standardized estimate	Standard estimate	Standard error	P
Anxiety attachment style to obsessive-compulsive symptoms	0.53	0.13	0.19	0.006
Health anxiety to obsessive-compulsive symptoms	0.48	0.35	0.06	0.001
Anxiety attachment style to health anxiety	0.91	0.32	0.14	0.001
Avoidant attachment style to health anxiety	-0.32	-0.14	0.11	0.006
Secure attachment style to health anxiety	-0.02	-0.01	0.08	0.78
Anxiety attachment style to obsessive-compulsive symptoms with the mediation of health anxiety	0.44	0.11	0.02	0.001
Avoidant attachment style to obsessive-compulsive symptoms with the mediation of health anxiety	-0.15	-0.05	0.01	0.002
Secure attachment style to obsessive-compulsive symptoms with the mediation of health anxiety	-0.01	-0.005	0.01	0.79

As shown in Table 4, the direct path from anxious attachment style to obsessive-compulsive symptoms and to health anxiety was significant ($P< 0.05$). The indirect path of anxious attachment style to obsessive-compulsive symptoms through health anxiety (þ= 0.11; SE= 0.02, Bias Corrected 95% CI: Lower Level= 0.07, Upper Level= 0.16), this mediating relationship was significant, and its mediation is partial.

The direct path from avoidant attachment style to health anxiety was significant ($P< 0.05$). The indirect path of avoidant attachment style to obsessive-compulsive symptoms through health anxiety (þ= -0.05; SE= 0.01, Bias Corrected 95% CI: Lower Level= -0.08, Upper Level= -0.01), this mediating relationship was significant, and its full mediation.

Moreover, the direct path from secure attachment style to obsessive-compulsive symptoms and from secure attachment style to health anxiety was not significant ($P> 0.05$). The indirect pathway shown the path of secure attachment style to obsessive-compulsive symptoms through health anxiety also was not significant ($P> 0.05$).

Discussion

This study aimed to determine the mediating role of health anxiety in the relationship between attachment styles and obsessive-compulsive symptoms. As the results show, this model has a good fit. In this study, the relationship between insecure anxiety and insecure-avoidant attachment styles with health anxiety, anxiety, insecure and avoidant insecure attachment styles with obsessive-compulsive symptoms, and health anxiety was significant with obsessive-compulsive symptoms. On the other hand, insecure anxiety, insecure-avoidant attachment styles, and health anxiety could directly predict obsessive-compulsive symptoms. Also, the bootstrap results showed that the indirect effect of insecure anxiety and insecure-avoidant attachment styles on obsessive-compulsive symptoms through the mediating role of health anxiety was significant. The direct effect of anxiety and avoidant insecure attachment styles on obsessive-compulsive symptoms is consistent with the studies of van Leeuwen et al. (8), Khalifat and Monirpour (12), and Yarbor et al. (13). van Leeuwen et al. in 2020, investigated the role of attachment in obsessive-compulsive disorder using the meta-analysis method on OCD-prone people as well as the non-clinical population that showed obsessive-compulsive symptoms. The results of 16 studies showed that each type of insecure anxiety and insecure-avoidant attachment affects obsessive-compulsive symptoms (8). Dorri Mashhadi et al. in 2022 investigated the perceived parenting style of people with OCD symptoms on 206 people. The results showed that childhood dynamics, especially parenting style and parental attachment, play an important role in obsessive-compulsive symptoms (32). In explaining this finding, it can be said that insecure attachment is a basic vulnerability factor in creating ineffective beliefs. These ineffective beliefs include the exaggerated assessment of threat and danger in insecure anxiety people and the extreme importance of thoughts in insecure people. The avoidance of these beliefs leads to a regulatory dimension in an individual. It causes the person to turn any warning or threatening thought into an obsession due to insecure attachment with hyperactivity in the attachment system leading to an excessive increase in alertness to threatening signs.

Also, the direct effect of health anxiety on obsessive-compulsive symptoms is consistent with the studies of Willadsen et al. (17), Rachman (18), and Hedman et al. (19). Willadsen et al. studied the role of health anxiety in obsessive-compulsive disorder on 94 children and adolescents. The results showed that concerns related to health anxiety could lead to the formation of obsessive-compulsive disorder (17). Mazloumzadeh et al. in 2021 investigated health anxiety during the coronavirus epidemic on 598 people. The results showed that the probability of experiencing health problems, especially the symptoms of the disease on the Internet, is very high. Over time, it can lead to dangerous issues (33). In the analysis of the research, it can be said that health anxiety leads to a person perceiving any warning of Iran as a threat to the health. It makes emotional regulation difficult, and they can have an accurate description of the situation and the emotions related to it. As a result, by performing obsessive behaviors, they constantly try to prove the situation, but these behaviors not only reduce this stress (14).

The results also show that attachment styles significantly correlate with health anxiety. This research finding is consistent with the research results of Reiser et al. (22), Lewczuk et al. (23), and Rajkumar (34). Rajkumar et al. in 2020 studied that how people respond to the

coronavirus and the resulting health anxiety based on their attachment style. The results showed that the insecure attachment style could not be used good coping strategy against the coronavirus, and as a result, the probability of experiencing anxiety and depression in them increases (34). In explaining finding, it can be said that the experiences of the first life of the caretaker of this important life predict many characteristics of people in adulthood. People with insecure attachments have high sensory processing sensitivity. They are more sensitive to physical symptoms so they may consider any physical symptom caused by a disease (35,36).

Insecure attachment may also increase seeking medical help; because a person with a negative view of him/herself and the inability to manage symptoms feels more distressed and seeks help in medical environments expressing discomfort (21). However, the important findings obtained from the present study were the mediating role of health anxiety in the relationship between attachment styles and obsessive-compulsive symptoms, which was consistent with the present findings, although a similar study has not been conducted to date, the findings of the present study are almost is consistent with the results of Pozza et al. (37).

This research was conducted on 270 people (135 people from the clinical group with OCD and 135 people from the non-clinical population) to investigate the role of attachment in obsessive-compulsive disorder. The results showed that insecure attachment styles make a person vulnerable to OCD. As a result, when a person experiences severe anxiety in a field such as health, he begins to perform mirroring behaviors to reduce anxiety (37). According to the existing background, it can be explained that the availability of caregivers and their unconditional response to basic human needs leads to the formation of a secure attachment for the individual, but on the other hand, not paying attention to the basic human needs, especially his need for security, leads to the formation of secure attachment. It will become an ineffective belief about the world's insecurity (38).

One of the insecure areas is health. The smallest signs activate the belief that the world is unsafe and creates terrible anxiety. To eliminate this anxiety and return to a state of peace, he/she turns to obsessive actions to reduce this anxiety. The clinical application of this finding requires careful attention to the role of attachment styles and the mediation of health anxiety in the severity of obsessive-compulsive disorder symptoms, as well as the need to apply comprehensive therapy such as a combination of emotional schema therapy with confrontation therapy and response prevention, which simultaneously addresses the symptoms of anxiety caused by it and attachment styles (39). This finding seems useful, especially in treating people resistant to selective treatments for obsessive-compulsive disorder. Also, since obsession is formed in the family and its formation is related to early life experiences and taking care of the child's basic needs, it seems that effective and sufficient parenting education in people with obsessions prevents the formation of insecure attachment and health anxiety as a result. In generalizing the findings of this research, its limitations should always be considered. Among the limitations during the implementation of the research was the increase in the spread of the COVID-19 virus in Iran and the non-face-to-face nature of most of the activities, which forced the researchers to carry out the questionnaires electronically. As a result, people who did not have access to the Internet were not included in this study. Another limitation is self-reporting tools, which always raise the concern of the answers being honest and accurate because there is a possibility of bias in this situation.

Another limitation of this research is that the spread of the coronavirus itself can increase concerns related to health and obsessive-compulsive syndromes, which caution should be observed in the generalization of the findings. However, the results of the present study regarding the significant relationship between attachment styles and health anxiety, as well as the interactive role of these two variables in predicting obsessive-compulsive symptoms, are worthy of further consideration to find underlying factors and require more extensive research.

Conclusion

The present study predicts obsessive-compulsive symptoms by showing the mediating role of health anxiety in the effect of attachment styles. Therefore, interventions based on introducing prevention related to parents' parenting style to reduce health anxiety have positive results and can be considered prevention and treatment programs to help people in the treatment of the obsessive-compulsive disorder.

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