*Original Article*

# A path analysis of clinical and demographic variables in body dysmorphic disorder in a student sample

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## Abstract

**Introduction:** The Body Dysmorphic Disorder is a common and complex disorder. The aim of this research was to study path analysis of clinical and demographic variables of in Body Dimorphic Disorder in a student sample.

**Materials and Methods:** These research was a correlation study and population was Islamic Azad University of Najafabad students who met diagnosis with body dimorphic disorder. Sampling was done in two stages. In the first stage, 280 students were selected and all of them asked to complete Yale-Brown body dysmorphic disorder questionnaire. 130 students that have equal to or higher than 20 were selected as final sample. In the second phase, questionnaires of body dysmorphic disorder (1986), metacognition thoughts (1994), dysfunctional attitudes (1978), fear of negative evaluation (1983), negative and positive perfectionism (1992), concerns of body image (2005), self-esteem (1967), social anxiety (1969) and demographical variables provided in a single package and give to students and requested them to deliverer within 1 week to the researcher. Data were analyzed using the version 18 software LISREL.

**Results:** The results showed that model has a good fitness. The regression coefficient of model was not significant, but seven paths of model were significant that related to clinical variables (*P*<0.05).

**Conclusion:** These results can be concluded that some clinical variables in the development of the disorder have a major role there.

**Keywords:** Body Dysmorphic Disorder, Clinical, Demographic, Path analysis

## Introduction

Body dysmorphic disorder is a mental obsession with one or more defects or flaws in appearance that an individual believes he/she is ugly, lacking in charm, abnormal, or dysmorphic, and can be associated with good insight, weak vision, or lack of insight/indifference (1). The results of some of the findings of mental health professionals show that some people have a continuous mental occupation of their physical appearance, and despite their natural or semi-natural physical appearance, they report an overwhelming fear of being ugly or unattractive (2). Research findings indicate that patients with this disorder have two sets of obsessive-compulsive symptoms associated with physical appearance (for example, the notion of large size, facial size, bald head, and facial hair), and obsessive factors related to physical appearance (for example, avoiding the mirror, repetitive behaviors of cosmetic alertness, and covering

the face) (3). Various variables are psychologically related to body dysmorphic disorder (4), which are presented below with some psychological and demographic factors and their role in causing this disorder.

Social anxiety pertains to anxiety in interpersonal or functional situations. People with high social anxiety are afraid of a negative assessment of others towards themselves or doing something that makes them embarrassed. Research suggests that social anxiety focuses on socially threatening information, including anxiety related to feelings and behaviors as well as symptoms of lack of satisfaction with others (5). Self-esteem, referred to as attention to oneself, self-respect, and self-integrity, can be defined as the ratio of success to failure, and also as a ratio of the actual success to the claimed success (6). Body image is one of the important aspects of the formation of the person's identity and that self-esteem includes the physical appearance and body image. Body image is defined as the inner embodiments of the apparent aspects of the body (7). People who feel good about themselves usually have a good sense of life. The mental image that is not accepted by the individual leads to changes in the sense of value. Several factors, such as socio-cultural values, social comparisons, community emphasis on apparent attractiveness and negative experiences in peer interaction, exacerbate such persecution and help to maintain it (8). When the cultural context of the society emphasizes the value of apparent attractiveness especially for women, concern about the body image is gradually being raised, therefore, the continuation of this dissatisfaction leads to depression, social anxiety and the decline of self-esteem (8,9). Negative perfectionism is the unrealistic expectations behind the negative body image of individuals. If individuals fail to reach the ideal criteria, it results in negative self-evaluation (10). Ineffective attitudes are attitudes and beliefs that predispose a person to depression or, in general, to mental disturbance. Such beliefs are acquired by experience in relation to oneself and the world. They prepare the individual to construe specific situations in a negative and ineffective manner. In light of their style, ineffective attitudes are rigid and perfectionist criteria that one uses to judge oneself and others (11). Negative evaluation apprehension is a psychological apprehension that results from an imbalance between situational or environmental demands and is a common feature in social anxiety and perfectionism, because individuals who have social anxiety, regularly and selectively focus on evidence based on their failure, and they are afraid that they should not be desirable in others' opinion (12,13). Metacognition examines the cognitive processes and structures that review and control various aspects of cognition. Metacognition is an aspect of the information processing system that reevaluates, interprets, and processes its own content and processes. In recent years, the study of thinking patterns in emotional disturbances and the evaluation of unwanted thoughts and its role in emotional disorders has attracted the attention of clinical researchers. Metacognitive components associated with body dysmorphic disorder are metacognitive control strategies, behaviors and immune responses, objectification of thoughts and mental images (14). According to research, a bulk of demographic factors are effective in causing body dysmorphic disorder among which age, gender, and economic factors can be mentioned (15). More than half of these patients are single or divorced women. Nearly 85% of the people are economically dependent on others (16,17). This disorder has a higher incidence in some groups, for example, studies have shown that students are susceptible to body dysmorphic disorder (18).

Path analysis is a statistical method for applying standard beta coefficients in multi-variable regression in structural models. The purpose of path analysis is to obtain quantitative estimates of causal relationships (unilateral or quartile interaction) between a set of variables. Creating a causal model does not necessarily mean the existence of causal relationships among the variables in the path analysis of the model, but this causality is based on the assumptions of correlation and the research theory and literature and explains which path is more important or more significant. Path coefficients are calculated according to the standardized coefficient of regression. A variable is assumed to be a function of other variables and the model can be used to plot the significance of each of the variables in its regression. The purpose of path analysis is to provide expression of the modalities of the correlations observed with the first patterns of causal relationships between variables (19).

Internal researches have examined the role of variables in body dysmorphic disorder in the

form of correlational or limited regression research. So far, there is no research in a path analysis that describes the role of psychological and demographic factors in body dysmorphic disorder in the country in the form of a model. The present study aimed to perform a path analysis of a proposed model of the role of clinical variables (social anxiety, self-esteem, body image apprehension, negative perfectionism, ineffective attitudes, negative evaluation apprehension, and metacognitive thoughts of body dysmorphic disorder) and demographic variables (including gender, age, height, weight, level of education, marital status, and economic level) of body dysmorphic disorder among a student sample.

## Materials and Methods

In terms of research design, this study goes under the rubric of correlation studies. The statistical population of this study consisted of all students with the diagnosis of body dysmorphic disorder in an Islamic Azad University who were studying at the first and second semesters of the academic year 2015-16. The sampling was done in two steps. In the first stage, which started from the second half of April, 2015 and lasted for one week, a total of 280 students were selected using convenient sampling technique (given that the study was of a path analysis type, the sample size was higher than that of correlation and regression research in which the sample size is at least sixty people. For each variable, 10 people were added to the sample size, taking into account at least 60 people, 280 were needed.

The sample were selected from the male and female dormitories of the Islamic Azad University and Payam-e-Noor University of Najafabad city, and filled in Yale-Brown Obsessive Compulsive Scale for body dysmorphic disorder. The questionnaires were scored according to the instructions of this scale and the number of 130 students whose scores were equal to or greater than 20 (cut-off scores) were selected as students who were diagnosed with this disorder and the main sample was selected accordingly. In the second stage, the checklist was prepared and students were asked to respond to the above questionnaires within a week and return the completed packets to the researcher. Of these, 101 returned their questionnaire packets. The following inclusion and exclusion criteria were considered for sampling. Inclusion criteria concluded the

informed consent of the subjects to participate in the research, scores higher than 20 (cut-off points) in the body dysmorphic disorder questionnaire, Aged 19 to 40 years, and exclusion criteria concluded failure to answer less than 90 percent of the items of each questionnaire.

In order to comply with ethical principles, the students were told that they did not need to write their names in the questionnaires, and they could withdraw from the study whenever they were reluctant to continue to participate in the research.

Research instrument

*A) Modified Yale-Brown Obsessive Compulsive Scale for Body Dysmorphic Disorder:* This scale is an instrument for self-assessment which has 12 questions that measures the severity of the symptoms of body dysmorphic disorder. The highest score in each question is score 4 whereas the lowest score is zero. The external version of this questionnaire has desirable construct validity and the internal and test-retest reliabilities are 0.88 and 0.85, respectively (20).

The Cronbach's alpha coefficient of its Iranian version is reported to be 0.93 and its concurrent validity with the Body Satisfaction Questionnaire is significant (21).

*B) Social Anxiety Inventory:* This scale was developed by Watson and Freund in 1969 for the purpose of identifying and evaluating social anxiety and includes 28 items, with half of them having a positive response and others having a negative response.

A score of 12 upwards indicates a high social anxiety and a score of less than 4 indicates a very low social anxiety. The test-retest reliability of the external version is 0.68 and its concurrent validity is 0.54 and in the Iranian version, the test-retest coefficient is 0.84, Cronbach's alpha coefficient is 0.90, construct validity is 0.75, and the concurrent validity is 0.62 (22).

*C) Copper Smith's Self-Esteem Inventory:* This questionnaire has 58 items that are answered with Yes and No answer. This scale was originally developed by Rogers and Diamond, and Cooper Smith in 1967 developed this questionnaire on the basis of a revision on Rogers and Diamond scale.

The Cronbach Alpha coefficient of the external version is 0.88 and the concurrent validity and reliability of the Iranian version of

this scale has been reported to be 0.84 and 0.85 respectively (23).

*D) Body Image Concern Inventory:* This 19-item questionnaire was developed by Littleton et al. in 2005, which looks at the individual's dissatisfaction and concern about their appearance. In this tool, the subject is asked to grade on a scale of 1 to 5 in relation to each of the items in which that item expresses its emotions or behavior (24). The internal reliability of the external version of this questionnaire was 0.93 using Cronbach's alpha coefficient and the correlation coefficient of each item with the total score of the questionnaire (internal validity) was from 0.32 to 0.73 with a mean of 62.2 (24). In the Iranian version, the construct validity was confirmed by factor analysis and its test-retest and internal reliability was 0.84 and 0.66, respectively (25).

*E) Negative Perfectionism Scale:* This scale is a test of 40 questions, of which 20 items are positive perfectionism and 20 items are negative perfectionism. The items, in a five-point Likert scale, measure the perfectionism of subjects from 1 to 5 in two positive and negative fields. The minimum score of subjects in each of the subscales of the test would be a maximum of 100. In evaluating the psychological components of the external version of this questionnaire, the concurrent validity of the questionnaire was consistent with the general health questionnaire and its structural validity was confirmed by factor analysis using the main components. In the Iranian version of this questionnaire, its Cronbach alpha coefficient was 0.9 and 0.87 and their convergent validity was significant with Cooper Smith self-esteem scale (26).

*F) Dysfunctional Attitude Scale:* This tool is a self-report scale that was developed by Weisman and Beck in 1978 to measure attitudes, thoughts, ideas and negative opinions. This scale is one of the most well-known instruments in the area of cognitive research and has 26 items graded according to a Likert scale of 7 points. Internal reliability and concurrent validity of the external version were 0.47 and 0.85 (27), and internal reliability and test-retest coefficients of its Iranian version were 0.9 and 0.73, respectively (28).

*G) Negative Evaluation Apprehension:* A short version of Negative Evaluation Apprehension was created by Larry in 1983 and has 12 items that measure the degree of anxiety experienced by individuals or their negative evaluation. The concurrent validity and internal reliability of the external version was equal to 0.97 and 0.57 (29).

In the Iranian version, the Cronbach's alpha coefficients for the total score and the subscales of the positive questions and the negative questions were 0.80, 0.82, 0.81, and the test-retest coefficients with a two-week interval for the whole scale and the subscales were 0.77-0.79 (30).

*H) Dysfunctional Metacognitive Beliefs in Body Dysmorphic Disorder:* This questionnaire was developed by Wales Mathews in 1994 to assess metacognitive dimensions of body dysmorphic, metacognitive control strategies, thought-action coalitions, or thought-inspiration, "positive and negative metacognitive beliefs, and safety behaviors, which have 31 items of Likert type. Internal reliability and test-retest reliability of the external version of this questionnaire were 0.73 and 0.72 (31). In the Iranian version, in exploratory factor analysis, the identified factors were metacognitive control strategies, thought-action coalitions (objectification of dysmorphic thoughts), positive and negative metacognitive beliefs (in appearance), and safety behaviors that explains a total of 48% of the variance of the questionnaire. Cronbach's alpha coefficient for four factors was higher than 0.7 (32).

*I) Demographic Characteristics Questionnaire:* It is a researcher-made questionnaire that evaluates all necessary demographic features in relation to the research sample. After selecting the primary sample, the research questionnaires (social anxiety, self-esteem, body image apprehension, negative perfectionism, inefficient attitudes, negative evaluation apprehension, dysfunction metacognitive beliefs of body dysmorphic disorder and demographic characteristics questionnaire) were prepared in a single package and the students were asked to respond to the above questionnaires within a week and return the completed packages to the researcher. Of these, 101 individuals returned their questionnaire packages. Then, based on the instructions, the questionnaires were graded twice. For statistical analysis, each student's questionnaire, along with their demographic information was entered into the statistical software. The obtained data were analyzed using the LISREL statistical software version 18. The findings were computed in two parts of descriptive findings including (statistical indices, mean) and inferential findings (regression, correlation coefficient and t-test).

## Results

Table 1 presents a number of demographic and clinical variables and Table 2 presents the mean and standard deviation.

The results of the study on the general fit of the proposed model are presented in Table 3.

**Table 1**. Some demographic and clinical variables of the research sample

| Variable | Levels | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 29 | 28.7 |
| | Female | 72 | 71.3 |
| Age range | 14-20 | 24 | 23.8 |
| | 21-25 | 48 | 47.5 |
| | 26-30 | 24 | 23.8 |
| | More than 31 | 5 | 5.0 |
| Level of education | A.A | 8 | 7.9 |
| | B.A | 61 | 60.4 |
| | M.A | 31 | 30.7 |
| | Ph.D. | 1 | 1.0 |
| Marital status | Single | 94 | 93.1 |
| | Married | 7 | 6.9 |
| Economic status | More than needed | 14 | 13.9 |
| | As needed | 45 | 44.6 |
| | Less than needed | 42 | 41.6 |
| Cosmetic surgery | No | 91 | 90.1 |
| | Yes | 10 | 9.9 |

**Table 2**. Mean, standard deviation, minimum and maximum of clinical variables

| Scale | Mean | SD | Minimum | Maximum |
|---|---|---|---|---|
| Body dysmorphic disorder | 31.10 | 6.95 | 20 | 46 |
| Social anxiety | 9.50 | 6.09 | 0 | 26 |
| Self-esteem | 99.97 | 11.23 | 73 | 124 |
| Body image apprehension | 46.09 | 13.87 | 22 | 85 |
| Negative perfectionism | 63.44 | 8.65 | 42 | 83 |
| Success-perfectionism | 39.47 | 14.22 | 13 | 85 |
| Need to be confirmed by others | 18.19 | 4.96 | 4 | 28 |
| Need to satisfy others | 20.63 | 5.66 | 7 | 34 |
| Vulnerability-performance evaluation | 18.00 | 4.45 | 4 | 28 |
| Negative evaluation apprehension | 43.03 | 5.43 | 14 | 51 |
| Metacognitive control strategy | 29.08 | 13.12 | 8 | 61 |
| Coalition of thought-action | 18.26 | 7.51 | 5 | 35 |
| Metacognitive positive and negative beliefs | 12.70 | 4.63 | 4 | 21 |
| Safety behaviors | 8.33 | 3.30 | 4 | 16 |

**Table 3**. Fitness Indicators of the proposed model for clinical variables

| Fitness indicators of the measurement mode | GFI | AGFI | TLI | IFI | NFI | CFI | RMSEA |
|---|---|---|---|---|---|---|---|
| The proposed model | 0.81 | 0.78 | 0.73 | 0.84 | 0.76 | 0.82 | 0.09 |
| Zero model | 0.10 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.45 |

According to Table 3, fitness indices are a rather favorable model, which indicates a fairly good fit of the model. This model with Chi square value of 19.93 and a degree of freedom of 81 was not significant at $P>0.05$. However, the score of the three indices of AGFI, TLI and NFI are less than optimal (which is 0.9), but this difference is not high.

In Table 4, the regression coefficient is presented and in table 5, the significance or insignificance of the paths within the model are presented.

**Table 4**. Results of regression coefficient of predictive variables in body dysfunction disorder

| Model | Sum of squares | DF | Square mean | F | Level of significance | R | Error of estimate |
|---|---|---|---|---|---|---|---|
| Body dysmorphic disorder | 1232.68 | 21 | 58.69 | 1.28 | 0.21 | 0.50 | 6.75 |

The predictive model of the body dysmorphic disorder based on clinical and demographic variables with a sum of square of 1232.84 and a degree of freedom of 21 and with F =1.28 is not significant at the level of $P<0.05$. Table 5 shows the regression weights for the prediction of body dysmorphic disorder.

**Table 5**. Regression weights of clinical and demographic variables in the structural model

| Regression weights | Standardized estimation | S.E. | C.R. | Level of significance |
|---|---|---|---|---|
| Vulnerability: social anxiety | -0.12 | 0.15 | -0.94 | 0.23 |
| Need for others' satisfaction: social anxiety | 0.07 | 0.12 | 0.51 | 0.65 |
| Need for others' confirmation: social anxiety | 0.03 | 0.14 | 0.32 | 0.51 |
| Perfectionism: social anxiety | 0.27 | 0.04 | 2.73 | 0.01 |
| Control strategies: social anxiety | 0.11 | 0.14 | 0.22 | 0.81 |
| Coalition of thought-action: social anxiety | 0.25 | 0.23 | 1.11 | 0.27 |
| Positive and negative beliefs: social anxiety | 0.10 | 0.24 | 0.51 | 0.57 |
| Safety behavior: social anxiety | 0.04 | 0.31 | 0.10 | 0.91 |
| Self-esteem: negative evaluation apprehension | -0.46 | 0.10 | -5.25 | 0.01 |
| Negative evaluation apprehension: perfectionism | 0.31 | 0.10 | 3.32 | 0.01 |
| Negative evaluation apprehension: need for confirmation | 0.37 | 0.30 | 3.96 | 0.01 |
| Negative evaluation apprehension: need for satisfaction | 0.30 | 0.04 | 3.20 | 0.01 |
| Negative evaluation apprehension: vulnerability | -0.08 | 0.03 | -0.83 | 0.40 |
| Negative perfectionism: family income | -0.02 | 0.01 | -0.26 | 0.79 |
| Negative perfectionism: economic status | -0.18 | 0.01 | -1.81 | 0.07 |
| Social anxiety: negative perfectionism | -0.02 | 0.01 | -0.28 | 0.76 |
| Negative perfectionism: body image apprehension | 0.36 | 0.15 | 3.83 | 0.01 |
| Gender: body image apprehension | -0.02 | 4.55 | -0.13 | 0.89 |
| Age: body image apprehension | 0.01 | 0.33 | 0.07 | 0.93 |
| Height: body image apprehension | -0.18 | 0.20 | -1.10 | 0.26 |
| Weight: body image apprehension | 0.10 | 0.15 | 0.83 | 0.40 |
| Body image apprehension: referral to surgeon | 0.19 | 0.01 | 1.96 | 0.01 |
| Body image apprehension: body dysmorphic disorder | 0.13 | 0.05 | 1.33 | 0.18 |

As Table 5 shows, 7 out of 23 paths within the model are significant that have all indirectly affected the symptoms of body dysmorphic disorder.

## Discussion

The purpose of this study was the path analysis of clinical and demographic variables in the body dysmorphic disorder as well as the evaluation of the proposed model.

The model's fitness indices are relatively favorable and are in good level, which indicates a fairly good fit of the model. However, the overall regression coefficient of this model is not significant. One of the causes may pertain to the low sample size. In calculating the regression coefficient of the whole model, the set of predictor variables enters the equation. If the sample size is low, the regression coefficient will not be significant. In the present study, the regression coefficient is equal to 0.5 which is not small in size, but because of the large number of predictor variables, a larger sample size was needed. Another reason for this result can be a low variance of the scores in the criterion variable. The scores of the scales in the questionnaire are limited, and the lack of sufficient variance of the criterion variables in the research sample may result in insignificant regression coefficients.

One of the significant paths is between self-esteem and negative evaluation apprehension. The results of this study are consistent with the results of Asadi and colleagues (33). Self-esteem is one of the most important psychological structures in psychopathology, which depends more on the level of attention and care that a person receives in the family. It is likely that emotional deficits and, consequently, the reduction of self-esteem by an irrational strategy, such as an increase in apparent attractiveness, will compensate for itself. There was no significant relationship between educational level and economic status with body dysmorphic disorder. The lowest academic level in the country is the associate degree. Based on descriptive findings in the study, only about eight percent of the research sample at the associate level was attended, and the number of doctorates in the research was only one. This imbalance in the distribution of educational level of the research sample can be considered as one of the reasons for the lack of correlation between the level of education and body dysmorphic disorder in this study.

The results of several researches have shown that cognitive errors contribute to the formation and emergence of social anxiety. For example, Hemiberg and Becker (34), in the study of cognitive errors in people with social anxiety, showed that one of the most important cognitive errors is the negative evaluation apprehension by others. In this regard, Lepine and Pelissolo (35) have also shown that people who are affected by social anxiety are afraid of social situations because they find themselves vulnerable to negative assessments from others, and avoid such situations. When placed in social situations, these people think that others are monitoring, evaluating and judging negatively on the various aspects of their behavior, performance and appearance because the appearance of the person is more likely to be seen than other aspects, such as behavior and performance, and people, even in situations like walking in the street that do not require any social interaction and speaking, and show their behavior, but their appearance and most of all, their faces are visible.

There is a significant relationship between body image apprehension and the demand for cosmetic surgery. These results are consistent with the results of the study by Higgins and Wiesong research (36). These results mean that these patients do not initially insist on cosmetic surgery. They will think about this alternative when body image apprehension increases. One of the important points about the demographic variables of this study, which have been diagnosed with body dysmorphic disorder, is that 90% of the research samples did not have a history of referral for cosmetic surgery. If this study and evaluation of the role of these variables were carried out on the subjects of cosmetic surgery, more comprehensive results would be achieved.

## Conclusion

Although the overall coefficient of the path of the research variables was not significant, seven variables had a significant relationship including perfectionism with social anxiety, self-esteem with negative evaluation, negative evaluation with perfectionism, negative evaluation with need for confirmation, negative evaluation with satisfaction level, perfectionism with body image apprehension, and body image apprehension with cosmetic surgery.

As the results of this study have been obtained in patients with body dysmorphic disorder, they are of great importance. The diagnosis method for these patients in this study was based on a questionnaire it is suggested that diagnostic interviews be used in future studies.

## *References*

1. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Washington, DC: American Psychiatric Publishing; 2013.

2. Phillips KA, Pinto A, Menard W, Eisen JL, Mancebo M, Rasmussen SA. Obsessive-compulsive disorder versus body dysmorphic disorder: a comparison study of two possibly related disorders. Depress Anxiety 2007; 24(6): 399-409.

3. Bellino S, Zizza M, Paradiso E, Rivarossa A, Fulcheri M, Bogetto F. Dysmorphic concern symptoms and personality disorders: a clinical investigation in patients seeking cosmetic surgery. Psychiatry Res 2006; 144(1): 73-8.

4. Crerand CE, Magee L. Cosmetic and reconstructive breast surgery in adolescents: Psychological, ethical, and legal considerations. Semin Plast Surg 2013; 27: 72-8.

5. Taylor CT, Bomyea J, Amir N. Attention bias away from positive social information mediates the link between social anxiety and anxiety vulnerability to a social stressor. J Anxiety Disord 2010; 24: 403-8.

6. Dietz-Uhler B, Lanter JR. The consequences of sports fan identification. In: Hugenberg LH, Kardidakis PM, Earnheardt AC. (editors). Sports mania: Essays on fandom and the media in the 21st century Jefferson, North Carolina: McFarland; 2008: 103-13.

7. Pecorari G, Gramagliaca C, Garzaro M, Abbate-Daga G, Cavallo GP, Grovdanoc ET. Self-esteem and personality in subjects with and without body dysmorphic disorder traits undergoing cosmetic rhinoplasty: preliminary data. J Plast Reconstr Aesthet Surg 2010; 63(3): 493-8.

8. Munns J, Martin AJ. A motivation and engagement framework. Proceeding of the AARE Annual Conference, Parramatta, 2005.

9. Kamysheva E, Skouteris H, Wertheim EH, Paxton SJ, Milgrom J. Examination of a multi-factorial model of body-related experiences during pregnancy: the relationships among physical symptoms, sleep quality, depression, self-esteem, and negative body attitudes. Body Image 2008; 5(2): 152-63.

10. Frost RO, Marten P, Lahart C, Rosenblat R. The dimensions of perfectionism. Cogn Ther Res 1990; 14: 449-68.

11. Davison G, Neale JM, Kring AM. Abnormal psychology. USA: Wiley; 1998.

12. Shumaker EA, Rodebaugh TL. Perfectionism and social anxiety. Rethinking the memory functioning. Learn Individ Dif 2009; 11(2): 213-30.

13. Jain M, Sudhir PM. Dimensions of perfectionism and Perfectionistic self –presentation in social phobia. Asian J Psychiatry 2010; 3(4): 216-21.

14. Wells A, Matthews G. Attention and emotion: A clinical perspective. Hove, UK: Erlbaum; 1994.

15. Asna Ashari N, Bakhshayesh AR, Afshani AR. [The prevalence of body deformity disorder among adolescent girls in Yazd]. Scientific/research journal of Sadoughi Medical Sciences University of Yazd; 2014; 22(3): 1237-45. (Persian)

16. Kuwabara H, Otsuka M, Shindom S, Someya T. Diagnostic classification and demographic features in 283 patients with somatoform disorder. Psychiatry Clin Neurosi 2007; 61: 283-9.

17. Fontenelle LF, Telles LL, Nazar BP, de Menezes GB, Do Nascimento AL, Mendlowicz MV. A sociodemographic, phenomenological, and long-term follow-up study of patients with body dysmorphic disorder in Brazil. Int J Psychiatry Med 2006; 36: 243-59.

18. Crerand CE, Franklin ME, Sarwer DB. Body dysmorphic disorder and cosmetic surgery. Plast Reconstr Surg 2006; 118: 167-80.

19. Johnson RA, Wichern DW. Applied multivariate statistical analysis. Prentic-Hall; 1992.

20. Phillips KA, Hollander E, Rasmussen SA, Aronowitz BR, DeCaria C, Goodman WK. A severity rating scale for body dysmorphic disorder: development, reliability, and validity of a modified version of the Yale-Brown Obsessive-Compulsive Scale. Psychopharmacol Bull 1997; 33: 17-22.

21. Rabiei M, Khormdel K, Kalantari K, Molavi H. Validity of the Yale-Brown Obsessive Compulsive Scale modified for Body Dysmorphic Disorder (BDD) in students of the University of Isfahan. Iranian journal of psychiatry and clinical psychology 2009; 15(4): 343-50. (Persian)

22. Mansouri F. [Reviewing the relationship between self-esteem, loneliness and social anxiety with the assertiveness of the high school female students in the schools of Ahwaz]. MA. Dissertation. Islamic Azad University of Ahvaz, 1999. (Persian)

23. Nisi AK, Shahani Yeylagh M. [Effect of assertiveness training on self-expression, self-esteem, social anxiety and mental health of high school male students in Ahvaz city]. Journal of education and psychology 2002; 1: 17-23. (Persian)

24. Littleeton HL, Axsom DS, Pury CL. Development of the body image concern inventor. Behav Res Ther 2005; 43: 229-41.

25. Sajadinejad M, Mohammadi N. Evaluation of psychology elements about the anxiety on the physical image. Psychological studies 2007; 3(1): 83-99. (Persian)

26. Beshart MA. Parental perfectionism and children test anxiety. Psychological reports 2003; 93: 1049-55. (Persian)

27. Beck AT, Brown G, Weissmabn AN. Factor analysis of the Dysfunctional Attitude Scale in a clinical population. Psychol Assess 1991; 3: 478-83.

28. Fani L. [Determination of the identity and status associated with identity styles and depression in adolescents in Tehran]. Ph.D. Dissertation. Tehran: Iran Medical Sciences University, 2003. (Persian)

29. Collins KA, Westra HA, Dozois DJ, Stewart SH. The validity of the brief version of the Fear of Negative Evaluation Scale. J Anxiety Disord 2005; 19: 345-59.

30. Geravand F, Kari O, Khodai A, Omarai M, Tolabi S. [Validity and reliability of short version of Fear Scale on Negative Evaluation in 18-12 year old adolescent students in Tehran]. Psychological studies 2011; 65: 95-7: 65. (Persian)

31. Wells A, Cartwright-Hatton S. A short from of the metacognition questionnaire: properties of the MCQ 30. Behav Res Ther2004; 42: 385-96.

32. Rabii M, Salahian A, Bahrami F, Palahang H. [Construction and validation of the questionnaire of body deformity disorder]. Mazandaran University of Medical Sciences 2011; 21: 43-52. (Persian)

33. Asadi M, Salehi Sadoghi M, Afkham Ebrahimi A. [Self-esteem and attitudes toward physical appearance before and after cosmetic surgery of the nose]. Psychiatry and clinical Psychology 2013; 19(1): 28-33. (Persian)

34. Heimberg RG, Becker RE. Nature and treatment of social fears and phobias. New York: Guilford Press; 2002.

35. Lepine JP, Pelissolo A. Why take social anxiety disorder seriously? Depress Anxiety 2000; 11: 87-92.

36. Higgins S, Wysong A. Cosmetic surgery and body dysmorphic disorder- An update. Int J Women Dermatol 2018; 4(1): 43-8.