Investigating the mediating role of body image concern among nurses in the relationship between personality traits and feelings of loneliness

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Abstract

Original Article

BACKGROUND: If nurses have acceptable mental health in the workplace, they will be better able to provide specialized services to patients. This study aimed to provide a model of the relationship between personality traits and feelings of loneliness and the mediating role of nurses' preoccupation with body image.

METHODS: According to the data collection method used, the present study was part of a correlation descriptive study performed with path analysis. The statistical population consisted of all nurses at Ibn Sina Hospital (235 nurses), Omid Hospital (280 nurses), and Erfan Hospital (320 nurses) in Tehran, Iran, in 2022. Using convenience sampling, 300 nurses were selected as the study participants. The data collection tools were the UCLA Loneliness Scale (ULS), NEO Five-Factor Inventory (NEO-FFI), and Body Image Concern Inventory (BICI). Data analysis was performed using SPSS software and Smart PLS.

RESULTS: The results confirmed that all variables (neuroticism, extraversion, agreeableness, and conscientiousness), with the mediation role of body image concern, were associated with loneliness except openness ($P < 0.05$). The study found no evidence to support the idea that body image problems have a mediating role in the association of extraversion, openness to experience, and agreeableness with loneliness ($P < 0.05$).

CONCLUSION: Knowing the health-related components of nurses can help researchers and managers in mental health to design and apply accurate and effective psychosocial interventions.

KEYWORDS: Personal Traits; Loneliness; Body Image; Nurses

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Introduction

Nurses, as the largest group of healthcare and treatment providers, face more stress and psychological pressures than other staff in the healthcare sector, due to their close relationship with the patient, their expertise, and the complexity of their work in emergency management.[1] Loneliness is the most painful of all human conflicts, arising when the need for closeness is not satisfied.[2] Feeling lonely takes away joy and happiness in life and places more psychological pressure on individuals, thus causing fatigue both physically and mentally, and these individuals have been proven to suffer from depression.[3] Sullivan, in 1953, suggested that feeling lonely results from being deprived of the basic human need for intimacy, that is, feeling deprived of social relationships.[4] Loneliness itself is predicted by many factors, and one factor associated with loneliness

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discussed in this study is personality traits.[5]

McCrae and Costa presented a five-factor theory, including extraversion, openness to experience, neuroticism, conscientiousness, and agreeableness.[6] Studies have shown that there is a significant relationship between loneliness and these five personality factors.[6] For example, neuroticism, which often leads to interpersonal problems, has a significantly positive relationship with feelings of loneliness and isolation.[6] Freilich et al. state that neuroticism is a predictor of loneliness, and explain that extroversion is more predictive of loneliness in Japan than in the United States, and that low levels of conscientiousness are only a significant predictor in the United States.[7] Ikizer et al. reported personality traits significantly linked with perceptions of stress and loneliness.[8] Research conducted by Direkvand-Moghadam et al. revealed that feeling stressed and lonely might be connected to having neurosis.[9] Chen et al. conducted a study on personality traits, loneliness, and emotions in boxers.[10] Moreover, a study showed that conscientiousness, extraversion, and agreeableness were negatively associated with loneliness, and neuroticism was positively associated with loneliness.[11]

Of course, it should be noted that the relationship between personality traits and loneliness is not straightforward. Each of these variables can be influenced by many factors, and these factors also affect the relationship between these variables. For example, concern about body image may indirectly give meaning to this relationship. Body image concerns are a multidimensional cognitive construct of body-related thoughts, feelings, beliefs, and behaviors, and this construct refers to a negative evaluation of body size, shape, and weight.[12] Body image concerns have both cognitive and evaluative aspects. The cognitive dimension refers to the extent to which a person thinks their abilities are judged based on their physical appearance. The evaluative aspect refers to how satisfied a person is with their body and appearance.[13]

El-emary and Zaki found that over 40% of nursing students felt bad about themselves, and 25% of them did not like their bodies.[14] Additionally, there was a clear link between how nurses viewed their bodies, how they felt about themselves, and how satisfied they were with life.[14] Hasballah and Hussain demonstrated that body image is associated with self-esteem, they found a significant (strongly positive) relationship between self-esteem and perceived body image among academic nurses.[15] Because of the limited body image research done in Iran, the purpose of this study was to provide a model of the relationship between personality traits and feelings of loneliness with the mediating role of nurses' body image concerns. The researchers' aims are illustrated in figure 1.

Methods

According to the method of data collection, the current research was part of a correlational descriptive research that was conducted using path analysis. The statistical population consisted of all nurses in Ibn Sina Hospital in Region 2 of Tehran, Iran, (235 nurses), Omid Hospital in Region 5 (280 nurses), and Erfan Hospital in Region 2 (320 nurses) from September to November 2022. From among them, 300 nurses were selected based on convenience sampling. The 3 hospitals mentioned had 835 nurses. The sample size supports Kline's recommendation that 2.5–5 people per topic is sufficient, although a minimum sample size of 200 people is acceptable.[16]

This research required the participation of a minimum of 247 nurses based on the different questionnaire items related to feelings of loneliness, personality traits, and body image concerns. To account for any potential inaccuracies or distortions in the responses, a total of 300 individuals were ultimately selected for the study
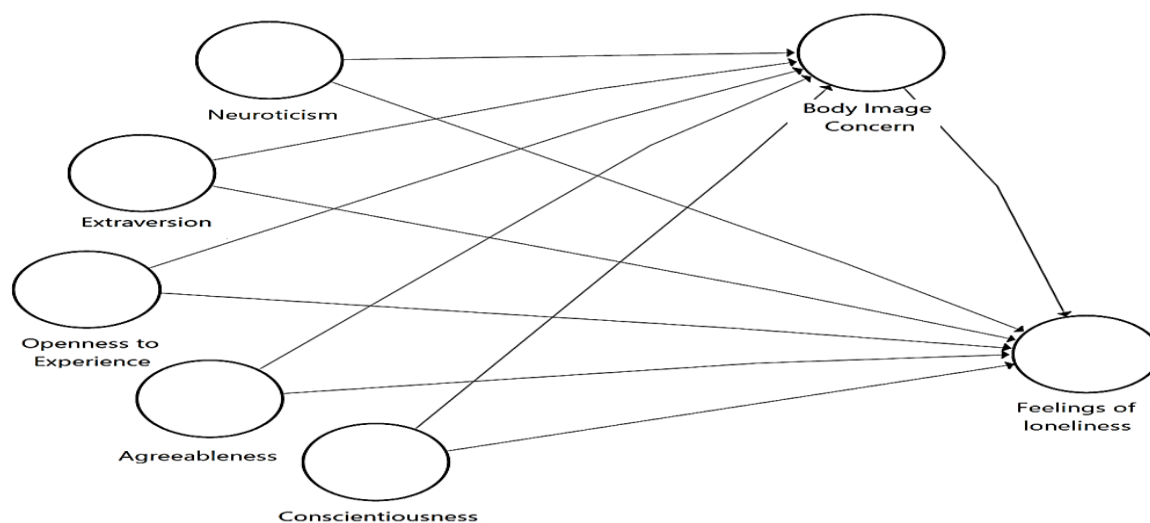
Figure 1. The conceptual model of the research

The distribution and collection of questionnaires lasted 7 months (from early May to mid-December). According to the bias of the surveys, 32 of the 268 surveys were subjected to statistical analysis. It should be noted that the questionnaire was submitted and received by the researcher and that all standards of research ethics, including confidentiality and incompleteness of the study, were considered. The study inclusion criteria were lack of any acute mental illnesses and being a nurse. The exclusion criteria included inability to complete the questionnaire correctly, taking psychiatric medication, and reluctance to engage in the study. This study used statistical results at two levels: descriptive and inferential insights. At the descriptive level, demographics, and key variables were described using frequencies and frequency percentages, means, and standard deviations. At the inferential level, the validity and reliability of the questionnaires were checked using confirmatory factor analysis. Relationships between variables were assessed using the Pearson correlation test, and study models were evaluated using the partial least squares (PLS) structural equation modeling technique. Data analysis was performed using SPSS software (version 27; IBM Corp., Armonk, NY, USA) and SmartPLS (version 3; SmartPLS GmbH, Gewerbering, Oststeinbek, Germany). The maximum alpha error value for hypothesis testing was assumed to be 0.05.

Research instruments

Loneliness Scale: The UCLA Loneliness Scale (ULS) comprises 20 questions and was developed by Russell.[17] The descriptive phrases 1, 4, 5, 6, 9, 10, 15, 16, 19, and 20 are scored negatively. Each item is scored on a 4-point Likert scale of 1 (never), 2 (rarely), 3 (sometimes), and 4 (always). The ULS scores can range from 20 to 80. Higher scores are associated with a greater feeling of loneliness. Zarei et al.[18] reported the reliability of this scale based on a Cronbach's alpha of 0.91. The validity of the ULS was confirmed with a CVI of 0.95 and a CVR of 0.93. In the current research, the reliability of ULS was 0.87 (using Cronbach's alpha coefficient).

NEO Five-Factor Inventory: The NEO Five-Factor Inventory (NEO-FFI) is a short form of the Five-Factor Personality Inventory (FFPI) that was developed by McCrae and Costa in 1983.[6] It has 60 items scored on a 5-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". Items 1, 6, 11, 16, 21, 26, 31, 36, 41, 46, 51, and 56 in this questionnaire are

related to neuroticism, items 2, 7, 12, 17, 22, 27, 32, 37, 42, 47, 52, and 57 to extraversion, items 3, 8, 13, 23, 28, 33, 38, 43, 48, 53, and 58 to openness, and items 4, 9, 14, 19, 24, 29, 34, 39, 44, 49, 54, and 59 to agreeableness.[6] Moreover, items 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, and 60 are related to conscientiousness.

Anisi reported the acceptable reliability of NEO-FFI among Iranians (Cronbach's alpha = 0.83).[19] Regarding the fact that the Cronbach's alpha for every trait was above 0.80, it was concluded that all five traits of the Persian NEO-FFI were internally consistent (r = 0.73). The reliability of the NEO-FFI in the current study was acceptable (Cronbach's alpha = 0.71).

Body Image Concern Inventory: The Body Image Concern Inventory (BICI) is a paper-pencil self-report and contains 19 items that were first developed and validated by Littleton et al.[20] The items are scored on a 5-point Likert scale ranging between 1 (never) and 5 (always). Littleton et al. determined the questionnaire to be reliable with a Cronbach's alpha value of 0.93 and correlations ranging from 0.32 to 0.73. The reliability of the Persian BICI items was assessed and the Cronbach's alpha was 0.90.[21] In this study, the total Cronbach's alpha coefficient was 0.93. The Ethics Committee of Imam Khomeini International University, Iran, approved the study (IR.IKhIU.REC.1401.055).

Results

The study included 148 women (55.2%) and 120 men (44.8%). Participants included 164 (61.2%) married and 104 (38.8%) single individuals. Most of the respondents (n = 179; 66.8%) had a bachelor's degrees; 23 individuals (8.6%) had a diploma and post-diploma education, and 66 individuals (24.6%) had a post-graduate and doctorate education. The mean and standard deviation of the respondents' age was 36.58 ± 9.58 years. In addition, the mean and standard deviation of the respondents' work experience was 13.64 ± 8.81 years.

According to the results presented in table 1, the highest mean score is related to conscientiousness (46.64 ± 6.53), and the lowest mean score to neuroticism (33.31 ± 7.72). In addition, the total mean score for body image concern were 38.69 ± 14.00, and the mean score for loneliness was 36.79 ± 10.68. Skewness and kurtosis values were between +2 and -2, which indicates that all variables have a normal distribution or are close to a normal distribution.

Table 2 shows a significant relationship between loneliness and all other variables except openness (P < 0.05). The findings showed that the four personality traits of neuroticism, extroversion, agreeableness, and conscientiousness and the variable of body image concern had a significant relationship with feelings of loneliness (P < 0.05).

The relationship direction of neuroticism and body image concern with feelings of loneliness was positive, and the relationship direction of extroversion, agreeableness, and conscientiousness with feelings of loneliness was negative.

Table 1. Description of the main variables and normality check with skewness and kurtosis indices

Variables	Mean ± SD	Skewness	Kurtosis
Neuroticism	33.31 ± 7.72	0.12	-0.61
Extroversion	38.40 ± 5.82	-0.07	-0.23
Openness	37.69 ± 4.23	0.02	-0.24
Agreeableness	41.67 ± 5.37	-0.08	0.01
Conscientiousness	46.64 ± 6.53	-0.41	0.15
Body image concern	38.69 ± 14.00	0.85	0.60
Feelings of loneliness	36.79 ± 10.68	0.33	-0.67

SD: Standard deviation

Table 2. Correlation and discriminant validity matrix by Fornell-Larcker criterion

Variables	VIF	Neuroticism	Extroversion	Openness	Agreeableness	Conscientiousness	Body image concern	Loneliness
Neuroticism	2.09	0.77						
Extroversion	1.73	-0.61[**]	0.77					
Openness	1.02	-0.03	0.04	0.37				
Agreeableness	1.26	-0.38[**]	0.25[**]	0.03	0.71			
Conscientiousness	1.60	0.51[**]	0.48[**]	-0.07	0.39[**]	0.71		
Body image concern	1.32	0.46[**]	-0.26[**]	0.06	-0.24[**]	-0.36[**]	0.63	
Feelings of loneliness		0.59[**]	-0.51[**]	0.03	-0.47[**]	-0.51[**]	0.46[**]	0.73

VIF: variance inflation factor
[*]$P \leq 0.05$; [**]$P \leq 0.01$

A comparison of correlation coefficients showed that the strongest correlation with feelings of loneliness was related to neuroticism (coefficient of 0.59), and agreeableness (coefficient of -0.50). The results showed that there was a significant relationship between the four personality traits of agreeableness, extroversion, agreeableness, and conscientiousness with the mediating role of body image concern ($P < 0.05$), which was positive in the direction of the relationship between neuroticism and body image concern, and the other relationships were negative. The strongest correlation with body image concern was related to neuroticism (correlation coefficient of 0.46). As can be seen, all the values of the root mean of the extracted variance of each variable are stronger than the correlation of that variable with other main variables, and this confirms the divergent validity. Examining the intensity of the correlation between the independent and mediator variables (Feelings of loneliness) showed that the strength of the correlations was at the limit of 0.70, which showed that there was no strong correlation and problem between the independent variables; moreover,

the values of the variance inflation factor (VIF) for all variables affecting feelings of loneliness were less than two or between two, which confirmed multiple non-collinearity, which showed that there was no strong collinearity between the independent variables.

Figure 2 is the model in the standard mode, where the significance of the relationship is shown with the t statistic. The results confirmed the direct effect of all variables (except openness), including the four personality traits of neuroticism, extroversion, agreeableness, and conscientiousness, as well as that of the mediating variable of body image concern on feeling lonely ($P < 0.05$).

Examining the fit indices of the model showed that the coefficient of determination for the dependent variable of loneliness was equal to 0.50, and based on this, the independent and mediating variables of the model could explain 50% or half of the variance of loneliness, which shows the appropriate explanatory power of the model. The value of the Q2 index (CV-Redundancy) for feeling alone was 0.46, which was higher than the desired value of 0.35, and the Q2 index relatively confirmed the fit of the structural part.
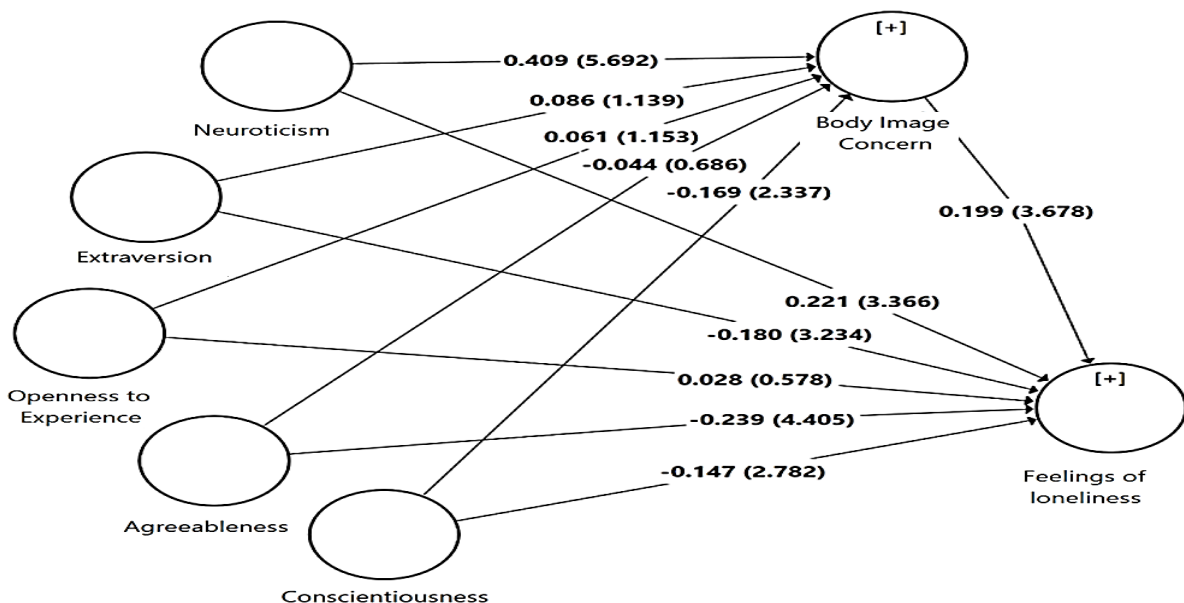

Figure 2. Experimental model in the case of standard path coefficients (and t-statistics)

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The NFI index, or the normalized fit index was equal to 0.90, which was a suitable and acceptable value and indicated the fit of the model. The standardized root mean square residual (SRMR) has a relatively good value of 0.086. None of the fit indexes had a poor value, and all values were higher than average or desirable, based on which the fit model was relatively confirmed. The results presented in table 3 show that the effect of the four traits of neuroticism, extroversion, agreeableness, and conscientiousness on the feeling of loneliness was confirmed (p < 0.05), and only the effect of the personality trait of openness to experience on the feeling of loneliness was rejected (P < 0.05). The direction of the effect of neuroticism on the feeling of loneliness was positive, and the direction of the effect of extroversion, agreeableness, and conscientiousness on the feeling of loneliness was negative.

Agreeableness had the most potent effect with a coefficient of -0.239. The effect of the two personality traits of neuroticism and conscientiousness on body image concern was confirmed (P < 0.05), and the effect of the three personality traits of extroversion, agreeableness, and openness to experience on body image concern was rejected (P < 0.05). The direction of the effect of neuroticism on body image concern was positive, and the direction of the effect of conscientiousness on body image concern was negative. Neuroticism had the most potent effect with a coefficient of 0.409. In addition, the results

presented in table 3 show that body image concern significantly affected loneliness (P < 0.05). The direction of the effect of body image concern on the feeling of loneliness was positive, and the intensity of the effect was equal to 0.199.

According to the results presented in table 4, the mediating role of body image concern in the relationship between neuroticism and loneliness was confirmed (P < 0.05), and the intensity of the indirect effect was equal to 0.082. Moreover, the mediating role of body image concern in the relationship between conscientiousness and loneliness was confirmed (P < 0.05), and the intensity of the indirect effect was equal to -0.034. However, the mediating role of body image concern with the three personality traits of extroversion, openness to experience, and seeking agreement with loneliness was not confirmed (P < 0.05).

Discussion

This study aimed to examine the impact of body image concerns on an individual's personality traits and feelings of loneliness. The results of the study suggest that nurses' concerns about body image mediate the relationship between personality traits and feelings of loneliness.

Other studies were utilized to elucidate the relationships since the findings did not indicate clear connections. These findings are in line with the findings of McCrae and Costa.[6] Chen et al.,[10] Mostafavirad and Dehghan Ardekani,[22] and Liu et al.[25]

Table 3. The results of the structural relationship test

Effects	Standard coefficient	Standard error	t	P
Neuroticism -> feelings of loneliness	0.221	0.064	3.43	0.001
Extroversion -> feelings of loneliness	-0.180	0.060	2.98	0.003
Openness to experience -> feelings of loneliness	0.028	0.046	0.62	0.537
Agreeableness -> feelings of loneliness	-0.239	0.053	4.54	< 0.001
Conscientiousness -> feelings of loneliness	-0.147	0.057	2.72	0.007
Neuroticism -> Body image concern	0.409	0.077	5.31	< 0.001
Extroversion -> Body image concern	0.086	0.072	1.19	0.236
Openness to experience -> Body image concern	0.061	0.055	1.12	0.263
Agreeableness -> Body image concern	-0.04	0.067	0.65	0.517
Conscientiousness -> Body image concern	-0.169	0.075	2.62	0.024
Body image concern -> feelings of loneliness	0.199	0.053	3.80	< 0.001

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Table 4. Results of the mediation test of body image concern using bootstrapping method

Type of indirect relationship	Indirect effect	t	P
Neuroticism -> Body image concern -> feelings of loneliness	0.082	3.05	0.002
Extroversion -> Body image concern -> feelings of loneliness	0.017	1.07	0.286
Openness to experience -> Body image concern -> feelings of loneliness	0.012	1.07	0.285
Seeking agreement -> Body image concern -> feelings of loneliness	-0.009	0.60	0.548
Conscientiousness -> concern about body image -> feelings of loneliness	-0.034	2.01	0.047

The connection between feeling lonely and personality traits, known as the Big Five, is widely known. Neuroticism was important in predicting loneliness in three studies. In one study, only neuroticism was considered. In the other two studies, a low score in extraversion was also found to strongly predict loneliness.[10] Individuals with the neuroticism personality trait experience frequent feelings of anxiety, stress, sadness, anger, impulsivity, and low self-confidence.[6] This can be explained as people who have fewer affections and emotional stability are more prone to experiencing unpleasant sentiments and evaluating their appearance more negatively, and also have depressive tendencies and more negative attitudes towards themselves than other people. Moreover, they have fewer social relationships, and a higher feeling of loneliness.[22]

Additionally, individuals with a strong level of conscientiousness in their personality tend to possess ambition in their pursuits, exuding confidence and expertise in their traits and skills, while experiencing less self-doubt about their physical appearance.[23] Correspondingly, these people have a good impression of sympathy with others and believe that others have the same relationship with them; therefore, they have less mental involvement in terms of their outward attractiveness, and they are less likely to seek attention from others, and in the negative dimension of conscientiousness, these people show behaviors such as many objections, forced obsessive thoughts, and insistence on doing things. Additionally, people who have a lower score on the conscientiousness

personality traits because they have a negative obsessive feeling towards themselves, and especially their appearance, are more prone to disfigurement disorder or excessive concern about body image.[12]

Regarding the mediating role of concern about body image between personality traits and feelings of loneliness, the findings are in line with that of Ghadakzadeh et al.,[21] Mostafavirad and Dehghan Ardekani,[22] Direkvand-Moghadam et al.,[9] Chen et al.,[10] El-emary and Zaki,[14] and Hasballah and Hussain.[15]

People with low scores on conscientiousness and high scores on the narcissistic personality trait, because of the reduction of self-concept and ideal self and the feeling of helplessness and incompetence, have a persistent subjective feeling that some aspect of their appearance or face is ugly, despite their normal or near-normal appearance. The basis of this disorder is the patient's severe belief or fear that they do not have an attractive appearance and have a poor overall view of themselves, which affects the growth of body image concerns with increased vulnerability to acceptance of appearance perceptions and increased appearance comparisons. All these factors cause these people to limit their social relationships, become anxious and isolated in their social encounters, and always find themselves under the stressful conditions of external evaluations, fear of ridicule, and negative evaluations of others.[9]

Therefore, the negative relationship between loneliness and fear of negative evaluation and concern about body image can be justified because a person's negative

perceptions and evaluation of themselves due to the negative image they have of themselves makes him/her believe that others also evaluate him/her negatively, because of which he/she maintains a distance from society and relationships, and feels lonely**.**[24,25] On the contrary, people with healthy personality traits have self-confidence and a higher sense of self-worth and appearance, which can reduce the negative effects of internalization, and appearance comparisons, and as a result, the risk of body dissatisfaction decreases**.**[24]

Therefore, the dominant hypothesis of the research that body image concern has a mediating role in the relationship between personality traits and loneliness is confirmed. However, the mediating role of body image in the relationship of the three personality traits of extroversion, openness to experience, and agreement-seeking with feeling lonely was not confirmed. Statistically, it can be stated that the simple correlation between personality traits and concern about body image and feeling lonely was confirmed**.**[9-13,21-23]

Nevertheless, according to the model and desired direct and indirect effect, the influence of some stronger variables has neutralized the weaker variables. In other words, in the present research, it can be said that the effect of the three personality traits of extroversion, openness to experience, and agreeableness on body image concern was not confirmed. For the reason that in the investigated model and according to the arrangement of selected variables, the effect of some variables was stronger and neutralized the effect of other variables, or it can be said that the other subscales of the five personality factors have a significant relationship with body image concern, but they cannot predict directly or indirectly in the desired model.

Feeling inferior due to personal experience, ways of thinking, and life attitudes are the main internal causes of feelings of inferiority. Some individuals tend to negatively evaluate

themselves because of their failures and setbacks in life or work. Some of them hold their distinctive views of themselves in the uncertain world and always pursue ultimate perfection in their work. Those self-evaluations and views will lead to their self-denials. Body inferiority is not primarily about height, some other physical defects were once thought to cause inferiority feelings, such as flabbiness. These so-called defects often serve as incentives for people to improve their health. Individuals with physical deficiencies usually have characteristics like sensitivity, inaccessibility, and negative emotions**.**[25]

The present study had some limitations, such as only using questionnaires to collect data, and lack of measuring mental status and controlling some important variables that may be effective on the tendency to cheat, so caution should be taken in generalizing the results. Caution is advised when dealing with terms and conditions. Training workshops by professionals and experts in the field of life skills, in particular awareness of the body's weaknesses and strengths and their adaptation, can have a great effect in alleviating anxiety and dissatisfaction about body image. In addition, it is recommended that medical personnel become familiar with appropriate psychological strategies and increase their coping skills, and training courses on stress and anxiety management and counseling sessions be held periodically. Perhaps recognizing the components in the relationship between nurses' health, in addition to a better and more accurate understanding of these components, will help researchers and practitioners in the field of mental health and in designing and applying accurate and effective psychosocial interventions. Thus, these are suggestions for future studies.

Conclusion

The result of this research is a confirmation of

the assumption that psychological factors do not lead to psychological injuries simply and linearly, and in this context, the interactive role of variables should also be taken into account, according to the explanation provided above.

Conflict of Interests

Authors have no conflict of interests.

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