

Original Paper

# Relationship Between Personality Traits and Health Anxiety Among Nurses



Mohsen Kamali<sup>1</sup>, Seyed Kazem Mousavi<sup>2,3\*</sup>, Fatemeh Akbari<sup>4</sup>, Marzieh Khodabandeh<sup>4</sup>, Marzieh Moharramkhani<sup>4</sup>

1. Instructor, Department of Nursing, Abhar School of Nursing, Zanjan University of Medical Sciences, Zanjan, Iran.
2. PhD Candidate of Nursing, Instructor, Department of Nursing, Abhar School of Nursing, Zanjan University of Medical Sciences, Zanjan, Iran.
3. Shahid Beheshti School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran.
4. Nursing (BSN), Department of Nursing, Abhar School of Nursing, Zanjan University of Medical Sciences, Zanjan, Iran.



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## ABSTRACT

**Introduction:** The unique occupational nature of the nursing profession creates anxiety as the most common psychiatric disorder among nurses.

**Objective:** This study investigated the relationship between personality traits and health anxiety among nurses.

**Materials and Methods:** In this analytical cross-sectional descriptive study, 185 nurses from six teaching hospitals affiliated with Zanjan University of Medical Sciences in Iran were selected by stratified random sampling. Data collection tools included a demographic questionnaire; neuroticism, extraversion, openness personality inventory, NEO 5factor inventory (NEOFFI) personality traits (short form), and health anxiety inventory (HAI), which the participants completed by the self-report method. The obtained data were analyzed using descriptive (frequency, percentage, Mean±SD) and inferential (the independent t-test, ANOVA, the Pearson correlation, and multiple linear regression) statistics.

**Results:** The participants' Mean±SD age was 34.83±8.26 years. About 58.4% of the nurses were female, and most were married (82.2%). Nurses' Mean±SD score of health anxiety was 22.86±4.05. The results of the NEO personality questionnaire showed that the highest mean (29.34±8.40) was related to the conscientiousness personality trait and the lowest to extroversion (25.53±8.64). The findings showed a positive and significant relationship between health anxiety and neurotic personality trait (P=0.001, r=0.411) and negative relationships with extraversion (P>0.05, r=-0.199) and openness to extroversion (β=-0.19, 95%CI; -0.66%, -0.04%, P=0.039) personality traits. Also, neuroticism (β=0.23, 95%CI; 0.06%, 0.8%, P=0.012) and extroversion (β=-0.19, 95%CI; 0.66% to 0.04%, P=0.039) personality traits can predict health anxiety in nurses. The findings revealed that 7.9% of the variance of health anxiety could be explained by the nurse's personality traits (F=2.81, R=0.256, R<sup>2</sup>=0.098, adjusted R<sup>2</sup>=0.079, P<0.05).

**Conclusion:** According to the study results and considering the importance of nurses' quality of performance, it is recommended that nurses with personality traits vulnerable to anxiety be identified, and the necessary training will be provided to them in the form of anxiety control and management workshops.

## \* Corresponding Author:

Seyed Kazem Mousavi, PhD Candidate of Nursing.

Address: Department of Nursing, Abhar School of Nursing, Zanjan University of Medical Sciences, Zanjan, Iran.

Tel: +98 (919) 9817584

E-mail: [kazemmoosavi69@gmail.com](mailto:kazemmoosavi69@gmail.com)

## Highlights

- Healthcare providers always have the highest level of health anxiety.
- In the long run, health anxiety causes destructive physiological and behavioral effects in nurses.
- More knowledge of nurses' psychological state can be obtained by investigating the different dimensions of nurses' personalities and identifying the relationship between each of these personality dimensions and their health anxiety.

## Plain Language Summary

The prevalence of health anxiety in nurses ranges from 30% to 50%. This disorder affects many essential aspects of nurses' personal and professional lives. Personality traits are one of the most important factors influencing a person's behavior. Therefore, more knowledge of nurses' psychological state can be obtained by exploring the different dimensions of nurses' personalities and identifying the relationship between each of these personality dimensions and their health anxiety. According to the findings, most nurses had conscientiousness personality traits and moderate health anxiety. Moreover, our study showed that health anxiety is high in nurses with neurotic personality trait and lower in nurses with extroverted and experiential personality traits. Also, neuroticism and extroversion personality traits can predict health anxiety in nurses. Therefore, it is recommended that nurses with vulnerable personality traits be used in wards with less work pressure and stress.

### Introduction

**P**rofession and occupation play a decisive role in every person's mental health. Nursing is a profession that challenges many problems and stresses in the work environment [1]. The nature of the nursing profession is such that it must be compatible with different roles through clinical, scientific, and emotional skills [2]. The National Institute for Occupational Safety and Health (NIOSH) has announced that out of 130 jobs surveyed, nursing ranks 20<sup>th</sup> in terms of visiting a doctor for physical and mental problems [3]. The most commonly known psychiatric disorder in nurses is anxiety [4].

One type of anxiety is health anxiety, defined as a wide range of concerns that people may have about their health, which involves emotional, cognitive, behavioral, and perceptual components [5]. Healthcare providers always face the highest level of health anxiety. The prevalence of this disorder in medical staff is estimated to be 30%, and among nurses, between 30% and 50%—a very significant rate [5-7]. In the long run, health anxiety produces destructive physiological and behavioral effects in nurses [8].

One of the most important factors influencing a person's behavior is his personality traits, including relatively fixed traits that can be described as irritable, anxious,

talkative, introverted, and extroverted [9]. McCurry and Costa developed the 5-factor personality model to describe the most salient aspects of a person's personality. This model of personality involves 5 dimensions: Neuroticism, extraversion, openness to experience, agreeability, and conscientiousness [10]. People with neuroticism typically have low emotional stability, high anxiety, anger, frustration, shyness, and a negative attitude toward their work. Extraversion refers to the special characteristics an extrovert person shows. This person is energetic, social, bold, active, passionate, highly confident, and has positive emotions. Openness to experience shows how much people are interested in novelty and trying new experiences. These people have imagination, interest in artistic effects, curiosity about other people's ideas, and open feelings, ideas, and actions [11].

On the other hand, agreeability is related to people's tendency to be similar to others. They present with adaptability, trustworthiness, honesty, altruism, kindness, humility, and self-sacrifice. Conscientiousness is a measure of reliability, and a person with a high conscience is competent, orderly, conscientious, purposeful, self-disciplined, and punctual [12].

Health anxiety affects many essential aspects of nurses' personal and professional lives. Therefore, their psychological status can be known better by investigating the different dimensions of nurses' personalities and identifying the relationship between each of these

personality dimensions and their health anxiety [13]. Furthermore, by acquiring sufficient knowledge of the personality dimensions of nurses, it is possible to provide more physical and mental health for nurses and increase the quality of their performance by providing specialized and professional training and adapting to working conditions [2]. Despite the importance of this issue, few studies have been done on this topic so far, and the need for appropriate research is felt. To this end, researchers decided to study the relationship between personality traits and health anxiety in nurses.

## Materials and Methods

This analytical cross-sectional study investigates the relationship between personality traits and health anxiety in nurses working in teaching hospitals affiliated with Zanjan University of Medical Sciences. The number of samples was estimated at 185 people, considering a 95% confidence level and 80% test power,  $d=0.1$  and predicting a 20% dropout ( $N=600$ ). The sampling method was stratified random. Thus, the hospitals in the research area were divided into six regions, and nurses were selected from each region in proportion to the total number of nurses in that center. In such a way, the hospitals with more nurses allocated a larger share of this number. After visiting the hospital, the researchers selected the nurses by a simple lottery method and provided them with the questionnaire. The inclusion criteria were willing to participate in the study, having a BS or higher degree in nursing, having at least six months of continuous work experience in the hospital, and lacking a history of physical or psychiatric illness and drug use based on self-report. The exclusion criterion also included withdrawal from continuing cooperation.

Data collection tools included three questionnaires: demographic information; neuroticism, extraversion, openness personality inventory, NEO 5-factor inventory (NEOFFI) personality traits (short form), and health anxiety inventory (HAI), completed by the self-report method. The demographic questionnaire included age, sex, degree, occupation, marital status, having children, family relationships, economic status, employment status, work history, hospital, and ward. The NEO personality traits questionnaire (short form) is one of the most comprehensive personality assessment tests developed by Costa and McCrae in 1992. The short form of this questionnaire has 60 items and is used to evaluate the 5 main personality factors. Participants answer the questions on a 5-point scale from 0 (strongly disagree) to 4 (strongly agree), and the score of each factor is the sum of the scores. The minimum score in each personality

is 0, the maximum score is 48, and the dimension with a higher score indicates the dominant dimension [14]. The Persian psychometric form of this questionnaire was used in this study [15].

In addition, we used the HAI questionnaire to assess the level of health anxiety. Salkowski and Warwick developed the short form of this questionnaire with 18 four-choice items covering three components: General health concerns, disease, and disease outcomes. Each item is scored from 0 to 3, and the total score ranges from 0 to 54. Scores between 0 and 18 indicate low levels of health anxiety, from 18 to 36 moderate, and above 36 indicate high levels of health anxiety [16]. This study used the Persian psychometric version of this tool [17].

After obtaining approval of the Ethics Committee of Zanjan University of Medical Sciences, the researcher referred to the study hospitals and, after obtaining permission from the managers of hospitals and introducing himself, stated the objectives and method of research and assured that the obtained information was kept confidential. He obtained written consent from the participants and provided them with the study questionnaires. The researcher was present next to them while completing the questionnaires to answer the likely questions. Sampling continued until the desired number was reached. In the end, university officials and research samples were thanked and assured that the results would be confidential and announced to them upon request. After collecting and entering the data into SPSS software version 26, the data were analyzed using descriptive (frequency, percentage,  $Mean\pm SD$ ) and inferential statistics (the independent t-test, ANOVA, the Pearson correlation, and multiple linear regression).

## Results

According to the results, the participants'  $Mean\pm SD$  age was  $34.83\pm 8.26$  years. Also, 58.4% of the nurses were female, and most were married (82.2%). In majority of them economic status was reported as moderate, and most had work experience between 5 to 10 years. Table 1 presents the study participants' demographic information, health anxiety, and personality traits.

The results of the NEO personality questionnaire showed that the highest mean ( $29.34\pm 8.40$ ) was related to the conscientiousness personality trait and the lowest to extroversion ( $25.53\pm 8.64$ ). Also, the mean score of nurses' health anxiety was  $22.86\pm 4.05$ .

**Table 1.** The demographic characteristics and main variables of the participants (n=185)

Variables	No. (%)	Mean±SD						
		Health Anxiety	Neurotism	Extraversion	Openness to Experience	Agreeableness	Conscientiousness	
Age (y)	>25	31(16.8)	23.16±3.92	27.97±7.11	25.91±7.62	26.02±3.51	27.84±8.91	29.41±8.12
	25-45	121(65.4)	22.84±3.75	28.72±7.24	26.23±8.05	28.98±5.87	28.35±9.34	28.87±7.43
	>45	33(17.8)	21.99±4.41	28.31±6.89	25.57±8.14	32.84±4.67	28.73±9.57	29.24±9.21
Gender	Male	77(41.6)	21.16±3.45	27.90±7.22	25.23±8.22	27.88±6.57	27.85±9.10	29.41±8.90
	Female	108(58.4)	25.89±3.09	33.81±7.70	25.94±8.67	28.47±6.57	28.17±8.91	28.84±8.40
Marital status	Single	19(10.2)	22.76±4.35	28.81±7.19	25.22±8.29	28.77±6.74	28.73±9.41	29.24±8.11
	Married	152(82.2)	22.55±3.88	28.97±7.77	25.83±7.94	28.44±6.71	28.88±8.58	27.84±8.41
	Divorced	9(4.9)	23.06±3.75	27.99±7.08	25.51±8.61	28.38±5.57	29.44±9.84	28.94±7.79
	Widowed	5(2.7)	22.51±4.11	28.41±7.55	26.03±8.04	28.28±6.07	28.95±8.47	29.74±8.20
Parenting	Yes	108(58.3)	21.26±3.75	28.71±7.45	25.73±8.67	27.54±6.77	27.95±9.57	29.74±8.77
	No	77(41.7)	22.42±4.15	27.66±7.19	26.04±8.74	28.78±6.76	28.27±9.71	28.99±8.53
Economic status	Bad	7(3.8)	22.42±4.27	28.77±7.34	25.49±8.12	27.74±6.35	27.55±9.71	29.04±8.01
	Moderate	134(72.4)	23.46±4.57	27.31±7.74	25.25±8.64	28.54±6.22	26.96±9.66	29.36±8.25
	Good	33(17.8)	23.74±4.04	28.77±8.04	25.33±8.64	28.74±5.54	27.97±8.61	28.60±8.46
	Excellent	11(6)	22.91±4.45	28.69±7.29	25.43±8.64	29.30±6.17	28.75±9.57	29.74±8.17
Work experience (y)	<5	37(20)	25.81±4.54	28.84±6.86	25.73±8.67	28.84±6.07	28.95±9.51	27.73±7.47
	5-10	83(44.8)	25.11±6.05	28.91±7.72	25.57±7.65	29.71±5.57	29.11±9.17	29.73±7.87
	10-15	35(18.9)	22.91±3.65	27.97±6.85	25.03±8.61	29.01±6.75	27.71±8.88	29.34±8.59
	15-20	17(9.3)	21.56±3.05	28.11±7.02	26.17±7.54	27.94±6.51	28.88±8.87	28.99±8.44
	>20	13(7)	20.96±4.04	28.66±7.77	27.03±8.74	28.76±6.38	28.50±7.07	29.74±8.10
Job category	Nurse	169(91.3)	23.83±4.75	27.93±8.09	26.57±8.04	28.14±6.07	28.69±9.77	29.04±8.78
	Head nurse	11(5.9)	22.98±4.47	28.70±7.87	25.67±7.70	27.46±5.87	29.01±9.91	28.70±8.47
	Supervisor	5(2.8)	23.76±4.57	28.88±7.38	26.51±8.47	28.14±6.65	27.97±9.80	29.78±8.60
Ward of service	Intensive	63(34)	23.16±4.11	27.71±7.61	26.73±7.94	27.44±6.77	27.95±8.91	29.24±8.30
	Non-intensive	122(66)	22.49±3.75	29.35±7.94	25.73±8.34	28.97±6.27	29.07±9.31	29.83±9.22
Level of education	BS	157(84.9)	23.82±3.45	27.91±7.39	26.51±8.61	29.14±4.54	27.95±9.01	29.14±8.19
	MS or higher	28(15.1)	22.26±4.65	28.50±8.11	25.33±8.01	27.35±6.47	28.77±8.57	28.44±9.42

BS: Bachelor science, MS: Master of science.

**Table 2.** Correlation coefficients between personality traits and health anxiety in nurses

Variable		Neuroticism	Extraversion	Openness to experience	Agreeableness	Conscientiousness
Health anxiety	P*	0.001	0.032	0.003	0.124	0.056
	r	0.411	-0.199	-0.245	-0.094	0.163

\* The Pearson correlation coefficient.

After confirming the normal data distribution, the Pearson correlation test evaluated the correlation between personality traits and participants' health anxiety scores. The findings revealed a positive and significant correlation between the neuroticism trait and health anxiety ( $P=0.001$ ,  $r=0.411$ ). Also, there were significant negative correlations between extraversion ( $P=0.032$ ,  $r=-0.199$ ) and openness to experience traits ( $P=0.03$ ,  $r=-0.245$ ) with health anxiety (Table 2).

Regarding the relationship between personality traits and health anxiety with demographic variables, this study showed a significant relationship between gender and participants' work experience with health anxiety score ( $P=0.0001$ ). Moreover, we found a significant correlation between age and openness to experience personality trait and a significant relationship between gender and neuroticism personality trait ( $P=0.001$ ). The obtained P about the relationship between the personality traits' dimensions and health anxiety with demographic variables and statistical tests used are presented in Table 3.

On the other hand, multiple linear regression (simultaneous model) was employed to predict health anxiety based on personality traits. The findings revealed that 7.9% of the variance of health anxiety could be explained by the nurse's personality traits ( $F=2.81$ ,  $R=0.256$ ,  $R^2=0.098$ , adjusted  $R^2=0.079$ ,  $P<0.05$ ). However, based on the regression coefficients associated with the role of each personality trait in predicting health anxiety, only the neuroticism and extraversion personality traits were significant predictors (Table 4).

## Discussion

This study investigated the relationship between personality traits and health anxiety in nurses. Regarding personality traits, the study findings showed that most nurses participating in the present study have conscientiousness personality traits, which aligns with many other studies conducted in Iran. In this regard, we can say that the dimension of conscientiousness personality determines the degree of responsibility sense. These

**Table 3.** The relationship between demographic variables and personality traits and health anxiety

Demographic Characteristics		Health Anxiety	Neuroticism	Extraversion	Openness to Experience	Agreeableness	Conscientiousness
Age	P*	0.37*	0.850	0.414	0.033	0.670	0.435
	r	-0.076	-0.011	0.036	0.143	0.023	-0.086
Gender	P**	0.0001	0.001	0.116	0.223	0.140	0.425
Marital status	P**	0.243	0.129	0.424	0.350	0.454	0.252
Parenting	P**	0.362	0.274	0.119	0.210	0.437	0.398
Economic status	P***	0.055	0.061	0.105	0.471	0.227	0.572
Work experience	P*	0.034	0.099	0.194	0.109	0.336	0.553
	r	-0.139	-0.076	0.041	0.116	0.033	-0.042
Job category	P***	0.212	0.180	0.217	0.364	0.403	0.332
Ward of service	P**	0.112	0.220	0.497	0.327	0.287	0.586
Level of education	P**	0.140	0.514	0.202	0.307	0.217	0.422

\* The Pearson correlation coefficient; \*\* The independent t-test; \*\*\*ANOVA.

**Table 4.** The results of the multiple regression analysis to predict health anxiety based on the nurses’ personality traits

Variable	Predictor Variables	Unstandardized Coefficients		Standardized Coefficients	t	P	95% CI	
		β	SE	β			Lower	Upper
Health anxiety	Constant	57.53	10.41	-	5.79	0.001	37.13	77.93
	Neuroticism	0.43	0.19	0.23	3.56	0.012	0.06	0.8
	Extraversion	-0.35	0.16	-0.19	-2.08	0.039	-0.66	-0.04
	Openness to experience	-0.02	0.16	-0.01	-0.14	0.88	-0.33	0.29
	Agreeableness	0.02	0.17	0.01	0.16	0.86	-0.30	0.34
	Conscientiousness	-0.16	0.21	-0.07	-0.78	0.43	-0.57	0.25

characteristics are the most apparent and openly and secretly considered in the educational program and which are taught to the nursing students during the training course. Furthermore, the lowest mean score was assigned to the extrovert personality dimension. Among the demographic variables, age and gender positively and significantly correlated with openness to experience and neuroticism dimensions of personality traits, respectively. It means that experiential personality traits are prevalent in older people, and neurotic personality traits are more seen in women. These results are consistent with similar studies done in this field [18, 19].

Generally, having a sensitive spirit is an essential characteristic of neurotic people. Since women have more emotional tenderness than men, this personality trait is more seen in them. On the other hand, the most explicit characteristics of people with experiential personality traits are high cognitive abilities, a skill formed with increasing age, and gaining more experience.

Also, based on the findings, the level of health anxiety in nurses was found to be average. Consistent with this finding, Mousavi et al., who conducted relatively similar research to the present study, reported a rate of health anxiety

as moderate [5]. This finding was repeated in some other similar studies [20, 21]. According to research conducted in recent years, the level of health anxiety in nurses was often reported to be between mild and moderate. Since the COVID-19 pandemic over the past three years, this rate has increased, and our results confirm this finding. There was a significant relationship between gender and work experience and participants’ health anxiety; the level of health anxiety was higher in female nurses and less reported in nurses with high work experience. These results are consistent with the

findings of most studies in this field [5, 22, 23]. In this regard, it can be argued that women pay more attention to their health than men and consequently suffer from greater health anxiety. Also, having longer work experience increases self-confidence and mastery in the workplace and reduces health anxiety.

Moreover, the study’s findings also showed a significant correlation between personality traits and health anxiety in nurses. Accordingly, the rate of health anxiety in nurses with higher neurotic personality traits was obtained. Consistent with this finding, a foreign study reports that medical and nursing students with neurotic personality traits had higher anxiety [24]. Also, in a similar study, health anxiety in nurses had characteristics such as negative emotion, hostility, and lack of inhibition, most of which are related to neurotic people [7]. According to another study finding, nurses with extraversion personality trait reported lower levels of health anxiety. Consistent with this finding, in a study in Indonesia, nursing students with extroverted personality trait experienced less perceived stress in the clinical setting [25], and in another study in China, nurses with experiential personality trait had lower anxiety [26]. Also, based on another finding, neuroticism and extraversion personality traits were significant predictors of health anxiety in nurses. In line with these findings, in one study, the dimension of neuroticism predicted the level of anxiety of nurses [27]. In another study, nurses’ health anxiety was predicted by dimensions of neuroticism and extraversion of personality traits [28]. In explaining these findings, it can be said that neurotic people usually have low emotional stability and are worried, stressed, and rushed. Still, extroverted people are bold, thrill-seeking, and emotional [12]. Therefore, it can be predicted that both groups will experience higher health anxiety.

One of the limitations of the present study was that the researcher had no control over the recent life events of nurses that could affect their health anxiety. Another limitation of the research was the self-reporting of the participants' tools and mental states while answering the questions, which may have affected the study results and was beyond the researcher's control. In this regard, nurses were asked to choose a time to complete the questionnaires when they had ample opportunity, and their workplace was better.

This study showed that health anxiety in nurses with neurotic personality traits is high, and in nurses with extroverted and experiential personality traits, it is lower. Also, neuroticism and extroversion personality traits can predict health anxiety in nurses. Therefore, it is suggested that by examining personality traits at the beginning of the nursing course, students prone to health anxiety will be identified, and the necessary training will be provided to them in the form of anxiety control and management workshops. Moreover, due to the increase in the average health anxiety in critical and acute situations such as COVID-19, it is recommended that nurses with vulnerable personality traits be employed as much as possible in wards with less work pressure and stress.

## Ethical Considerations

### Compliance with ethical guidelines

The researcher obtained permission for the present study from the Research Department and Ethics Committee of Zanjan University of Medical Sciences (Code: IR.ZUMS.REC.1400.291). All the study participants were informed about the study's aims, the confidentiality of the information obtained, and the voluntary nature of their participation.

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### Authors' contributions

Conceptualization and methodology: Seyed Kazem Mousavi and Mohsen Kamali; Data collection: Fatemeh Akbari, Marzieh Khodabandeh, and Marzieh Moharramkhani; Data analysis: Mohsen Kamali; Writing the original draft: Seyed Kazem Mousavi; Final approval: All authors.

### Conflict of interest

The authors declared no conflict of interest.

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