

The role of personality traits and demographic factors in occupational stress

Beheshti MH, MSc*

- Faculty Member, Dept. of Occupational Health, Faculty of Health, Gonabad University of Medical Sciences, Gonabad, Iran.

Abstract

Received: August 2015, Accepted: October 2015

Background: The use of psychology in the workplace and accurate scientific findings in this field, in addition to reducing work-related diseases, can promote the performance of employees. Nursing is a stressful job and can be the cause of physical and mental disorders. This study investigates the relationship of personality traits and demographic factors with occupational stress.

Materials and Methods: This investigation was a descriptive-correlational study conducted on 95 nurses of hospitals affiliated to Gonabad University of Medical Sciences, Iran, in 2014. The data collection tools used in this study included the Neuroticism-Extraversion-Openness-Five-Factor Inventory (NEO-FFI) and Osipow Occupational Stress Inventory-Revised (OSI-R). Data were analyzed using spearman correlation coefficient, simultaneous multiple regressions and independent t tests in SPSS software.

Results: No significant difference was observed between the mean score of occupational stress of men and women undergraduate and master's graduates, and different age groups. The regression model showed that the predictor variables of agreeableness and gender had a significant association with the response variable of occupational stress ($P = 0.005$). Results showed that the two predictive variables of agreeableness and gender had a negative effect on occupational stress. Nonstandard regression coefficient showed that with 1 unit increase in agreeableness score, the score of occupational stress decreased 1.335 units.

Conclusions: There is an association between the agreeableness personality trait and occupational stress. Thus, we recommend that more attention be paid to this feature as a predictor of occupational stress in nurses.

Keywords: Personality, Demographic factor, Stress.

Introduction

Occupational stress has special importance among psychological factors. In 1992, the United Nations reported that occupational stress is the disease of the twentieth century. In addition, the World Health Organization (WHO) has declared it a rampant problem in the world. The International Labour Organization estimates costs imposed on a country due to occupational stress to be 1 to 3.5% of the gross domestic product (GDP) (1). Studies performed in Iran have shown that the prevalence of occupational stress is high and at

an average of 14.4% (2-4). Several studies have shown that about 30% of workers suffer from job stress in developed countries and this rate is higher in developing countries (5, 6).

From the standpoint of ergonomics, there must be coordination between workload applied to individuals and their abilities and limitations and any incompatibility between these factors causes damage and stress (7).

* **Corresponding author:** Mohammad Hossein Beheshti, Dept. of Occupational Health, Faculty of Health, Gonabad University of Medical Sciences, Gonabad, Iran. Email: beheshtihasan8@gmail.com

Many studies show that occupational stress is common among nurses due to their working conditions (8-10). Human health can be affected by stress and it can cause imbalance in the physical and mental state of individuals. Long and persistent stress in the workplace can cause burnout (11). In nursing, factors such as shift work, high work pressure, and conflicts with colleagues, viewing the suffering and death of patients, professional responsibilities, and administrative-related issues are the major causes of job stress (12). Symptoms that appear as a result of occupational stress are divided into 3 categories of physical, psychological, and behavioral symptoms (13). Until the early 80s, many psychological scientists believed that stressful events have a key role in psychosomatic disorders. For example, Holmes and Rahe found that life events are related to the onset of the disease (14). Later psychological studies show that there are moderating factors between stressful events and psychological disorders that cause stressful events to have different impacts on individuals. For example Kobasa invented the concept of stubborn personality and investigated it as an intervening variable in relationship between stress and disease (15). The findings of a recent research illustrated the relationship between personality characteristics, type of workplace, and mental health (16). A considerable theoretical research showed the interaction between certain types of workplace and personality traits (16). Among the important personality features the five-factor model of personality is of interest to researchers (17). Today, many researchers believe that the best conceptualization of personality has crystallized in the five-factor model (2). Overall, studies have shown that there is a significant relationship between personality traits and occupational consequences (5, 16, 18, 19). However, one study has reported the relationship between these variables as inconsistent and weak (6). Factors that can cause job stress can be divided into two

categories including individual factors and environmental factors (20).

Of the most important individual factors to personality type, socioeconomic status, and demographic factors such as gender, age, marital status and of environmental factors geographical environment can be mentioned (14, 21). MacCary and Costa classified personality into five dimensions or five main factors including neuroticism, extraversion, openness, agreeableness, and conscientiousness (22).

Neuroticism refers to the tendency to experience anxiety, stress, depression, and low self-esteem. Extraversion refers to the tendency of experiencing positivity and being assertive and sociable. Flexibility is to show curiosity, pyrotechnics, wisdom, intelligence and innovation, and artistic sensitivity. Agreeableness is the tendency to be polite, tactful, flexible and reliable, good-natured, generous, tender-minded, and tolerant. Conscientiousness is the tendency to be consistent, determined, and thorough, and act according to plans (22).

In Iran, not many researches have been conducted on the relationship between type of personality and occupational stress. Of the few studies in this area, studies by Enjezab and Farnia (23) in the field of stresses of the midwifery profession, Samari and Lali (24) on electricity company employees, and Aghili Nejad et al. (2) on police officers can be mentioned. Other researchers have shown that many employees are turning to drugs to deal with stress in the workplace (18).

The implementation of any plan to prevent and manage job stress, increase job satisfaction, reduce workload, and enhance public health requires a detailed understanding of their risk factors. Moreover, few researches have been performed in this area. Thus, this study was conducted with the aim to determine the role of personality traits and demographic factors in occupational stress among nurses in hospitals affiliated to Gonabad University of Medical Sciences, Iran, in 2014.

Material and Methods

This is a descriptive study. The study population consisted of all registered and full-time nurses working in hospitals affiliated to Gonabad University of Medical Sciences in 2013 to 2014. The participants were selected through census method ($n = 95$). The data collection tools consisted of the Neuroticism-Extraversion-Openness-Five-Factor Inventory (NEO-FFI), and Osipow Occupational Stress Inventory-Revised (OSI-R). The NEO-FFI was used to evaluate nurses' personality traits and the OSI-R was used to evaluate occupational stress.

Moreover, another questionnaire was used to collect the demographic data of the employees. To observe the ethical principles of research, the necessary information about the goals of the study were given to the participants and they were assured of the confidentiality of the study, and their written consent was obtained before completing the questionnaires.

The OSI-R was first used by Osipow et al in 1987. (25). This questionnaire has been used in several studies in Iran and the validity of this tool was approved (5,3). In the study by Namavar et al. in 2013, a reliability of 0.87 was achieved for this questionnaire using Cronbach's alpha (5). The OSI-R consists of 60 questions scored on a 5-point Likert scale (never to very often) which determine job stress in 6 aspects of role overload, role insufficiency, role ambiguity, role boundary, responsibility, and physical environment. According to individuals' scores, they are categorized into 4 groups of no stress, normal stress, medium stress, and severe stress. The score of each question ranged from 1 to 6. The mean total score of each aspect illustrates occupational stress in that aspect. SPSS software and descriptive statistics and ANOVA were used to analyze data.

To evaluate the personality traits of nurses, the NEO-FFI was used in this study. The NEO-FFI is a 60-item version of the NEO-PI-3 that provides a quick, reliable, and accurate measure of the five personality domains

(neuroticism, extraversion, openness, agreeableness, and conscientiousness). All updates made in the NEO-PI-3 are reflected in this instrument. The scoring options consist of completely disagree (1), disagree (2), no opinion (3), agree (4), and strongly agree (5). Some questions were scored reversely. This questionnaire has 240 questions initially which later Short Form 60 questionnaire has been prepared by McCrae and Costa (1985). In this study was used short form questionnaire. In this questionnaire each factor measured in the 60-item short form with 12 questions. In the questionnaire prepared by MacCary and Costa, each question represents one of the five personality factors. The total score of the questionnaire ranged from 0 to 48 (22). Results of the study by McCray and Costa (1992) showed that the correlation of the 5-sub scales short-form with and the long-form ranged from 0.77 to 0.92. Moreover, the internal consistency of its subscales is in the range of 0.68 to 0.86. This questionnaire consists of 60 items and only measures five personality traits, while the long-form, in addition to the five factors also measures 30 dimensions. Jafari et al. (6) used the short-form in their research on nurses. In this questionnaire, Cronbach's alpha values of personality dimensions of neuroticism, openness, conscientiousness, agreeableness, and extraversion were 0.82, 0.69, 0.76, 0.73, and 0.70, respectively (6).

In this research, ethical approval was obtained from the Research Deputy of Gonabad University of Medical Sciences and presented to the Department of Health Network and Hospitals of 22 Bahman and 15 Khordad in Gonabad. Then, the questionnaires were distributed among the employees, with the assurance that their participation was voluntary and their information would remain confidential and anonymous. In this study, the questionnaire was distributed among 95 people and all questionnaires were returned.

Statistical data analysis was carried out using SPSS (version 17, SPSS Inc., Chicago, IL, USA), Spearman correlation coefficient,

independent t, and multiple regressions tests.

Results

The study subjects were 21 (22.1%) men and 74 (27.9%) woman. The mean age of the participants was 31.27 ± 5.32 years. In

addition, 89 participants (93.7%) had a master's degree and 6 (6.3%) had an undergraduate degree. The mean of occupational stress and its dimensions are given in table 1.

Table 1: The mean and standard deviation of occupational stress and its dimensions in the research units

Variables	Mean	Standard deviation	Maximum	Minimum
Role overload	27.71	5.67	45	16
Role insufficiency	27.89	6.35	46	14
Role ambiguity	26.09	6.67	43	10
Role boundary	26.73	6.48	41	13
Responsibility	29.19	5.75	45	13
Physical environment	23.46	7.23	46	12
Occupational stress (total score)	159.04	27.72	259	30

According to the results presented in table 1, the mean score of occupational stress in the study population was 159.04 ± 27.72 . The results illustrated in table 1 also indicate that, among all variables that effect occupational stress, the dimension of responsibility with average score of 29.19 ± 5.75 has a more

effective role in increasing occupational stress. Furthermore, physical environment, with an average score of 23.46 ± 7.23 , has the least effect on occupational stress increase. The comparison of mean occupational stress scores of men and women is shown in table 2.

Table 2: The relationship between demographic factors (including gender, age and level of education) and Job stress

Demographic factors	Job stress	Results of independent t-test and Pearson correlation
Sex	Male	t = 1.98
	Female	df = 93 P = 0.051
Academic degree	Undergraduate degree	t = 0.733
	Master's degree	df = 93 P = 0.446
Age	31.27	r = -0.076
Job stress	159.04	P = 0.465

The mean score of job stress among men and women nurses was 169.48 and 155.08, respectively. Independent t-test results showed that there was no significant difference in mean score of job stress between women and men ($P = 0.051$). Independent t-test results also showed that there was no significant difference in the mean score of job stress

between undergraduate and master's degree graduates ($P = 0.466$). In accordance with the results of the above table, the Pearson correlation showed that there was no significant relationship between job stress and age ($P = 0.465$). The results of the study showed that the mean of the five personality dimensions of neuroticism, extraversion,

openness, agreeableness, and conscientiousness were 22.03, 29.18, 23.30, 29.44, and 33.60, respectively. The results of

the correlation between personality traits and job stress in the study population are presented in table 3.

Table 3: Pearson correlation coefficient between personality characteristics and job stress

Personality variable	Job stress		Result of Pearson correlation
	SD	Mean	
Neuroticism	6.29	22.03	r = -0.004 P = 0.96
Extroversion	5.64	29.18	r = -0.06 P = 0.39
Openness	4.05	23.30	r = 0.02 P = 0.08
Agreeableness	5.39	29.44	r = -0.02 P = 0.01
Conscientiousness	6.62	33.60	r = -0.08 P = 0.41

As can be seen in table 3, the Pearson correlation test results showed that there was no significant association between occupational stress and neuroticism (P = 0.968). Moreover, test results showed that there was no significant correlation between

job stress and personality traits of extraversion, conscientiousness, and openness. The Pearson correlation test showed a significant negative relationship between job stress and agreeableness (P = 0.011)

Table 4: Regression of demographic factors and five personality dimensions on job stress

Model	Sum of squares	Average of squares	Degrees of freedom	f	P
Regression	786.226	3903.113	2		
Remaining	6441.605	700.452	92	5.572	0.005
Total	72247.832		94		

The table 4 shows that regression on predictor variables of agreeableness and gender is significant on the response variable of job stress (P = 0.005). The adjusted coefficient for this regression model was 0.089. This means

that this model can explain only about 9% of the variance in occupational stress. The amount that cannot be explained is related to other factors that influence job stress, but have not been considered in this model.

Table 5: Coefficients of the regression on gender and agreeableness on job stress

Model	Standard coefficients	Non-standard coefficients		t	P	Confidence interval of 95%	
	Beta	Standard error	B			Upper limit	Lower limit
Constant factor		19.093	222.113	11.634	< 0.001	260.054	184.213
Agreeableness	-0.260	0.505	-1.335	-2.637	0.010	-0.330	-2.340
Gender	-0.201	6.544	-13.372	-2.043	0.044	-0.375	-26.368

In this study, only predictor variables of agreeableness and gender had a significant association with the response variable of occupational stress. The coefficients of the regression model are presented in table 5. Non-standard regression coefficients show that per unit increase in the score of agreeableness will decrease occupational stress score by 1.335 units. Furthermore, a one unit increase in the variable of gender will decrease the amount of job stress score by 13.372 units. The standardized regression coefficients indicate that the variable of agreeableness had greater effect on occupational stress.

Discussion

According to the gradation spectrum of 60 to 107 (no stress), 108 to 203 (normal stress), 204 to 251 (medium stress), and 252 to 300 (severe stress), the degree of occupational stress among the study population was normal. In fact, nurses of Gonabad University of Medical Sciences did not have severe stress. In addition, the results showed that the aspects of role overload, role insufficiency, responsibility, and physical environment were in the normal range and dimensions of role ambiguity and role boundary were in the moderate range. The responsibility dimension, compared to the other variables, had an effective role in the development of job stress. The results of the study by Jafari et al. on 108 nurses working in public hospitals in Hamedan, Iran, showed that nurses' stress level ranged between medium and severe stress. Their results showed higher stress levels among nurses in comparison to the present study (26). This discrepancy is not unexpected, because stress as a psychological phenomenon is influenced by numerous factors one of which is job-related factors and there are numerous risk factors that can exacerbate stress.

On the other hand, stress is to a great extent caused by individual risk factors. In addition to environmental factors and stressors, interpersonal factors, such as cognitive,

attitudinal, emotional, and personality factors, also plays a major role in the occurrence and severity of stress. The results of independent t-test showed that there is no meaningful difference in mean score of job stress between men and women, and between undergraduate and master's degree graduates. The Pearson correlation test showed that there is no significant relationship between occupational stress and age. The results of the study by Ghaneay et al. on job stress in 115 nurses in Imam Khomeini Hospital of Saghez, Iran, showed that there is no relationship between age and job stress (27). The study results showed that there was no significant relationship between job stress and personality traits of neuroticism, extraversion, conscientiousness, and openness, and there was a negative significant relationship between job stress and agreeableness. Results of the study by Ghasemzadeh et al. showed that the personality trait of conscientiousness had a negative significant relationship with stress. In the event that it had positive significant relationship with respondents feeling. The agreeableness personality trait had a positive and significant correlation with performance and a significant negative relationship with a sense of responsibility. Furthermore, the results showed that the relationship between conscientiousness and occupational stress is mediated through emotional responses. The mediating role of emotional response was confirmed by the relationship between agreeableness personality trait and occupational performance (28). The study by Ghaneay et al. on the relationship between personality traits and occupational stress showed a significant correlation between neuroticism and occupational stress (27). Moreover, in their study, the results of multiple regression analysis showed that neuroticism is a good predictor for occupational stress (27). The discrepancy between Results of present study and the findings of Ghasemzadeh et al. (28) may be due to differences between the study subjects,

because that study was conducted on faculty members and the present study is conducted on nurses. In a study by Fontana and Abouzari (22) on stress levels, gender and personality factors in 94 teachers revealed that 72.6% and 23.2% of teachers had experienced an average and severe level of stress, respectively. A significant correlation was found between stress and neuroticism. The results of study by Fontana showed that extraversion and neuroticism are the best predictors of occupational stress and it seems that personality trait is more effective on job stress than other factors such as age and gender (22). The results of two studies have shown that burnout is very common among nurses (14, 29) and another study has shown that job stress is one of the factors that cause burnout (16). Moreover, there is evidence that the nursing profession is stressful (30) and this job stress leads to burnout in the long run. As a result, stress management for nurses is necessary. In addition to the five personality traits examined in this study, there are certainly other personality traits that may contribute to job stress. In addition to individual and occupational characteristics, other factors may contribute to the increasing of job stress. Hence, further studies in this area are necessary for the management of occupational stress.

Conclusion

Based on the findings regarding job stress, personality dimensions, and demographic factors and other researches in the field of personality traits and job stress, it can be concluded that some basic aspects of personality and demographic factors have a significant relationship with occupational stress. The findings of the study revealed that the two predictor variables of agreeableness and gender had negative significant effect on occupational stress. The standardized regression coefficient showed that agreeableness had a greater effect on occupational stress. In the interpretation of this

theme that agreeableness had a greater effect on occupational stress it can be said that desirable characteristics and traits associated with occupational tasks are in agreement with feminine characteristics. This study had some limitations. In this study, data collection was conducted using self-assessment tools that permit bias. In addition, this study was limited to public hospital nurses in Gonabad city, so generalizing the results to other groups should be done with caution. However, because this was a correlational study, it was impossible to discover causal relationships. Therefore, in order to identify the causes of occupational stress it should be conducted further research with a larger sample size.

Acknowledgments

This study was registered as the research project No. P/438/1 by the Research Deputy of Gonabad University of Medical Sciences. The authors would like to thank the authorities of this University for their cooperation.

Conflict of interests: None declared.

References

1. Tangri RP. What stress costs. A special report presented by Chrysalis Performance Strategies Inc. [Internet]. 2009 [cited 2009 Aug 05]. Available from: <http://www.StressCosts.com>.
2. Kjellstrom T, Kovats RS, Lloyd SJ, Holt T, Tol RS. The direct impact of climate change on regional labor productivity. *Arch Environ Occup Health* 2009; 64(4):217-27.
3. Abdi H, Kalani Z, Harazi MA. Job related stress in nurses. *Journal of Shahid Sadoughi University of Medical Sciences and Health Services* 2000; 8(4):17-21.
4. Rohafza HR, Salehi B, Sadeghi M. Prevalence and severity of emotional stress in Isfahan and Markazi provinces, 2002. *Arak University of Medical Sciences Journal* 2007; 10(2):22-30.
5. Namavar S, Rahmani Gh, Rezanejad MT, Gholami L. Evaluation of job stress on the staff of the National Gas Company and

- distribution of petroleum products in Yasuj in 2013. Paper presented at: 16th the national Conference on Environmental Health; 2013 Oct 1-3 Tabriz, Iran.
6. Jafari A, Amiri Majd M, Esfandiary Z. Relationship between personality characteristics and coping strategies with job stress in nurses. *Quarterly Journal of Nursing Management* 2013; 1(4):36-44
 7. Khandan M, Roshanzamir S, Maghsoudipour M. Survey of workload and job satisfaction relationship in a Productive Company. *Iran Occupational Health* 2012; 9(1):30-6.
 8. Elfering A, Grebner S, Semmer NK, Gerber H. Time control, catecholamines and back pain among young nurses. *Scand J Work Environ Health* 2002; 28(6):386-93.
 9. Santos SR, Carroll CA, Cox KS, Teasley SL, Simon SD, Bainbridge L, et al. Baby boomer nurses bearing the burden of care: A four-site study of stress, strain, and coping for inpatient registered nurses. *J Nurs Adm* 2003; 33(4):243-50.
 10. Plant ML, Plant MA, Foster J. Stress, alcohol ,tobacco and illicit drug use amongst nurses: a Scottish study. *J Adv Nurs* 1992; 17(9):1057-67.
 11. Roberts R, Golding J, Towell T, Weinreb I. The effects of economic circumstances on British students' mental and physical health. *J Am Coll Health* 1999; 48(3):103-9.
 12. Embriaco N, Papazian L, Kentish-Barnes N, Pochard F, Azoulay E. Burnout syndrome among critical care healthcare workers. *Curr Opin Crit Care* 2007; 13(5):482-8.
 13. Woods P. Intensification and stress in teaching. In: Huberman AH, ed. *Understanding and preventing teacher burnout: A sourcebook of international research and practice*. New York: Cambridge University Press; 1999. P.115-38.
 14. Kjellstrom T, Holmer I, Lemke B. Workplace heat stress, health and productivity-an increasing challenge for low and middle-income countries during climate change. *Glob Health Action* 2009; 2:46-51.
 15. Kobasa SC. Stressful life events, personality, and health: an inquiry into hardiness. *J Pers Soc Psychol* 1979; 37(1):1-11.
 16. Hosseini HM. Evaluation of thermal stress workers in a tile factory in 2010. 7th Occupational Health Congress. 2010 Feb 16-18, Iran, Qazvin.
 17. Digman JM. Personality structure: Emergence of the five-factor model. *Annu Rev Psychol* 1990; 41:417-40. DOI: 10.1146/annurev.ps.41.020190.002221
 18. Lin RT, Chan CC. Effects of heat on workers' health and productivity in Taiwan. *Glob Health Action* 2009; 2: DOI: 10.3402/gha.v2i0.2024
 19. Barrick MR, Mount MK. The big five personality dimensions and job performance: a meta-analysis. *Pers Psychol* 1991; 44(1):1-26.
 20. Ross RR, Altmaier EM. *Intervention in occupational stress: A handbook of counselling for stress at work*. London: Sage; 1994.
 21. French JRP, Caplan RD. Organizational stress and individual strain. In: The failure of success. AJ Marrow, ed. NewYork: AMACOM; 1972
 22. Fontana D, Abovseri R. Stress levels, gender and personality factors in teachers. *Br J Educ Psychol* 1993; 63(2):261-70.
 23. Enjezab B, Faraj Khoda T, Mojahed SH, Bokaei M. Barriers and motivators related to cervical and breast cancer screening. *The Journal of shahid Sadoughi University of Medical Sciences* 2004; 12(3):78-84.
 24. Kerslake DM. *The stress of hot environments*. 1st ed. Britain: Cambridge University Press; 1972.
 25. Osipow SH, Spokane AR. *Occupational stress inventory: Manual research version*. Odessa, FL: Psychological Assessment Resources; 1992.
 26. Jafari A, Amiri Majd M, Esfandiary Z. Relationship between personality characteristics and coping strategies with job stress in nurses. *J Nurs Manag* 2013; 1(4):36-44.
 27. Ghanei Gheshlagh R, Valiei S, Rezaei M, Rezaei K. The relationship between personality characteristics and Nursing occupational stress. *Iranian Journal of Psychiatric Nursing* 2013; 1(3):27-34.
 28. Ghasemzadeh A, Abbaszadeh M, Hassani M, Hashemi T. Structural Modeling of personality traits on stress and job performance considering the mediating effects of individual accountability. *Iran Occupational Health Journal* 2013; 10(2):54-64.
 29. Jay O, Kenny GP. Heat exposure in the Canadian workplace. *Am J Ind Med* 2010; 53(8):842-53.
 30. Lee I, Wang HH. Perceived occupational stress and related factors in public health nurses. *J Nurs Res* 2002; 10(4):253-60.