



## **The Study of Factors Affecting the Job Performance of Nurses Working in Selected Teaching Hospitals in Tehran**

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### **ABSTRACT**

**Background:** Undoubtedly, one of the most important objectives of any organization is to provide high quality and desirable goods and services that depend on the performance of human force of the organization. The performance of physicians and nurses is a very important factor in establishing and enhancing the effectiveness of services. Since nurses are the most fundamental medical staff of the hospital, the present study was performed with the aim of investigating the factors affecting the job performance of nurses working in selected teaching hospitals in Tehran in 2018.

**Methods:** The target group of this study included nurses working in inpatient wards of hospitals, of whom 354 individuals were selected by simple random sampling method. The intraorganizational environment questionnaire (Weisbord), five personality traits (NEO personality inventory), and Paterson's job performance questionnaire were the three data collection tools. The study was conducted in 2018 and the data were analyzed by SPSS<sub>20</sub> software using descriptive statistics and artificial neural networks.

**Results:** In the personality traits questionnaire, neuroticism ( $40.22 \pm 6.66$ ) dimension had the highest and responsibility ( $23.94 \pm 4.91$ ) dimension had the lowest mean scores. Also in the inter-organizational environment questionnaire, communication ( $14.66 \pm 4.52$ ) dimension and rewards ( $21.33 \pm 6.54$ ) dimension had the best and worst status, respectively. Comparison of significance coefficients in neural networks showed that dimensions of agreeability (100 %) and marital status (8 %) had the highest and lowest importance in nurses' job performance.

**Conclusion:** The results reveal that the dimensions of personality traits and job agreeability dimension have the most effect on the employees' job performance. Hence, it is possible to improve staff performance by hiring people consistent with their work.

**Keywords:** Job Performance, Personality, Teaching Hospital, Nurses

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## Introduction

Each organization is formed to meet specific needs and predetermined goals. One of the most important objectives of any organization is to provide high quality and desirable goods and services that depends on the performance of human force of the organization (1). Like other organizations, health organizations also require professional and knowledge-based staff (2) aiming at providing and enhancing the health of individuals in the community (3). In such organizations, in order to ensure the quality of the provided product and service, performance evaluation is performed to improve and enhance the quality of performance (4, 5). Performance has various definitions, and each of the experts has referred to specific aspects of it. Armstrong (6) names it the achievement of goals whose quantity and quality are predetermined. Oxford English Dictionary defines performance as “to act, to apply, to do every regular or committed thing”. Moreover, Bramach (7) believes that performance consists of behavior and outcomes. From his viewpoint, “performance means behaviors and outcomes; behaviors originate from an agent, transforming the performance from thought to action.” According to different studies, there are many factors affecting the performance of employees in an organization, including two factors of the intraorganizational environment and personality traits with the most effective role (8-11).

The assessment of the intraorganizational environment investigates the current conditions of the organization, an important tool for managing organizations today (12). Analyzing factors affecting the intraorganizational environment is one of the priorities of managers and staff to achieve the objectives of the organization and identifying them as well as the quality of their interaction with each other, besides external factors, provide the organization with the ability to compete and accelerate growth and lead to the future change of the organization (13-15). In the assessment of intraorganizational environment, managers use conceptual models and applied research methods to address the status of an

organization and discover ways to solve problems, deal with challenges, or improve performance (16). According to various studies, it has been determined that challenging and rich work environments, as well as environments increasing employee enthusiasm, may play an effective role in enhancing employees' performance (11, 17). In the study by NasiriValikBani and Sepahvand, (18) it was determined that there was a positive and significant relationship between the organizational identity and safety leadership style and the employees' job performance. Among the dimensions of safety leadership style, the components of acceptance and the use of intrinsic motivations had the most effect on the prediction of employees' job performance. In the study by Khanjankhani et al (1) intraorganizational factors including targeting and helpful mechanisms had the most and leadership and communication had the least effect on employees' job performance. Another study revealed that as an intraorganizational factor, organizational conflict has a negative and significant effect on organizational performance (19). On the other hand, many studies showed that there is a significant relationship between personality traits and job performance (20-25). According to the conducted studies, individual, social and demographic variables, personality and psychological traits, development motivation, level of education, human and social capital, specialized knowledge and skills, learning capacity, managing relationships with key persons in the organizational network, socialization and trustworthiness are all positively correlated with job performance. Moreover, organizational characteristics such as type of work, development strategies, size of organization, organizational commitment and leaving the organization are from other factors affecting job success and performance (26- 30). In the study by Sheikh Shabani (31) on the role of personality traits in performance, it was revealed that neuroticism had a negative correlation with job performance and extraversion, while having a positive correlation with responsibility and agreeableness. The results of another study revealed



no significant relationship between personality traits and job performance (32). Since nurses are the largest group of hospital treatment staff, this study was aimed at investigating the factors affecting job performance of nurses working in selected teaching hospitals in Tehran.

### Materials and Methods

This is an analytical cross-sectional study carried out to investigate the importance of factors affecting the job performance of nurses working in selected teaching hospitals in Tehran in 2018. The statistical population of this study included nurses working in inpatient wards of educational hospitals (Imam Khomeini, Cancer, Pediatric Medical Center, Shariati, Amir A'lam, Bahrami, Baharloo, Roozbeh, Razi, Arash, Yas, Sina, Ziyaiyanand Farabi). The inclusion criteria were at least one year of work experience in these hospitals (with the purpose of their familiarity with the internal environment and structure of the hospital). After investigating similar papers (Summers and Casal) (33) as well as considering the population size (4507) and through using Cochran formula, the sample size was estimated 354 and appropriately distributed in different sections of the hospital (considering the number of nurses in each hospital and in each ward). Then simple random sampling method was used for distributing the questionnaires to each hospital and ward. The data were collected in a timeline (September) and the response rate in this study was 100 %. Data were collected using Neo Personality Inventory (five personality traits), Weisbord intraorganizational environment, and Paterson's performance appraisal that the validity and reliability of all of them were confirmed in various studies (34-36).

The NEO five-personality traits inventory consisted of five dimensions and four questions. The Likert scale was employed to answer these questions. The scores of each domain were calculated and interpreted by summing the scores of questions related to all 12 domains. For each domain, the score of 12-24 was considered as low score, 25- 48 as medium score and 49-60 as high score. The psychometric properties of this tool have

been investigated in the research by Haqshenas. The alpha coefficients calculated for the dimensions of this questionnaire were 0.81 for neuroticism, 0.71 for extroversion, 0.57 for extraversion, 0.71 for agreeability and 0.83 for responsibility. The test-retest reliability was validated over a six-month period and varied from 0.53 to 0.76 for the questionnaire's dimensions, which was statistically acceptable (37).

The Weisbord interorganizational environment questionnaire contains seven dimensions. The questionnaire was scored based on a Likert scale ranging from 1 to 7 (strongly disagree to strongly agree). In their study, Darvish et al. (35) confirmed the validity of this questionnaire and obtained its reliability of 0.89 using Cronbach's alpha. A score of 20 in the questionnaire was a neutral score, a score of less than 20 indicated strength, and a score of more than 20 indicated weakness in the relevant variable.

The Paterson Job Performance Questionnaire has four questions. The five-item Likert scale was used to score the questionnaire. This questionnaire was transformed into a self-assessment questionnaire with minor modifications and translated by Arshadi and Shekarshekan (quoted from Aslanpour Jokandan et al.) (36). A score of 15-35 is considered as low, 36-55 is average and 56-75 is considered high. Aslanpouret al. (36) obtained the reliability of this questionnaire 0.86 and 0.79, respectively through using Cronbach's alpha and split-half method. Furthermore, the validity of this tool was obtained by correlating with a researcher-made general question  $r = 0.61$  at the significance level of 0.001 (36). Demographic characteristics were asked in a questionnaire separate from the sample. Finally, the data were analyzed using SPSS 20 software and descriptive statistics as well as artificial neural networks (to extract rank). Artificial neural networks are one of the advanced data mining techniques that can approximate any continuous dependency between input and output even if a relationship is nonlinear (38,39). Estimation of functions, prediction, pattern recognition, control, optimization etc. are among the capabilities of these networks (40). The artificial neural network (ANN)

consists of three layers of input layer (information delivery), hidden layer (input processing based on the communication weight between them), and output layer (extracting significance coefficients and ranking inputs according to the hidden layer's activity) (40, 41). Multilayer perceptron neural network, which is one of the most powerful ANN models, was used in this study. Given the output variable, the multilayer perceptron neural network assigns one percent of the coefficient of significance to each input variable, in a range from zero percent (meaning completely unimportant) to 100 percent (meaning completely significant). These coefficients help the researcher prioritize the dimensions. Fig.1 represents the conceptual model of the neural network for this study. As observed in the figure, the dimensions of demographic characteristics, as well as the dimensions and total score of the questionnaire of personality traits and intraorganizational environment are considered as the model inputs and the total score of job performance questionnaires as model output. Obtaining the consent of subjects to participate in the study consciously, avoiding coercion, threats, lure and seduction, and disclosing information to the subjects, while preserving confidentiality were among the ethical considerations of this study.

This paper is the result of a research plan approved by Tehran University of Medical Sciences and Health Services under the code of ethics IR.TUMS.VCR.REC.1397.243.

## Results

Among the studied nurses, the two groups aged 31-40 and fewer than 30 respectively had the highest and lowest frequencies among the age groups (41.9 % vs. 19.7 %). In terms of the employment type, the formal employees with 68.7 % and the contractual employees with 4.3 % had the highest and lowest percentages of the types of employment, respectively. 85.8 % of the respondents had BA education degree, 13.1 % had MA education degree and 0.9 % had high school diploma and Associate degree. 92.3 % of the respondents were women and 7.7 % were men. 70.7 % of them were married.

Table 1 represents the mean score and standard deviation of dimensions of the intraorganizational environment assessment. Among the studied dimensions in the intraorganizational environment, two dimensions of communication ( $14.66 \pm 4.52$ ) and rewards ( $21.33 \pm 6.54$ ) respectively had the best and worst status.

Table 2 exhibits the mean score and standard deviation of the dimensions of five personality traits. Among the studied dimensions, neuroticism ( $40.22 \pm 6.66$ ) obtained the most and the responsibility ( $23.94 \pm 4.91$ ) obtained the least score. The mean score and standard deviation of job performance in the studied hospitals were reported  $18.36 \pm 5.80$ .

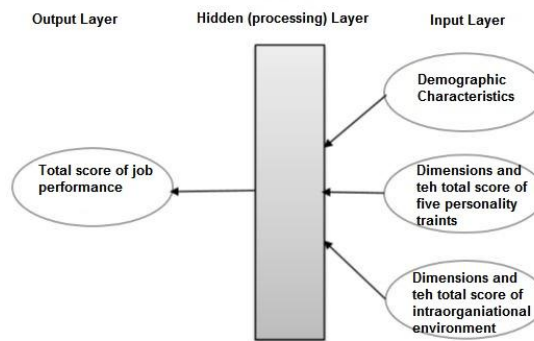
Table 3 presents the weight of demographic characteristics and dimensions of the five traits and intraorganizational environment related to job performance. Given the results, among demographic characteristics, the variables of level of education (53.8 %) and marital status (0.8 %) respectively had the highest and the lowest significance coefficients. Investigation of the results of personality traits revealed that the dimension of agreeability (100 %) and neuroticism (36.7 %) respectively had the highest and the lowest percentage of importance coefficient and ultimately, communication dimensions (63.8 %) and attitudes toward change (28.6 %) respectively obtained the highest and the lowest percentages of importance coefficient in examining the dimensions of the intraorganizational environment.

Fig. 1 illustrates the ranking of the factors affecting the nurses' job performance in the studied hospitals. This section addresses our question about the rankings of each of the components of personality traits, intraorganizational environment, and demographic characteristics related to job performance. As observed in the chart, dimensions of agreeability (100 %) and marital status (0.8 %) have the highest and the lowest importance on nurses' job performance, respectively.

Chart 2 exhibits the ranking of total score of factors affecting nurses' job performance. This section addresses our question about ranking of total score of personality traits, intraorganizational environment, and demographic characteristics

versus job performance. As observed in the chart, total score of personality traits and marital status

have the highest and least importance on nurses' job performance, respectively.



**Figure 1.** Conceptual model of research neural network

**Table 1.** Mean score and standard deviation of the dimensions of the assessment of the intraorganizational environment

Dimensions	Mean $\pm$ SD
Objective	15.60 $\pm$ 5.33
Structure	6.60 $\pm$ 17.63
Leadership	6.25 $\pm$ 16.12
Communication	4.52 $\pm$ 14.66
Rewards	6.54 $\pm$ 21.33
Coordination	6.10 $\pm$ 17.29
Attitudes toward change	5.59 $\pm$ 17.51

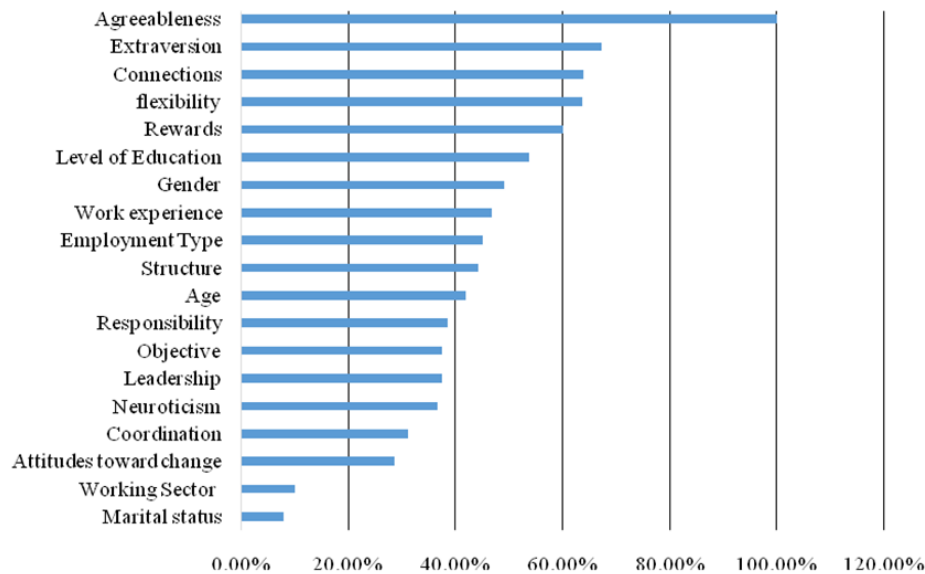
**Table 2.** Mean score and standard deviation of the dimensions of the personality traits

Dimension	Mean $\pm$ SD
Neuroticism	6.66 $\pm$ 40.22
Extroversion	4.98 $\pm$ 30.84
Flexibility	4.29 $\pm$ 33.59
Agreeability	5.55 $\pm$ 28.05
Responsibility	4.91 $\pm$ 23.94

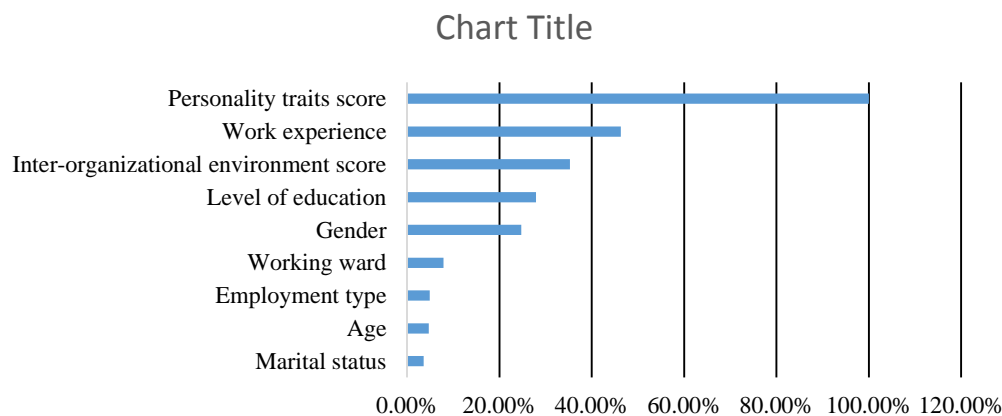
**Table 3.** Weight of demographic characteristics and dimensions of five personality traits and intraorganizational environment in relation to job performance

Variable	Dimension	Weight
Demographic Characteristics	Age	41.9 %
	Employment type	45.1 %
	Level of education	53.8 %
	Working ward	10.2 %
	Gender	49.1 %
	Work experience	46.8 %
	Marital status	8.0 %
Five Personal Traits	Neuroticism	36.7 %
	Extroversion	67.2 %
	Flexibility	63.6 %
	Agreeability	100.0 %
	Responsibility	38.6 %
Intraorganizational Environment	Objective	37.6 %
	Structure	44.3 %
	Leadership	37.5 %
	Communication	63.8 %
	Rewards	60.0 %
	Coordination	31.2 %
	Attitudes toward change	28.6 %





**Chart 1.** Ranking of factors affecting nurses' job performance



**Chart 2.** Ranking of total score of factors affecting nurses' job performance

## Discussion

As a major factor in people's lives, health is in close relationship with health organizations. Hospitals, as the largest part of the health system in providing health and treatment services, have to provide high quality required services. Furthermore, the services provided in organizations are directly related to the job performance of their employees. Nurses' performance as an important and essential part in the provision of health services in hospitals is of great importance. Employees' performance is associated with a variety of factors, most notably the intraorganizational environment as well as

personality traits. Hence, the present study was aimed at investigating the importance of factors affecting the job performance of nurses working in selected teaching hospitals in Tehran in 2018.

The results of this study reveal that among demographic characteristics, the variables of level of education and marital status respectively had the highest and least importance (effect) in nurses' job performance. In addition, among the dimensions of the intraorganizational environment, the dimensions of communication and attitudes toward change respectively are the most and least important factors affecting nurses' job performance, and the communication



dimension has the best status. Investigation of dimensions personality traits indicated that the dimensions of agreeability and neuroticism respectively had the highest and lowest effect on nurses' job performance with the highest mean score related to neuroticism. Comparing all dimensions of variables used in the study showed that the dimensions of agreeability and marital status respectively had the highest and the lowest importance in nurses' job performance. Furthermore, by comparing the studied variables including personality traits, intraorganizational environment and demographic characteristics, it was recognized that the variable of personality traits are more important in nurses' job performance. In this study, the personality traits inventory was used that due to the complexity of some of the questions for nurses, the researcher was required to be present for some explanations about the questionnaire. In addition, some nurses did not fully complete the demographic information part of their questionnaire that the questionnaires were completed after re-referring of the researcher and providing information and assuring them of data confidentiality.

Different studies have examined the job performance and factors affecting it. For instance, a study concluded that emotional commitment had a significant effect on nursing staff's job performance (42). Another study revealed that transformational and entrepreneurial leadership styles significantly affected the job performance (43). Moreover, working pressure significantly affects the nurses' job performance (44). Another study considers organizational design a factor affecting job performance (45). The organization has to communicate with its staff to advance its goals and activities. Barati et al. (46) consider communication essential for hospitals. Moreover, SoleymaniNejad et al. (47) have shown that by improving the relationships between managers and employees, their organizational performance would be improved. The communication dimension in the studied hospitals was better than other dimensions of the intraorganizational environment, indicating the openness of

communication channels as well as clarity of communication pathways, affecting the achievement of hospital goals. In the study of Darvish (35) and Habibipour (48), it was revealed that targeting and setting the objectives of the organization would enhance the job motivation and performance of the organization's employees. For greater success, organizations may align their goals and that of their employees in the same way that will improve the performance of those present in the organization. In addition, the studied hospitals had relatively good status in the target dimension, showing the well-defined goals in these organizations and the alignment of staff with the goals of the organization. Personality is one of the most important factors in predicting job performance, since personality determines individual's attitude toward a job and the way that the person responds to job requirements. Najari et al. (49) specified that there was a significant relationship between personality type and nurses' internal and external job success. Bazol et al. (50) showed that extroverted and neurotic personality traits predicted the job performance of the European senior executives. Consequently, all of these studies confirm the important effect of personality traits and types on job performance.

### Conclusion

As the results of this study showed, the total score of personality traits had the highest importance and impact on nurses' job performance, and it is suggested that personality traits should be considered by hospital managers before employment and so that managers can select more suitable individuals for recruitment.

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### Conflicts of interests

The authors declared that they have no conflict of interests.

**Authors' contributions**

Saberzadeh V designed research; Asheqi H, Abdollahinia J and Nourizadeh P collected data; Khanjankhani Kh analyzed data; Saberzadeh V wrote manuscript; Khanjankhani Kh had primary

responsibility for final content. All authors read and approved the final manuscript.

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