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# The relationship between different aspects of occupational stress and general health

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***Introduction***. *Stress is one of the most common problems at work environments, which may have a negative effect on physical and mental health. Besides, general health problems are the most commonly discussed matter relating to occupational health, causing a reduction in the individual performance quality and work absence.*
***Aims and objectives***. *The objective of the study was to examine the relationship between the different indicators of occupational stress and general health.*
***Material and methods.*** *This cross-sectional study was conducted among the office workers in Tehran in 2017. HSE' occupational stress questionnaire was used to develop the different aspects of occupational stress. General health status was determined by General Health Questionnaire (GHQ-12). The relationship between different levels of occupational stress and general health was examined by statistical methods.*
***Results***. *The study was conducted among a total of 393 participant. The mean scores of occupational stress and general health were 3.23 ± 0.44 and 3.26 ± 2.92, respectively. A significant statistical relationship was observed between general health and the different indicators of occupational stress including role (OR = 10.95, P value <0.001), relationships (OR = 2.73, P value <0.001), manager support (OR = 2.43, P value <0.001), demand (OR = 1.98, P value = 0.001) and organizational changes (OR = 3.03, P value <0.001), suggesting that as the level of occupational stress increased, the level of general health declined*
***Conclusion***. *Attention to the different indicators of occupational stress and to the efficient ways to avoid and manage it can play an important role in improving the general health status of office workers.*

*K e y w o r d s :  job stress; general health; office worker.*

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## Introduction

Today, stress is one of the most common problems at work environments, which may have a negative effect on physical and mental health, the quality of individual performance, job satisfaction and absence from work [1]. Stress is a complex pattern of psychological conditions and the associated psychological reactions resulting from external demands that can cause symptoms ranging [2] from slight skin problems to severe diseases such as cardiovascular and musculoskeletal ones, behavioral disorders such as poor performance and psychological disorders such as anxiety, panic and a sense of frustration [3, 4]. Occupational stress is caused by an inconsistency between working conditions and individual characteristics in such a way that job has high expectations of the individual. According to Cannon's theory of stress, body creates an imbalance in the homeostasis system in response to stressors that, in the long term, it leads to a disruption in the biological system, prevents coping mechanism from working properly and ultimately poses a general health risk [5–7]. On the other hand, general health problems are a crucial issue in the whole world and they are the most commonly discussed matter relating to occupational health [8–10].

Under the definition proposed by World Health Organization [WHO], "mental health is a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" [11, 12].

Poor mental health causes a reduction in the quality of individual performance, job losses and economic difficulties [13]. Studies show that 14 to 18 percent of the world population have mental health problems, and 30 to 40 percent of all work-related disabilities can be attributed to mental health problems [10, 14]. Some studies have also indicated a correlation between occupational stress and mental health at work environments [15, 16]. According to the studies, occupational stress is more prevalent among nurses, teachers, military personnel and office workers [6, 10, 17, 18]. Office workers spend much of their time at work. Consequently, individual characteristics along with working conditions such as statistics and documents, information management, relationships, and decision-making processes may affect their health [19, 20]. In a study conducted by Myung, it was observed that occupational stress caused by job strain, relationships and anxiety about job security is more prevalent in office workers than in blue collar workers [21]. Occupational stress can pose a general health risk for office workers and make chronic physical and mental diseases more prevalent among them [19, 20]. Thus, the present study aims to examine the relationship between the different indicators of occupational stress and general health, and to identify crucial factors in the relationship among the office workers of a government organization in Tehran.

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Table 1

**The mean score and frequency of the different occupational stress indicators in participants**

| Occupational stress indicators | Mean ± SD | No stress, %(N) | Low stress, %(N) | Moderate stress, %(N) | High stress, %(N) |
|---|---|---|---|---|---|
| Role | 3.96 ± 0.73 | 75.8 (298) | 20.1 (79) | 4.1 (16) | Zero |
| Relationship | 3.50 ± 0.88 | 45.8 (180) | 37.9 (149) | 14 (55) | 2.3 (9) |
| Manager support | 3.22 ± 0.79 | 36.4 (143) | 44.5 (175) | 17.8 (70) | 1.3 (5) |
| Peer support | 3.41 ± 0.78 | 39.2 (154) | 44.8 (176) | 15.3 (60) | 0.8 (3) |
| Control | 3.05 ± 0.63 | 20.6 (81) | 56.5 (222) | 22.6 (89) | 0.3 (1) |
| Demand | 2.50 ± 0.56 | 3.1 (12) | 46.1 (181) | 45.3 (178) | 5.6 (22) |
| Changes | 3.04 ± 0.83 | 30.5 (120) | 44.5 (175) | 20.9 (82) | 4.1 (16) |

## Material and methods

This cross-sectional study was conducted among the office workers of a government organization in Tehran in 2017. At least one year of work experience and an informed consent for participation were criteria for inclusion in the study.

Demographic data such as age, gender, marital status, work experience, education, smoking and a history of psychiatric or medical disorders and drugs was collected by a checklist. Involvement in a field unrelated to the main occupation and a history of psychiatric disorders and drugs were criteria for exclusion from the study. HSE' occupational stress questionnaire and 12-item General Health Questionnaire (GHQ-12) were used to determine the level of occupational stress and general health status, respectively.

***HSE' occupational stress questionnaire.*** The questionnaire was designed by Health and Safety Executive in the UK in the late 1990s. It contained 35 questions, demonstrating occupational stress indicators in 7 categories of demand, control, Managersupport, peer support, relationships, role and change. Ratings were completed on a five-point Likert scale (never, rarely, sometimes, often and always that they were given a score from 0 to 4, respectively). The lower score, the higher stress level. The validity and reliability of the questionnaire has been confirmed in Persian [22].

***12-item General Health Questionnaire (GHQ-12).*** The questionnaire was first developed by Goldberg in 1972. It has been widely used to diagnose mild mental illnesses. Ratings were completed on a four-point Likert scale (better than as usual, as usual, less than as usual and much less than as usual that they were given scores 1, 1, 0 and 0, respectively).The lower score, the better general health. The validity and reliability of the questionnaire has been confirmed in Persian ($\alpha = 0.81$) [23]. SPSS software (version 22) was used to enter data and to conduct statistical analysis. Chi-square test and independent *t*-test were used to analyze qualitative and quantitative data, respectively. Logistic regression test was used to remove confounding effects. The level of significance was considered 0.05.

## Results

The study had 437 participants. The survey covered a total of 393 staff after satisfying the exclusion criteria. Most of the subjects were female (71.2%) and married (73.7%). The mean age and work experience of the subjects were 41.05 ± 8.48 and 12.57 ± 8.39, respectively. Eighty of the subjects were non-smokers. In the study, 30.8 and 53.5 percent of the subjects had respectively a bachelor's degree and a master's degree or higher and the others had a degree lower than bachelor's one.

The mean score of occupational stress was 3.23 ± 0.44. The subjects were included in 4 categories of high-stress (a mean score less than 1.5), mild-stress (a mean score of 1.5-2.5), low-stress (a mean score of 2.6-3.5) and non-stress (mean score more than 3.5). Table 1 shows the mean score and frequency of the different occupational stress indicators for each category. The mean score and the lowest and highest values of the general health were 3.26 ± 92 and (12-0), respectively.

The value of mean occupational stress score among the subjects less than 40 years old was more than others for all indicators, but there was a significant statistical relationship only for role, peer support and demand indicators ($p < 0.05$). Female subjects had a higher value of mean occupational stress score than men for all indicators, but a significant statistical relationship was observed only for peer support and control indicators ($p < 0.05$). In addition, role and Manager support indicators were significantly correlated with work experience in such a way that less-experienced subjects reached a higher level of occupational stress. The relationship between the other variables and the different indicators of occupational stress is summarized in Table 2.

General health status among male workers with more-experienced ,non-smoker , with age more than 40 years old , normal BMI was better than others, but there was no significant relationship (Table 2).

In order to investigate further, the relationship between general health and the mean occupational stress score of the different Subscales was analyzed separately (Table 3). As can be seen from the table, there was a significant statistical relationship between general health and the different indicators of occupational stress including role (*p*-value < 0.001, OR =10.95), relationships (*p*-value < 0.001, OR = 2.73), Manager support (*p*-value < 0.001, OR = 2.43), demand (*p*-value = 0.001, OR = 1.98) and change (*p*-value < 0.001, OR = 3.03) in such a way that an increase in occupational stress level has lowered general health. In addition, the general health status of those with occupational stress in terms of peer support and job control was worse than the others, but this difference was not statistically significant (Table 3).

Logistic regression test was used to remove the effect of confounding variables including age, gender and work history. After regression analysis, the relationship between general health and all occupational stress indicators except manager and peer support, control and change remained significant. In other words, by eliminating the effect of confounding variables, the relationship between general health and occupational stress in the dimensions of manager support and change, which was significant in the initial analysis, was no longer significant; But in other dimensions, there was still a significant relationship (Table 4).

## Discussion

In this study which conducted among 393 office workers demand and role indicators achieved the highest and the lowest level of occupational stress, respectively. The subjects had a relatively good general health (mean score = 3.26 ± 2.92). The results showed a negative statistical relationship between the different indicators of occupational stress and general health, suggesting that staff with a high level of occupational stress had a lower general health status.

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Table 2

**The relationship between occupational stress and general health with study variables in participations, $M \pm SD$**

| Indicator | | Role | Relationship | Manager support | Peer support | Control | Demand | Changes | GHQ |
|---|---|---|---|---|---|---|---|---|---|
| Age (years) | <40 | 3.9 ± 0.7 | 3.3 ± 0.8 | 3.1 ± 0.7 | 3.3 ± 0.7 | 3.02 ± 0.5 | 2.4 ± 0.5 | 3.0 ± 0.7 | 3.43 ± 2.8 |
| | ⩾40 | 4.0 ± 0.7 | 3.6 ± 0.8 | 3.2 ± 0.8 | 3.5 ± 0.8 | 3.09 ± 0.6 | 2.5 ± 0.5 | 3.0 ± 0.8 | 3.08 ± 2.9 |
| *p* value | | 0.09 | 0.006 | 0.49 | 0.02 | 0.28 | 0.02 | 0.40 | 0.23 |
| Gender | Male | 4.0 ± 0.7 | 3.6 ± 0.9 | 3.3 ± 0.6 | 3.6 ± 0.7 | 3.2 ± 0.5 | 2.5 ± 0.5 | 3.1 ± 0.7 | 2.84 ± 2.9 |
| | Female | 3.9 ± 0.7 | 3.4 ± 0.8 | 3.1 ± 0.8 | 3.3 ± 0.8 | 2.0 ± 0.6 | 2.4 ± 0.5 | 3.0 ± 0.8 | 3.43 ± 2.8 |
| *p* value | | 0.47 | 0.14 | 0.09 | 0.002 | < 0.001 | 0.24 | 0.19 | 0.07 |
| BMI, Kg/m$^2$ | <25 | 4.0 ± 0.6 | 3.5 ± 0.8 | 3.1 ± 0.7 | 3.4 ± 0.7 | 3.0 ± 0.6 | 2.4 ± 0.5 | 3.0 ± 0.8 | 3.17 ± 2.9 |
| | ⩾25 | 3.9 ± 0.7 | 3.4 ± 0.8 | 3.2 ± 0.8 | 3.3 ± 0.8 | 3.1 ± 0.6 | 2.5 ± 0.5 | 3.0 ± 0.8 | 3.39 ± 2.8 |
| *p* value | | 0.20 | 0.82 | 0.47 | 0.51 | 0.08 | 0.40 | 0.33 | 0.46 |
| Smoking | Yes | 4.0 ± 0.7 | 3.4 ± 1.0 | 3.0 ± 0.8 | 3.2 ± 0.7 | 3.0 ± 0.7 | 2.4 ± 0.6 | 2.8 ± 0.8 | 3.55 ± 3.0 |
| | No | 3.9 ± 0.7 | 3.5 ± 0.8 | 3.2 ± 0.7 | 3.4 ± 0.7 | 3.0 ± 0.6 | 2.5 ± 0.5 | 3.0 ± 0.8 | 3.19 ± 2.8 |
| *p* value | | 0.47 | 0.53 | 0.03 | 0.06 | 0.82 | 0.70 | 0.07 | 0.33 |
| Work history, years | <12 | 3.8 ± 0.7 | 3.4 ± 0.8 | 3.3 ± 0.7 | 3.3 ± 0.7 | 3.0 ± 0.5 | 2.5 ± 0.5 | 3.1 ± 0.7 | 3.27 ± 2.7 |
| | ⩾12 | 4.1 ± 0.6 | 3.5 ± 0.9 | 3.1 ± 0.8 | 3.4 ± 0.8 | 3.0 ± 0.6 | 2.4 ± 0.5 | 2.9 ± 0.8 | 3.25 ± 3.0 |
| *p* value | | < 0.001 | 0.36 | 0.02 | 0.47 | 0.31 | 0.32 | 0.13 | 0.94 |
| Education | Low | 4.0 ± 0.8 | 3.7 ± 0.8 | 3.2 ± 0.8 | 3.4 ± 0.8 | 3.1 ± 0.6 | 2.5 ± 0.6 | 3.2 ± 1.0 | 3.20 ± 2.7 |
| | Medium | 3.8 ± 0.7 | 3.4 ± 0.8 | 3.2 ± 0.7 | 3.3 ± 0.7 | 3.0 ± 0.5 | 2.5 ± 0.5 | 3.0 ± 0.7 | 3.33 ± 2.8 |
| | High | 4.0 ± 0.6 | 3.4 ± 0.9 | 3.1 ± 0.8 | 3.4 ± 0.7 | 3.0 ± 0.6 | 2.4 ± 0.5 | 2.9 ± 0.8 | 3.23 ± 2.9 |
| *p* value | | 0.19 | 0.10 | 0.66 | 0.26 | 0.41 | 0.29 | 0.12 | 0.94 |

In a few studies to investigate the relationship between occupational stress and general health status, results are similar to our study. Lim et al. [24] observed a significant statistical correlation between general health and stress among accounting students. A study conducted among bank staff using HSE occupational stress questionnaire and GHQ12 indicated a negative statistical correlation between the different indicators of occupational stress and general health [25]. Whereas most studies on the factors affecting occupational stress have considered only one indicator of occupational stress and one or two its effective factors [26, 27], this study has investigated all occupational stress indicators in detail.

A systematic review in the relationship between working conditions and stress-related diseases identified a lack of manager and peer support as a risk factor for stress only in men [28]. In a study conducted by Guidi, a significant statistical correlation was observed between general health and occupational stress caused by peer support indicator in men [25]. In the present study as well as in studies among teachers [10] and prison staff [29], women reached a higher level of occupational stress than men. The varying results can be attributed to the cultural differences, the lack of reporting by men, the more supportive and friendly relationships between men in the workplace, as well as the greater responsibility of women outside the workplace, especially housework and taking care of children.

The findings of the present study showed that workers less than 40 years old reached a higher level of stress than others for all indicators. It is consistent with earlier researches [30] including a study conducted among military staff indicated that occupational stress was higher among people aged 20 to 40 years [17]. It can be said that the increasing age has likely made adaptation to the workplace, organizational change, role and demand fulfillment and improvement in relationships more successful.

In many studies, there was no significant statistical correlation between work experience and occupational stress [31-34]. However, the present study observed a negative significant relationship

Table 3

**The relationship between general health and the mean of Subscales occupational stress in participations**

| Subscales | *p* value | OR | 95% CI |
|---|---|---|---|
| Role | < 0.001 | 10.95 | 2.45-48.88 |
| Relationship | < 0.001 | 2.73 | 1.58-4.73 |
| Manager support | < 0.001 | 2.43 | 1.46-4.07 |
| Peer support | 0.26 | 2.38 | 0.80-2.37 |
| Control | 0.06 | 1.56 | 0.97-2.51 |
| Demand | 0.001 | 1.98 | 1.31-2.98 |
| Changes | < 0.001 | 3.03 | 1.89-4.86 |

Table 4

**The Relationship between Occupational Stress and General Health by Eliminating the Impact of Confounding Variables Using Logistic Regression Analysis**

| Variables | B coefficient | *p* value | OR (95% CI) |
|---|---|---|---|
| Age | -0.316 | 0.232 | 0.72 ( 0.43-1.22) |
| Gender | -0.257 | 0.354 | 0.77 ( 0.44-1.33) |
| Work history | 0.197 | 0.473 | 1.21 ( 0.71-2.08) |
| Role | -1.075 | <0.001 | 0.34 ( 0.23- 0.50) |
| Relationship | -0.599 | 0.001 | 0.54 ( 0.38-0.77) |
| Manager support | -0.333 | 0.162 | 0.71 ( 0.45-1.14) |
| Peer support | 0.368 | 0.073 | 1.44 ( 0.96-2.16) |
| Control | -0.185 | 0.426 | 0.83 ( 0.52-1.31) |
| Demand | -0.185 | 0.001 | 0.45 ( 0.27-0.73) |
| Changes | -0.006 | 0.976 | 0.99 ( 0.65-1.50) |

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between work experience and occupational stress caused by role indicator so that the level of occupational stress was decreased by an increase in work experience. Although it was not significant, the greater work experience also decreased the level of occupational stress inrelationship and peer support dimensions. It is consistent with earlier researches [17], including Khatoni [35] that showed a negative statistical correlation between work experience and occupational stress. It can be said that the greater work experience has improved the ability to establish strong relationships with others, and it has increased peer support. The present study also showed that the greater work experience increased the level of occupational stress caused by managersupport, change and demand, consistent with Gharibi et al. [36].The present study is one of the few studies to investigate the relationship between different aspects of occupational stress and general health status in workers, whereas most studies have investigated only the factors affecting occupational stress, and they have given little attention to the effect of occupational stress on general health. In this study, several individual and occupational factors that may affect occupational stress and general health are separately examined. Participants who were involved in a field unrelated to the main occupation and a history of psychiatric disorders and drugs were excluded from the study. Therefore, further studies are recommended considering all factors that may have an effect on occupational stress.

## Conclusions

The results of the present study illustrate a significant statistical relationship between general health level and the distinct dimensions of occupational stress including role, relationships, Managersupport, demand and change among the entire staff. Also, less-experienced female subjects, less than 40 years old demonstrated a bigger increase at the level of occupational stress. Therefore, greater attention to younger and less-experienced staff and more support, female staff may reduce their occupational stress and consequently improve their general health.

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