

# An investigation on occupational stress of the operating room staffs in hospitals affiliated to Isfahan University of Medical Sciences and its association with some factors

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## ABSTRACT

**Background:** Stress is a nonspecific reaction to everything the body needs. Although occupational stress exists in every occupation, it is seen with more frequency and intensity amongst those occupations related to human health. In this study, we aimed to investigate the level of occupational stress in operating room staffs working in the hospitals affiliated to Isfahan University of Medical Sciences and its association with some factors.

**Materials and Methods:** This is a descriptive co-relational study conducted in summer 2010. The population studied comprised 100 OP staffs working in hospitals affiliated to Isfahan University of Medical Sciences. The data were collected by a questionnaire including two sections of personal information and Toft-Anderson Standard occupational stress inventory. The first section contained 13 questions and the second included 34 questions on stressful factors, measured through Likert's scale in which the scores of 0-33 indicated mild stress, 34-66 indicated moderate stress, and 67-100 indicated acute stress. The data were analyzed through SPSS. The statistical tests of Pearson correlation, variance analysis, and independent *t*-test were employed to analyze the data ( $P < 0.05$  was considered significant).

**Results:** Based on the findings, mean score of staffs' stress (out of 100) was 32.3 (12.9) and was in the range of 1-65. The highest frequencies were for mild stress (57.4%) and moderate stress (42.6). In addition, mean score of stress was not the same in different domains. There was a significant inverse association between the score of stress and monthly working hours ( $r = -0.21$ ,  $P = 0.049$ ). Mean score of stress was 28.1 (12.3) among those with average income and 33.8 (12.8) for the low-income subjects, showing a significant difference ( $P = 0.048$ ).

**Discussion and Conclusion:** The present study showed that most of the subjects suffer from mild stress. Since the highest level of stress was for work overload, it is suggested to reduce the staffs' work overload by employing capable and knowledgeable work force and enhancing their scientific and practical abilities.

**Key words:** Iran, operating rooms, stress

## INTRODUCTION

Stress is a nonspecific response of the body to everything it needs. Dr. Selye has named the stress with positive reaction as good stress. This sort of stress leads to human growth in emotional and psychological domains. Bad stress or distress stimulates negative responses and disorders of physiologic and psycho-cognitive activities of the individuals, and ultimately leads to disease or disability.<sup>[1]</sup> Each stimulant leading to

stress or physical nonspecific response is named stressor.<sup>[2]</sup> It can be defined as an event or an internal or external situation with the potential to make physiologic, mental, or behavioral changes in individuals. Stressors can be physical, physiologic, or socio-psychological.<sup>[3]</sup> Rendal *et al.* in response to the question, "what is occupational stress?" argues that occupational stress can be defined as piling up the stressors and those work-related situations whose role as stressors is agreed by most of the individuals.<sup>[4]</sup>

Although there is occupational stress in all occupations, those in relation with human health are of great importance.<sup>[5]</sup> Nurses going on frequent strikes in most of the western countries reveal the fact that nursing is a profession under a great deal of stress. The profession of nursing acts as a source of stress due to not only its nature of work, but also inadequate number of the nurses and high load of work.<sup>[6]</sup> Inappropriate environmental conditions such as noise, light, radiations, temperature, and humidity, high load of work, low number

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of the staffs, and high responsibility are also effective in the incidence of being stressed. Nurses' working environments, especially operating rooms, are counted stressful due to their existing physical and psychological stress.<sup>[7]</sup> Occupational stress can lead to occupational burnout.<sup>[8,9]</sup> It also leads to reduction of efficiency and working output, high work absenteeism, reduction of patients' satisfaction, quitting a job, familial and marital problems, drug and alcohol abuse, depression, and even suicide.<sup>[10,11]</sup> Stress accounts for 30% of diseases and absenteeism of the personnel in health care centers, with a yearly burden of 300-400 million dollars. This figure only reveals the materialistic aspect of loss due to stress while it can highly affect the personnel, their family members, as well as the patients.<sup>[12]</sup> This study was conducted with the goal of investigating the level of occupational stress among operating room staffs in hospitals affiliated to Isfahan University of Medical sciences and its association with some factors.

## MATERIALS AND METHODS

The present study is a descriptive co-relational study conducted in the summer of 2010. The study population comprised 100 operating room staffs in hospitals affiliated to Isfahan University of Medical Sciences.

Inclusion criteria were all interested subjects working in OP at the time of the study, not having filled the questionnaire before, and having the education level of associate, bachelor's, and nurse aid degrees.

The data were collected by a questionnaire including two sections of personal information and Toft-Anderson standard occupational stress inventory. The first section contained 13 questions. The second included 34 questions about stressors: 7 were related to patients' mortality and pain; 5 to conflicts with physicians; 3 to inadequate awareness; 3 to shortage of supportive sources; 5 to conflicts with other colleagues; 6 to work overload, and 5 questions were related to doubt on treatment.

They were all in Likert scale, so that score 0 was assigned to never, 1 to sometime, 2 was assigned to often, and 3 to most of the times.

Each question was scored from 0 to 3. To calculate the scores out of 100 in each domain, total score of the questions in each domain was multiplied by 100, and divided by the number of the questions in that domain, and ultimately multiplied by 3.

Based on this calculation, scores 0-33 were considered for mild stress, 34-66 for moderate stress, and 67-100 for acute stress. The data were analyzed by SPSS. Pearson correlation

tests, analysis of variance (ANOVA), and independent *t*-test were adopted to check the association between occupational stress and personal and social characteristics.  $P < 0.05$  was considered significant.

## RESULTS

Based on the findings, the subjects were 24-50 years of age, with a mean of 35 (8.9) years. About 63.8% were females, 36.2% were males, and 78.27% were married. About 59.6% of the subjects had associate degree, 24.8% bachelor's degree, and 10.6% were nurse aids. Most of the personnel (53.3%) were working as staffs in rotating shifts and 57.4% were permanent employees. The subjects' work experience ranged from 1 to 29 years, with a mean of 15.25 (9.4) years. Their average monthly working hours was 193.5 (36) hours.

Total mean score of stress was 32.3 (12.9) out of 100 in the range of 1-65, with the highest frequency for mild stress (57.4%) and moderate stress (42.6%). Mean scores of stress in various domains have been presented in Table 1. As observed in Table 1, the levels of stress from the highest to the lowest were for work overload, shortage of supportive sources, conflicts with colleagues, patients' mortality and pain, doubt on treatment, conflicts with physicians, and lack of adequate awareness. ANOVA with multiple observations showed that mean score of stress was not the same in different domains ( $P < 0.001$ ).

Pearson correlation test showed that there was a significant inverse association between the score of stress and monthly hours of work ( $r = -0.21$ ,  $P = 0.049$ ). There was also a significant inverse association between the level of stress and work experience ( $r = -0.20$ ,  $P = 0.047$ ). There was no significant association between the level of stress and age, working shift, and the number of children.

Mean scores of stress in men and women were 31.9 (12.8) and 32.6 (13.1), respectively. The *t*-test showed

**Table 1: Mean score of various stressors**

Stressors	Stress score out of 100			
	Min	Max	Mean	SD
Work load	0	88.9	43.26	19.5
Shortage of supportive resources	0	88.9	37.35	23.3
Conflicts with other colleagues	0	80	32.62	17.26
Parents' death and suffer	4.76	76.19	32.21	15.4
Lack of assurance about treatment	0	60	27.09	13.29
Conflicts by physicians	0	73.33	25.81	18.8
Lack of adequate awareness	0	77.78	24.82	15.40
Total	1	65	32.3	12.9

no significant association between sex and level of stress ( $P = 0.68$ ). Mean scores of stress among single and married subjects were 35.2 (9.2) and 31.6 (13.7), respectively, for which independent  $t$ -test showed no significant difference ( $P = 0.43$ ). Mean score of stress for the subjects with associate degree of education was 31.2 (12.8), for bachelor's degree was 34.3 (8.05), and for nurse aids, it was 33.1 (26.7). ANOVA test showed no significant association between the level of education and score of stress in these three groups ( $P = 0.76$ ).

Mean scores of stress for the subjects working in the morning shift and those in different shifts were 31.5 (17.5) and 32.6 (10.9), respectively. Independent  $t$ -test showed no significant association between working shift and the score of stress ( $P = 0.79$ ).

Mean scores of stress for the employed subjects and casual staffs were 31.6 (12.9) and 33.6 (13.4), respectively. Independent  $t$ -test showed no significant association between the type of employment and score of stress ( $P = 3.6$ ).

Mean scores of stress for those subjects with adequate income and those with low income were 28.1 (12.3) and 33.8 (12.8), respectively. Independent  $t$ -test showed a significant association between the income status and scores of stress ( $P = 0.48$ ).

## DISCUSSION

The findings in the present study showed that there is mild stress in most of the subjects. A study on the level of stress among the employees in Gorgan reported that most of the OP staffs (54.4%) had mild stress. It also reported unfavorable smells as the strongest environmental stressor.<sup>[13]</sup> In the present study, mean scores of stress were calculated for seven domains of stressors, revealing the highest level of stressor for work overload and the lowest for lack of awareness.

A study conducted on nurses in 2009 concluded that the most important nurses' occupational stressors were not receiving any reward (48.6%), work overload (46.4%), not being consulted in major decision making (39.3%), lack of control on working conditions (38.6%), and lack of occupational promotion (36.4%).<sup>[14]</sup>

The findings of a literature review study conducted by Dickinson and Wrigitt reported work overload as the major stressor.<sup>[15]</sup> The inverse significant association of score of stress and monthly hours of work (obtained in the present study) can be due to the fact that those who work more have less stress. The results of a study conducted on nurses in Hamedan showed almost equal levels of stress between

the nurses working for one shift and those working for extended shifts.<sup>[16]</sup>

The results in relation with the association between level of stress and work experience are controversial in various studies. In a study on stressors among nurses in Mashhad, the findings showed no significant association between work experience and the level of stressors.<sup>[17]</sup> Meanwhile, another study in Gorgan showed a significant inverse association between the above items.<sup>[13]</sup> Willy *et al.* also reported a significant inverse association and correlation between work experience and the level of stress.<sup>[18]</sup>

The results in the present study showed a significant inverse association between work experience and the level of stress. In other words, based on the findings, the level of stress is reduced by increase of work experience. This finding is justifiable as stress is reduced through time and acquiring skills and occupational and social experiences.

With regard to the level of stress among single and married individuals, although based on the findings of the present study, mean score of stress is lower for the married subjects compared to the single ones, this difference is not significant. In other words, there is no significant association between marital status and the level of being stressed.<sup>[17]</sup>

Based on the findings, there was no significant association between the level of stress and the level of education and working shift. This finding is consistent with that of a study conducted in Gorgan.<sup>[13]</sup> The results showed that there is a significant association between the variable of income status and the level of stress, so that individuals with adequate income experience less stress. Khodaveisi *et al.* reported the highest level of stress for those individuals with a monthly income of lower than US \$100.<sup>[16]</sup> Since the staffs in OP are directly responsible for individuals' lives and any stress in their working environment can seriously threaten patients' lives, authorities are recommended to take strategies to reduce OP staffs' work overload.

It is also recommended to lower OP staffs' workload by hiring capable and knowledgeable staffs, as well as by promotion of the scientific level and competencies of these newly employed personnel.

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