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Comparison of Job Burnout among Emergency Medicine, Surgery, Internal Medicine, Obstetrics and Gynecology and Pediatrics Residents at the First year of residency program

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Abstract---

Introduction: *Considering the importance of the burnout and its consequences, and the lack of studies on the prevalence of burnout among medical residents in our country, a study was conducted to investigate and compare burnout among emergency medicine, surgery, internal medicine, Gynecology and pediatric residents.*

Methods: *This study was carried out using an observational-analytical manner in three universities of medical sciences. Maslach burnout inventory questionnaire was used to assess the medical residents at the beginning and the end of the first year of residency. The demographic information including age, gender, and marital status were also asked. Statistical analysis was performed using SPSS 22.*

Results: *The burn out was shown to increase significantly among emergency medicine residents (P = 0.015), surgery (P = 0.043) and pediatrics (P = 0.021) at the end of the first year of their residency program. However, there was not a meaningful difference between burnout scores at the beginning and the end of the first-year in internal medicine (P = 0.643) and gynecology (P = 0.849) residents. There was also a significant difference between the scores of burnout between different academic residents (P = 0.036). Emergency medicine, surgery and pediatric residents had higher burnout rates.*

Conclusion: *Burn out is common in emergency Medicine, surgery, pediatrics internal medicine, and gynecology residents, but vary according to the field of their study.*

Keywords--- *Burnout, Residency, Emergency Medicine, Surgery, Internal Medicine, Gynecology and Obstetrics, Pediatrics.*

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I. INTRODUCTION

Job burnout is a syndrome that arises from job stressors and it is diagnosed by emotional exhaustion, personality disorders, and reduced personality congruence (1). Job burnout is linked to the increased frequency of medical errors, loss of skills, learning disorder, alcohol abuse, and suicidal thoughts (2, 3). The likelihood of job dissatisfaction (3, 4), turnover, reduced working hours at the hospital, and early retirement is higher among physicians with symptoms of job burnout (5).

In different studies on physicians in other countries, the incidence of job burnout and job satisfaction varied by the clinical specialty(6). For instance, in a study on 6880 American physicians in 2014, 46.3% of the pediatricians and 7.6% of emergency medicine specialists showed symptoms of job burnout(7).

Despite the extensive data on the physicians' job burnout, adequate research has not been conducted in Iran to assess job burnout in the residents of specialties. However, it is assumed the high-risk groups include specialists that are under heavy job stress such as surgeons and emergency medicine specialists. In this multicenter research, job burnout is studied among the residents at the affiliated hospitals in Qazvin and Shahroud cities and Iran University of Medical Sciences in 2018.

II. METHODS AND MATERIALS

Design, setting and ethics

This study was conducted with the observational-analytical approach at the medical sciences universities of Iran, Qazvin, and Shahroud.

Participants and sampling

The census method was used for sampling. All of the emergency medicine, internal medicine, surgery, obstetrics/gynecology, and pediatrics junior residents at Iran, Qazvin, and Shahroud universities in 2017-2018 were included in this study. The residents' information was recorded on the questionnaires for different variables. The inclusion criteria included the lack of a chronic disease and no history of taking tranquilizers.

The primary outcome of this study is assessing job burnout. Job burnout refers to the decrease in the individual's potential for adapting to the stress factors. It is, in fact, a syndrome composed of physical and emotional exhaustion, which results in a negative self-concept, a negative attitude to the job, and a sense of detachment from the clients at work. This syndrome may lead to various types of mental and physical diseases(2). In this study, job burnout is assessed based on the score the participants obtained on the burnout inventory. The frequency and severity scores on each of the three subscales of the burnout scale, which include emotional exhaustion, personal accomplishment, and depersonalization, are reported separately and cannot be summed. High scores on the emotional exhaustion and depersonalization scales show job burnout, while a low score on the personal accomplishment subscale shows job burnout.

The data gathering tool in this study was the standard Maslach Burnout Inventory (MBI), which consists of 25 statements. The job burnout dimensions include emotional exhaustion (i.e. loss of emotional resources or

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exhaustion of mental power) (9 statements, questions 9-1), personal accomplishment (reduced sense of competence in accomplishing personal tasks and negative self-assessment of one's work) (8 statements, questions 10-17), and depersonalization (cynical tendencies or negative responses to the individuals that generally receive services from the individual) (4 statements, questions 18-21), and involvement (4 statements, questions 22-25) (8). Two scores (frequency and severity) are assigned to each question to calculate the test score. On each question, each respondent obtains a score of 1 to 6 for frequency and a score of 1 to 7 for severity.

As for the classification of burnout into the severe, moderate, and mild categories, the Maslach and Jackson conducted this test on many groups of professions. Tables 1 and 2 present the classifications and cut-off points of the test subscales for partial and overall job burnout, respectively. In Iran, the validity and reliability of this inventory have been confirmed in various studies (9, 10).

This study is an observational-analytical study. The quantitative variables results are expressed in terms of mean and standard deviation (mean $\pm$ SD), and the results for categorical qualitative variables are expressed in terms of percentage. The t-test was used to compare the quantitative variables such as job burnout at the beginning and end of the residency in different fields and to compare the interdisciplinary overall job burnout. The correlation among the quantitative variables was also studied using the Pearson correlation coefficient. Statistical data analysis was performed in SPSS 25 at the $P<0.05$ significance level.

Table 1: Classification and cutting points of job burnout subscales

Quad factors	**Scale**	**High burnout**	**Moderate burnout**	**Low burnout**
Emotional exhaustion	Frequency	37-54	19-36	0-18
	Severity	43-63	22-42	0-21
Lack of personal accomplishment	Frequency	0-12	13-30	31-48
	Severity	0-14	15-35	36-56
Depersonalization	Frequency	19-30	7-18	0-6
	Severity	22-35	8-21	0-7
Engagement	Frequency	0-6	7-12	13-18
	Severity	0-7	8-14	15-21

Table 2: General classification and cutting point of job burnout

	Scale	**High burnout**	**Moderate burnout**	**Low burnout**
Burnout	Frequency	35-84	-15-34	-66 - -16
	Severity	40-98	-18-39	-77 - -19

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III. RESULTS

Descriptive Analysis of Research Findings

The respondents' demographic information including their university, specialty, age, gender, and marital status is listed in Table-3. The participants in this study were 133 residents of emergency medicine, obstetrics and gynecology, surgery, pediatrics, and internal medicine at Iran University of Medical Sciences, Qazvin University of Medical Sciences and Shahroud University of Medical Sciences. Of the 56 participants, 56 participants (42.1%) were male and 77 were (57.8%) female. The average age of the male and female participants was 32.03 and 30.27 years, respectively. The lowest age was 25 years and the oldest participant was 47 years old.

Table 3: Detail Characteristics of medical residents

University	**Specialty**	**Frequency**	**Age**	**Gender**		**Marital status**	
				Male	**Female**	**Single**	**Married**
Iran University of Medical Sciences	EM	23	30.4±8. 6	11	12	14	9
	Gyn/OB	19		0	19	7	12
	Surgery	13		10	3	7	6
	Pediatrics	14		4	10	6	8
	IM	25		11	14	16	9
	Total	94		39	55	50	44
Qazvin University of Medical Sciences	EM	0	31.4±3.3	0	0	0	0
	Gyn/OB	3		0	3	0	3
	Surgery	7		4	3	3	4
	Pediatrics	10		5	5	6	4
	IM	5		3	2	1	4
	Total	25		12	13	10	15
Shahrood University of Medical Sciences	EM	0	31.2±3.6	0	0	0	0
	Gyn/OB	3		0	3	2	1
	Surgery	3		0	3	2	1
	Pediatrics	3		2	1	3	0
	IM	5		2	3	2	3
	Total	14		5	9	9	5

EM=Emergency Medicine, Gyn/OB=Gynecology/Obstetrics, IM=Internal Medicine

Inferential Analysis of Research Findings

The comparison of job burnout at the beginning and end of the residency in different specialties revealed a significant difference with regard to job burnout levels at the beginning and end of the first year of the residency

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among emergency medicine residents (P of frequency 0.015 and P of severity 0.028), the surgery residents (P of frequency 0.043 and P of severity 0.030), and the pediatrics residents (P of frequency 0.021 and P of severity 0.049). In fact, job burnout significantly increased (Table 4).

Table 4: The overall burnout rate among emergency medicine, gynecology, surgery, pediatric, and internal medicine assistants at the beginning and end of the first year of residency.

Specialty	Burnout Scores At the Beginning and the end								
	At the Beginning			At the End					
	F	S	F	S	F	S	P (f)	P (S)	P (T)
EM	30.40±8.65	37.78±11.85	68.18±13.24	57.83±10.13	81.30±13.84	139.13±12.39	0.015	0.028	0.049
Gyn/OB	27.92±9.38	31.85±12.00	59.77±11.64	34.43±13.01	38.78±15.54	73.21±14.01	0.015	0.028	0.049
Surgery	25.11±9.75	27.42±8.78	52.53±10.28	47.41±14.76	59.44±15.90	106.85±16.48	0.043	0.030	0.035
Pediatrics	31.23±812.25	38.19±12.00	69.42±13.87	44.66±13.26	61.29±13.71	105.95±14.93	0.021	0.049	0.016
IM	19.23±8.25	23.19±9.00	41.42±10.62	33.08±12.26	38.29±10.71	71.37±13.57	0.643	0.851	0.591

EM=Emergency Medicine, Gyn/OB=Gynecology, F=frequency, S=severity, IM=Internal Medicine

In addition, the comparison of the mean overall job burnout scores at the beginning and end of the residency in different academic fields showed a significant difference between the residents with regard to job burnout (P=0.036). In fact, job burnout among emergency medicine, surgery, and pediatrics residents is significantly higher than the internal medicine and obstetrics/gynecology residents.

The results of the Pearson correlation in the comparison of overall job burnout of residents in relation to their age showed lack of a significant relationship between the residents' overall job burnout and age (P>0.05). The women showed significantly higher job burnout levels than men (P=0.015 for frequency and P=0.021 for severity). Also, there was not a significant association between overall job burnout and marital status (p>0.05). We found that the overall job burnout levels among the residents with regard to the university (Iran, Qazvin, and Shahroud) were not reached to a significant level (p>0.05).

Results for Different Residency Fields

According to our study, there was a significant difference between job burnout levels among emergency medicine residents at the beginning and end of the first year of the residency regarding the personal accomplishment dimension (P=0.046 for frequency and P=0.04 for severity), and the depersonalization dimension (P=0.016 for

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frequency and P=0.027 for severity). As for the other dimensions of burnout, there was not a significant difference at the beginning and end of the emergency medicine residency.

Moreover, there was a significant difference between job burnout levels among surgery residents at the beginning and end of the first year of residency with regard to emotional exhaustion (P=0.042 for frequency and P=0.038 for severity) as well as depersonalization (P=0.036 for frequency and P=0.0.22 for severity). However, there was not a significant difference with respect to the other dimensions of burnout at the beginning and end of the surgery residency.

The emotional exhaustion was significantly worsened at the end of first year of residency amongst the internal medicine residents (P=0.030 for frequency and P=0.047 for severity). But there was not a significant difference at the beginning and end of the internal medicine residency with regard to the other dimensions of burnout.

Among the pediatrics residents, there was a significant difference with respect to all dimensions including emotional exhaustion, personal accomplishment, depersonalization, and engagement at the beginning and end of the first year of residency ($P<0.05$).

We found that the scores of obstetrics and gynecology residents did not differed from the beginning to the end of the first year of residency regarding any dimension of job burnout ($P<0.05$).

IV. DISCUSSION

Human resources form the most important capital of every organization, and the likelihood of success, survival, and promotion of the organization grows with an increase in the quality of this capital. Hence, psychological findings and principles have to be implemented in the work environment to have efficient and effective human resources in organizations with optimal productivity. One of the factors reducing job satisfaction is job burnout among the personnel. Since job stress is currently present in all professions, it causes many problems for organizations and individuals.

The results of the present study revealed the relationship between job burnout at the beginning and end of the first year of residency among emergency medicine residents with regard to its frequency (P=0.015) and severity (P=0.028), surgery in regard to its frequency (P=0.043) and severity (P=0.030), and pediatrics with respect to its frequency (P=0.021) and severity (P=0.049). Moreover, the comparison of the mean overall job burnout levels at the beginning and end of the residency in different disciplines revealed the significant difference between the job burnout levels among residents (P=0.036). In general, job burnout was more prevalent among emergency medicine, surgery, and pediatrics residents than the internal medicine and obstetrics/gynecology residents.

In our study, job burnout was more prevalent among female residents. In some other studies in the United States, female physicians showed more symptoms of job burnout. The difficulties in balancing the job and everyday tasks, personal life conflicts, and sexism may also be involved in the incidence of job burnout.

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The results of various studies also suggest that job burnout is more prevalent among physicians who practice surgery(11). In our study, the job burnout level was high among surgeons but it was not high among obstetrics/gynecology residents. This is perhaps because the residents in our study were spending their first year of residency and had not entered the operating theaters.

Kalemoglu et al. studied job burnout among the health workers through a survey using the Maslach Burnout Inventory. It was indicated that 45.3%, 32%, and 28.1% of the participants showed high levels of job burnout in the emotional exhaustion, depersonalization, and personal accomplishment dimensions, respectively. These results are in line with the findings from the present study. The incidence of the symptoms of job burnout in the emergency ward personnel is probably more than the other health workers. Research results also suggest that sharing experiences with the family, friends, and other health workers prevents job burnout(12). In their survey study, Bragdar et al. reported high levels of job burnout among emergency medicine physicians and listed the environmental factors and personal issues leading to job burnout. They selected 491 MEDLINE, PsycInfo, and Science Direct articles published by 2005. Their findings showed that emergency medicine physicians had average to high levels of job burnout. Difficult working conditions, shortage of resources, and poor support from these physicians were among the factors determining job burnout. However, the physicians reported high levels of job satisfaction(13). Xiao et al. conducted a study to measure psychological distress, job burnout, and job satisfaction in Chinese emergency medicine specialists. They studied all emergency medicine specialists in three general hospitals. In this study, three questionnaires, namely the Hospital Anxiety and Depression Scale (HADS), the Maslach Burnout Inventory, and the Minnesota Satisfaction Questionnaire (MSQ), were used. The questionnaires were completed by 205 physicians. The average HADS score of emergency medicine specialists was significantly higher than the public population (7.8 ± 3.4 and 4.7 ± 3.5, $P<0.05$). Besides, 25.4% of the participants showed high levels of job burnout. All job burnout dimensions had a considerably negative correlation with job satisfaction(14). Kimo Takayesu et al. carried out a study to analyze the prevalence of job burnout among emergency medicine residents and the personal factors associated with job burnout. They studied eight different emergency medicine residency programs using the Maslach Burnout Inventory (MBI). They reported that 65% of the residents met the job burnout criteria. The prevalence of job burnout among participants that had a mate or a spouse was considerably higher than the single participants (60% versus 40%, $p=0.002$). The authors of this paper stated that job burnout is highly common among emergency medicine residents. Interventions have to be made with the following goals: 1) maximizing the individuals' independence in the emergency ward; 2) teaching the individuals how to take risks; 3) providing social support for reducing family conflicts during the residency period(15). In another survey study, Arora et al. concluded that the level of job burnout among emergency medicine specialists was over 60%, which was 38% higher than the general practitioners. However, many emergency medicine physicians (60%<) were satisfied with their job. The work-related variables (working hours, activity years, professional development activities, nonclinical duties, etc.) and personal factors (age, gender, lifestyle factors, etc.) were linked to job burnout. In these studies, the Maslach Burnout Inventory is mainly used to determine the quantity of job burnout. Kuhn et al. (16) carried out 193 surveys and reported that there was a high rate of job burnout, which was approximately 32.1%, among emergency medicine specialists. The demographic variables were not linked to job

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burnout. The final model also revealed that the severe anxiety resulting from the concerns over income (odds ratio=6.35) was among the most powerful predictors of job burnout. Despite emotional exhaustion, most respondents were satisfied with emergency medicine as a job (17). Bell et al. used the Maslach Burnout Inventory to study the demographic and occupational variables, lifestyle characteristics, and job burnout levels among emergency medicine residents. They reported that 59% of the residents showed average to high levels of job burnout in the emotional exhaustion dimension. Besides, 66% and 34% showed burnout in the depersonalization and personal accomplishment dimensions, respectively. There were a few links between job burnout in emergency medicine residents and their personal traits such as insomnia (18).

Seemingly, the disproportionate demand, the limited time of residents in different specialties, and the lack of balance between their personal and professional lives may cause stress and excessive dissatisfaction in them, which eventually leads to job burnout.

Research Limitations

The three-center design (three cities) of this study may not represent all the residents of emergency medicine, internal medicine, surgery, obstetrics/gynecology, and pediatrics specialties in Iran. Furthermore, other important factors such as the economic condition of the residents at the beginning of the residency are linked to job burnout but were not studied in this research.

V. CONCLUSION

The symptoms of job burnout are prevalent among the residents of emergency medicine, surgery, pediatrics, internal medicine and obstetrics/gynecology but its level varies by specialty. More studies have to be conducted respecting the various factors influencing the different dimensions of job burnout to gain a better insight into the differences and identify the problem.

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