



## Burnout Syndrome During Residency

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**Objective:** The aim of this study is identified the degree of Burnout Syndrome (BOS) and find out its correlation with years of residency and sociodemographic characteristics, training, sleeping habits, such as smoking and alcohol consumption.

**Methods:** After approval from the Hospital Ethics Committee and obtaining informed consent, First, second, third, fourth and fifth year of residency staff (n=127) working in our hospital were involved in this study. The standardized Maslach Burnout Inventory (MBI) was used in this study.

**Results:** Fifty six male (44.1%) and seventy one female (55.9%) residents were enrolled in this study (Cronbach Alfa( $\alpha$ )=0.873). 57% of the first year residents smokes cigaret and 54% of them use alcohol. 2% of them gets one day off after hospital night shift, 61% of them suffers from disturbed sleep. 60% of them had been stated that they willingly selected their profession. 61% of them prefers talking to friends and 32% of them prefers shopping to overcome stress. There were statistical difference according to years of residency in MBI, Emotional Burnout (EB) and desensitisation scale (DS) points. EB scale points of the second year of residency group was statistically higher than fourth year of residency group. DS points of second year of residency group was also statistically higher than the third and fourth year of residency group. There was no statistical difference between any groups in Personal Success.

**Conclusion:** BOS is a frequent problem during residency in anaesthesia. Appropriate definition and awareness are the first important steps to prevent this syndrome. Further administrative approaches should be evaluated with regard to their effects.

**Keywords:** Burnout syndrome, resident, Maslach Burnout Inventory

### Introduction

The term 'burnout syndrome' was first used to define a three-dimensional condition characterized by emotional exhaustion, depersonalization and reduced personal accomplishment among volunteer health workers. Emotional exhaustion describes the feelings of being tired by one's work and excessively exhausted, depersonalization, loss of ideals related to work, feelings of personal ineffectiveness, depression, low morale, avoidance of relationships with others, inability to cope with pressure and poor sense of self. Today, burnout syndrome is known to be a major problem among health care workers.

Significant studies that have been conducted for many years show that the risk of burnout is higher in health professions, including doctors, nurses and dentists, as well as in teachers and in people who interact directly with people at their work, compared to other professions (1). The study of burnout syndrome, which closely affects the lives of health workers and doctors, is important to address this problem. In this study, we aimed to determine the levels of burnout in resident physicians, considering the duration of their work as residents, and to evaluate the relationship between burnout syndrome and variables such as socio-demographic features, education, sleeping habits, smoking and alcohol consumption. This study is a preliminary study for the determination of a problem.

### Methods

The population of the study, for which ethical approval was obtained from the Ethics Committee of Clinical Research in the Okmeydanı Education and Research Hospital under the Turkish Ministry of Health, included first-, second-, third-, fourth- and fifth-year (n=127) resident physicians working at our hospital (because the number of fifth-year resident physi-

cians was low, they were considered to be final year residents together with fourth-year residents). In the questionnaire administered for evaluation, the Maslach Burnout Inventory (MBI) was used along with an information form containing questions regarding the socio-demographic features and occupational information of the resident physicians (Table 1). The MBI assesses the sub-scales of emotional exhaustion (EE, 9 items), personal accomplishment (PA, 8 items) and depersonalization (DP, 5 items) (total: 22 items). The validity and reliability of the MBI in Turkish were studied by Ergin (2). When the MBI was adapted to Turkish, the 7-point choices in the original scale were changed to 5-point choices (0=Never, 1=Rarely, 2=Sometimes, 3=Often, 4=Always). While EE and DP are scored as mentioned above, the opposite scores are used for PA (never=4, always=0). When these scores are added, the total score is between 0 and -36 for EE, between 0 and -20 for DP and between 0 and -32 for PA. While the sub-scales of EE and DP consist of negative expressions, the PA sub-dimension consists of positive expressions. Increased High EE and DP scores indicate excessive burnout; however, a high PA score indicates a low burnout level. The Cronbach's alpha coefficients of the sub-scales are 0.83 for EE, 0.72 for PA and 0.65 for DP.

**Reliability Analysis of the MBI: Cronbach's Alpha Coefficient (Alpha Technique):** The alpha coefficient is a weighted standard average variance that is calculated as the proportion of the total variances of k items in the general variance. Cronbach's alpha coefficient reveals the similarity of items in cases in which individual scores are obtained by adding the responses given to questions in a scale including k items. It is used to investigate whether k items in the scale constitute a whole explanation of a homogeneous structure.

The alpha coefficient is evaluated according to the following criteria:

If  $0.0 \leq \alpha < 0.40$ , the scale is unreliable.

If  $0.40 \leq \alpha < 0.60$ , the scale is poorly reliable.

If  $0.60 \leq \alpha < 0.80$ , the scale is quite reliable.

If  $0.80 \leq \alpha < 1.00$ , the scale is highly reliable.

The alpha coefficient (Cronbach's alpha) was used to test the reliability of the scales. Data obtained from 127 participants were used in the analyses. Moreover, to determine the extent of the effects of the questions on the alpha coefficient, the value 'Alpha Coefficient if Item Deleted' was calculated. These values show the internal consistency of the remaining variables if any one variable is deleted. A reliability value  $\alpha=0.873$  was obtained from the evaluation of the internal consistency of the MBI (Table 2). The effects of the items informing the factor of reliability are presented in Table 3. Cronbach's Alpha value for the MBI was found to be at an excellent level, and the scale was evaluated to be highly reliable. For the whole scale and the sub-dimensions, Cronbach's Alpha internal

consistency value was 0.912 for the sub-dimension of EE, 0.692 for the sub-dimension of DP and 0.646 for the sub-dimension of PA (Table 3).

### Statistical Analysis

Data were statistically analysed using NCSS (Number Cruncher Statistical System) 2007 software (Kaysville, Utah, USA). While analysing the data of the study, in addition to descriptive statistical methods (mean, standard deviation, median, frequency, ratio, minimum and maximum), Student's t-test for the paired comparison of normally distributed variables and the Mann-Whitney U test for the paired comparison of non-normally distributed variables were used to compare quantitative data. For comparison of three or more groups that displayed normal distribution, one-way ANOVA was used. Tukey's HSD test was employed to determine the group that led to the difference. In contrast, for the comparison of three and more non-normally distributed groups, the Kruskal-Wallis test was used. The Mann-Whitney U-test was used to determine the group that led to the difference. Pearson correlation analysis and Spearman correlation analysis were employed to evaluate the relationships between the variables. Significance was evaluated at the levels of  $p < 0.01$  and  $p < 0.05$ .

### Results

The study was conducted on a total of 127 resident physicians, including 44.1% (n=56) males and 55.9% (n=71) females, at the Okmeydanı Education and Research Hospital under the Turkish Ministry of Health. The ages of the participants varied from 25 years to 43 years and the mean age was  $28.01 \pm 2.41$  years. It was observed that 83.5% of resident physicians in the study (n=106) did not have any children, 14.2% (n=18) had 1 child and 2.4% (n=3) had 2 children. 37.8% (n=48) of the participants had no hobbies, while 62.2% (n=79) had hobbies. It was found that while 25.3% (n=20) of the participants who had hobbies participated in their hobbies more than once a year, 48.1% (n=38) participated in their hobbies once a year and 26.6% (n=21) participated in their hobbies every two years and at longer intervals.

The weekly working hours of the resident physicians varied between 35 and 130 hours, and the mean working hour was found to be  $74.65 \pm 15.64$  hours. Of the participants, 7.9% (n=10) did not have monthly shift duties, 19.7% (n=25) had 5 and fewer shift duties in a month and 72.4% (n=92) had more than 5 shift duties in a month. 81.4% (n=83) of the residents stated that they took their last annual leave within the last year. In contrast, 18.6% (n=19) took their last annual leave one year ago or longer. The daily sleep time of the participants varied between 3 and 8 hours, and the mean daily sleep time was  $5.73 \pm 0.89$  hours. The monthly incomes of the resident physicians were found to be between 2384 Turkish lira (TL) and 7000 TL, and the mean monthly income was  $5352.63 \pm 861.85$  TL (Table 4).

Table 1. The effects of items forming the factors on reliability

	Mean	SD	Scale mean if item deleted	Scale variance if item deleted	Whole correlation of corrected item	Cronbach's alpha if item deleted
I feel I am alienated from my job.	3.35	0.89	52.283	142.681	0.604	0.864
I feel worn out at the end of the working day	3.64	0.99	51.992	141.436	0.587	0.864
I feel fatigued when I get up in the morning and have to face another day on the job	3.10	1.11	52.528	135.775	0.742	0.858
I can easily understand how my patients feel about things	1.16	1.45	54.472	141.188	0.376	0.872
I feel I treat some patients as if they were impersonal objects	2.73	0.95	52.898	144.680	0.468	0.868
Working with people all day is really a strain for me	3.72	0.91	51.913	142.842	0.579	0.865
I deal very effectively with the problems of my patients	0.95	1.18	54.677	139.427	0.553	0.865
I feel burned out from my work	3.28	0.97	52.354	138.389	0.745	0.860
I feel I am positively influencing other people's lives through my work	1.35	1.64	54.276	153.789	-0.006	0.891
I have become more callous towards people since I took this job	3.36	0.94	52.268	144.452	0.482	0.867
I worry that this job is hardening me emotionally	3.46	1.02	52.173	145.541	0.391	0.870
I feel very energetic	1.53	1.48	54.102	144.886	0.256	0.878
I feel restricted by my job	3.76	0.97	51.866	143.069	0.526	0.866
I feel I am working too hard on my job	4.06	0.87	51.567	144.581	0.520	0.867
I don't really care what happens to some patients	2.33	1.04	53.299	143.322	0.475	0.867
Working with people directly puts too much stress on me	3.49	0.91	52.142	142.869	0.578	0.865
I can easily create a relaxed atmosphere with my patients.	1.20	1.05	54.425	142.897	0.488	0.867
I feel exhilarated after working closely with my patients	1.39	0.87	54.244	149.996	0.256	0.873
I have accomplished many worthwhile things in my job	1.20	1.01	54.425	144.056	0.460	0.868
I feel I am at the end of my tether	2.32	1.05	53.307	137.341	0.720	0.860
In my work, I handle emotional problems very calmly	1.13	1.22	54.504	141.363	0.461	0.868
I feel patients blame me for some of their problems	3.12	0.97	52.512	146.125	0.390	0.870
SD: standard deviation						

Table 2. Reliability value

Cronbach's alpha	n
0.873	22

To evaluate the relationship between the three sub-dimensions of the MBI, Pearson correlation analysis was performed; the results are presented in Table 5. The relationships between EE and DP ( $r=0.578$ ) and between EE and PA ( $r=0.436$ ) were positive and highly significant ( $p<0.01$ ). There was a positive and statistically significant relationship between DP and PA ( $r=0.415$ ) ( $p<0.01$ , Table 5).

Regarding the duration of residency, a statistically significant difference was detected in the scores of the participants ob-

tained from the MBI EE sub-dimension ( $p=0.040$ ;  $p<0.05$ ). According to the results of the Tukey HSD test, which was performed to determine the difference, the scores from the EE sub-dimension were significantly higher in second-year resident physicians than in fourth-year resident physicians ( $p=0.049$ ;  $p<0.05$ ). No significant difference was found between other groups of resident physicians ( $p>0.05$ ). In terms of the duration of residency, a statistically significant difference was detected in the scores of the participants obtained from the MBI DP sub-dimension ( $p=0.044$ ;  $p<0.05$ ). According to the results of the Tukey HSD test, which was performed to determine the difference, the scores from the DP sub-dimension were significantly higher in second-year resident physicians than in third- and fourth-year resident physicians ( $p=0.032$ ;  $p=0.021$ ;  $p<0.05$ ). There was no statis-

Table 3. Internal consistency values of the Maslach Burnout Inventory sub-dimensions

	Number of items	Cronbach's alpha
Emotional exhaustion	9	0.912
Depersonalization	5	0.692
Personal accomplishment	8	0.646

Table 4. Demographic features of the participants

	Min-Max	Mean±SD
Age	25-43	28.01±2.41
Weekly working hours	35-130	74.65±15.64
Daily sleep time	3-8	5.73±0.89
Monthly income	2384-7000	5352.63±861.85
Occurrence time of the problem	0-7	1.82±1.16
	<b>n</b>	<b>%</b>
<b>Gender</b>		
Male	56	44.1
Female	71	55.9
<b>Number of children</b>		
None	106	83.5
1 child	18	14.2
2 children	3	2.4
<b>Hobby</b>		
None	48	37.8
Yes	79	62.2
More than once a year	20	25.3
Once a year	38	48.1
Once every two years and at longer intervals	21	26.6
<b>Number of monthly shift duties</b>		
None	10	7.9
≤5 shift duties	25	19.7
>5 shift duties	92	72.4
<b>Time of the last annual leave</b>		
Within the last one year	108	85.0
One year ago or longer	19	15.0
SD: standard deviation		

tically significant difference between other groups of resident physicians ( $p>0.05$ ). No statistically significant difference was revealed in the scores of the participants from the MBI PA sub-dimension in terms of the duration of residency ( $p>0.05$ , Table 6, Figure 1).

Table 5. The relationship between the sub-dimensions of the Maslach Burnout Inventory

		Emotional exhaustion	Depersonalization	Personal accomplishment
Emotional exhaustion	‘r	1.000	0.578	0.436
	p		0.001**	0.001**
Depersonalization	‘r		1.000	0.415
	p			0.001**
Personal accomplishment	‘r			1.000
	p			

‘r=’Pearson correlation \*\* $p<0.01$

The participants' scores obtained from the EE, DP and PA sub-dimensions of the MBI did not display statistically significant differences according to age group, gender, having children, having hobbies, or the frequency of participating in hobbies ( $p>0.05$ , Table 7).

The scores obtained from the EE, DP and PA sub-dimensions of the MBI did not demonstrate statistically significant differences in terms of the participants' monthly shift duties, the time of taking their last annual leave, weekly working hours, daily sleep time, monthly income and duration of problems ( $p>0.05$ , Table 8).

## Discussion

The term 'burnout,' which was first defined by Herbert Freudenberger in 1974, is described as 'a pathological condition characterized by mental and physical exhaustion caused by untreated stress in the workplace for a long time' (3). Its present definition was established by Maslach and Jackson (4) in 1981. Maslach defined burnout as a syndrome characterized by physical, emotional and intellectual exhaustion presenting with the development of poor self-esteem, chronic fatigue and feelings of helplessness and hopelessness. He divided burnout into three sub-dimensions: emotional exhaustion, depersonalization and reduced personal accomplishment (4).

Emotional exhaustion involves feeling burnout from one's work, feeling emotionally drained, or feeling overloaded. In depersonalization, the person treats people who he/she serves as if they were impersonal objects. Reduced personal accomplishment demonstrates that the person cannot cope with problems and feels incompetent (5-7).

The most important result of burnout is impaired quality and quantity of the given service; it also causes serious physical and mental problems in individuals (7). In our study, the scores of second-year resident physicians for the sub-dimensions of EE and DP were found to be significantly higher than those of third- and fourth-year resident physicians. This reaction, which is seen in new residents, can be explained by the fact that occupational commitment has yet not been

Table 6. Evaluation of the scores of the Maslach Burnout Inventory sub-dimensions according to the duration of residency

		First-year resident physician	Second-year resident physician	Third-year resident physician	Fourth-year resident physician	*p
Emotional exhaustion	Mean±SD	32.06±6.58	32.31±6.10	29.64±7.17	28.08±6.07	0.040*
	Min-Max (Median)	16-43 (32)	18-44 (33)	18-42 (30)	19-41 (27)	
Depersonalization	Mean±SD	15.53±3.37	15.94±3.52	14.24±3.05	13.96±2.79	0.044*
	Min-Max (Median)	10-24 (16)	9-25 (16)	9-21 (14)	8-18 (14)	
Personal accomplishment	Mean±SD	11.09±6.43	9.49±5.24	10.00±5.07	8.80±4.56	0.414
	Min-Max (Median)	3-35 (9)	0-22 (9)	0-21 (9)	1-15 (9)	

\*One-way ANOVA test. \*p<0.05. Min: minimum; max: maximum; SD: standard deviation.

Table 7. Evaluation of the scores of the Maslach Burnout Inventory sub-dimensions according to demographic feature

		Emotional exhaustion		Depersonalization		Personal accomplishment	
		Mean±SD	Min-Max (Median)	Mean±SD	Min-Max (Median)	Mean±SD	Min-Max (Median)
Age	≤26 years (n=36)	30.00±6.31	19-42 (30)	14.33±3.36	8-20 (15)	9.19±4.57	1-21 (9)
	27-29 years (n=63)	30.78±6.35	16-41 (31)	15.17±3.16	8-21 (15)	10.41±4.78	0-25 (9)
	≥30 years (n=28)	31.50±7.82	18-44 (31.5)	15.46±3.49	9-25 (15)	9.71±7.49	0-35 (8.5)
	p	ª0.670		ª0.334		ª0.377	
Gender	Male (n=56)	30.80±6.31	18-43 (30)	15.23±3.05	9-21 (16)	9.64±5.29	0-25 (9)
	Female (n=71)	30.65±6.97	16-44 (30)	14.82±3.49	8-25 (15)	10.13±5.55	1-35 (9)
	p	ª0.897		ª0.483		ª0.798	
Children	None (n=106)	30.67±6.51	16-44 (30)	14.94±3.28	9-25 (15)	9.87±5.55	0-35 (9)
	Yes (n=21)	30.95±7.55	19-43 (30)	15.29±3.44	8-21 (15)	10.14±4.81	0-18 (11)
	p	ª0.860		ª0.665		ª0.521	
Hobby	None (n=48)	30.50±7.55	16-44 (30)	14.71±3.69	8-25 (15)	10.81±5.99	0-35 (10)
	Yes (n=79)	30.85±6.10	18-43 (30)	15.18±3.04	9-21 (15)	9.37±5.00	0-25 (9)
	p	ª0.776		ª0.439		ª0.118	
Frequency of participating in hobbies	More than once a year (n=20)	30.90±5.22	21-39 (31.5)	16.30±2.58	11-21 (17)	10.20±4.80	3-21 (9)
	Once a year (n=38)	30.08±6.78	18-43 (29)	14.45±3.01	9-20 (15)	8.92±5.14	0-25 (9)
	Less than once a year (n=21)	32.19±5.57	24-42 (30)	15.43±3.26	9-21 (15)	9.38±5.07	1-21 (9)
	p	ª0.450		ª0.078		ª0.657	

ªOne-way ANOVA test, ¸Kruskal-Wallis test, ¸Student's t-test, ¸Mann-Whitney U test. Min: minimum; Max: maximum; SD: standard deviation.

formed (8). No statistically significant difference was found between the scores of the participants from the PA sub-dimension in terms of the duration of residency.

The degree of feeling incompetent and unsuccessful is expected to increase as new resident physicians gain more experience. However, this was found to be the opposite in the fourth- and fifth-year resident physicians in our study. As the duration of residency increased, PA scores decreased. This result may be explained by the resident's being deprived of

some status features, differences due to the importance of the job, or inability to accomplish career planning.

Ağaoğlu et al. stated that (9) 'individuals can lose their organizational commitment and competence due to excessive stress which they cannot cope with and, thus, they can have burnout.' Further studies are required on this subject. In a study by Moradi et al. (10) on 2509 participants, burnout syndrome was found in 44% of resident physicians in gynecology and obstetrics; it was recommended that the work-

Table 8. Evaluation of the scores of the Maslach Burnout Inventory sub-dimensions according to working life features

		Emotional exhaustion		Depersonalization		Personal accomplishment	
		Mean±SD	Min-Max (Median)	Mean±SD	Min-Max (Median)	Mean±SD	Min-Max (Median)
Monthly shift duty	None (n=10)	31.30±7.41	21-43 (30.5)	15.60±4.58	9-24 (16)	12.20±9.27	2-35 (8.5)
	≤5 (n=25)	31.08±7.50	18-43 (30)	15.64±3.63	8-21 (16)	9.00±4.88	0-20 (8)
	>5 (n=92)	30.55±6.40	16-44 (30)	14.76±3.05	9-25 (15)	9.91±5.01	0-25 (9)
	<sup>b</sup> p	0.938		0.290		0.608	
Last annual leave	<1 year (n=83)	30.66±6.83	16-44 (30)	15.11±3.44	8-25 (15)	9.93±5.88	0-35 (9)
	≥1 year (n=19)	31.26±6.35	20-41 (30)	15.68±3.06	11-21 (16)	9.68±3.76	5-17 (9)
	p	<sup>c</sup> 0.727		<sup>c</sup> 0.504		<sup>d</sup> 0.990	
		<b>r</b>	<b>p</b>	<b>r</b>	<b>p</b>	<b>r</b>	<b>p</b>
Weekly working hours		-0.033	0.713	-0.005	0.956	-0.037	0.680
Daily sleep time		-0.051	0.575	-0.002	0.984	0.041	0.649
Monthly income		-0.079	0.375	-0.155	0.082	-0.159	0.074
Occurrence time of the problem		0.087	0.375	0.177	0.069	-0.011	0.913

<sup>a</sup>One-way ANOVA test, <sup>b</sup>Kruskal-Wallis, <sup>c</sup>Student's t-test, <sup>d</sup>Mann-Whitney U test, <sup>r</sup>Spearman's correlation coefficient, SD: standard deviation; Min: minimum; Max: maximum

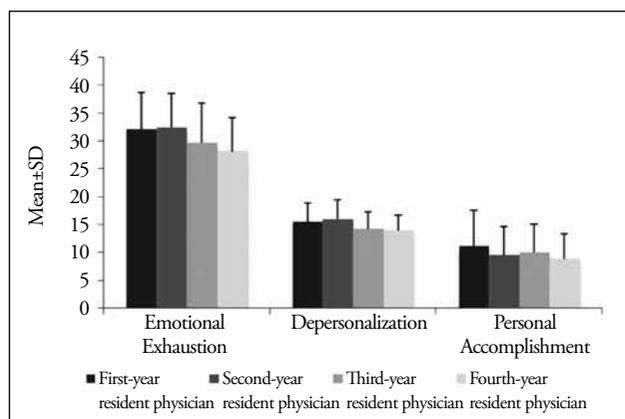


Figure 1. Distribution of the sub-dimensions of the scales according to the duration of residency.

ing conditions of the residents be improved. Similar findings were found among resident physicians working in the emergency unit, at a rate of 57.1%. Unwillingness to work may result from heavy workload, doing work not related to the participant's education and other problems (11).

Dolunay et al. (6) found that burnout was more common among young people; they attributed this result to the fact that young workers had yet not gained the ability to cope with problems at work or that their occupational commitment yet had not been completed. They emphasized that teachers experienced increase success in parallel with age, which was an expected result considering that occupational experience and maturity increase with age. It was found that the second-year resident physicians in the study experienced

burnout more often than the third- and-fourth year resident physicians; also, the variable of age displayed an inverse correlation with burnout. As the age of the resident physicians increases (in parallel with the duration of residency), the rates of emotional exhaustion and depersonalization decrease.

The level of burnout among plastic surgery resident physicians was found to be 25%, and it was reported that the risk was higher in the first years of education. Therefore, the risk of making medical mistakes would also be higher (12). However, despite these findings, it was reported in the same study that 62.9% of the resident physicians were satisfied with their careers. Despite heavy weekly working hours, no relationship with burnout was observed. Increased awareness, frequent staff meetings and clearer career plans were recommended as solutions (12).

## Conclusion

It has been observed that burnout syndrome is more common in the first years of residency and is experienced independently of the residents' branches of medicine. To address the problem of burnout syndrome, it is necessary to determine a strategy, to plan it and to put it into practice. However, because the establishment of a strategy mostly depends on the decisions of the people who determine working conditions, it is clear that the problem cannot be solved with personal control techniques. Therefore, a permanent mechanism should be established for taking measures to restructure the work, to evaluate the work environment accurately and to address problems as soon as they appear.

**Ethics Committee Approval:** Ethics committee approval was received for this study from Okmeydanı Training and Research Hospital Clinical Research Ethics Committee (14.04.2015/ 284).

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