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### Evaluation of Burnout, Anger Management and Job Stress in Medical Residencies Working in and Outside the Operating Room

Cemil Bulent SEN <sup>1</sup>, Selda SEN <sup>2</sup>, Imran KURT OMURLU <sup>3</sup>,  
Mustafa ATILE <sup>2</sup>, Murat DEMIRCIOGLU <sup>2</sup>

<sup>1</sup> European University of Lefke, Faculty of Health Sciences, Department of Social Work

<sup>2</sup> Adnan Menderes University Faculty of Medicine, Department of Anesthesiology and Reanimation

<sup>3</sup> Adnan Menderes University Faculty of Medicine, Department of Biostatistics

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#### ABSTRACT

**Objective:** The aim of the study is to compare job stress, burnout and anger management in surgical (in the operating room) and internal medicine residencies, and also to evaluate whether there is a relationship between burnout, anger management and job stress. **Materials and Methods:** Following ethics committee approval, surgical and internal medicine residencies were asked to fill out an online survey regarding job stress, Copenhagen burnout scale, and anger management. **Results:** The burnout level according to the cutoff value for a total of 139 residencies (surgery, n=74 and internal medicine, n=65) was 73%, and also higher prevalence was observed in surgical residencies than in internal medicine residencies (77% and 68%, p=0.01). It was determined that total and work-related burnout, trait anger and job stress scales were significantly higher in the surgical group. When burnout was evaluated in all residencies, it showed a strong correlation with the job stress scale and a moderate correlation with anger. The job stress scale also showed moderate correlation with anger. Job stress (p=0.019) and personal burnout (p=0.002) were found to be higher in women, especially surgical residencies, than in men. **Conclusion:** In this study showed that burnout, job stress, and trait anger were higher in surgical residencies (in the operating room) than in internal medicine residencies, and burnout had a strong correlation with job stress and a moderate correlation with anger.

**Keywords:** Residencies, Surgery; Burnout; Job Stress, Anger.

### Ameliyathane İçinde ve Dışında Çalışan Tıp Asistanlarında Tükenmişlik, Öfke Yönetimi ve İş Stresinin Değerlendirilmesi

#### ÖZ

**Amaç:** Çalışmanın amacı cerrahi (ameliyathanede) ve dahiliye asistanlarında iş stresi, tükenmişlik ve öfke yönetimini karşılaştırmak, ayrıca tükenmişlik, öfke yönetimi ve iş stresi arasında ilişki olup olmadığını değerlendirmektir. **Gereç ve Yöntem:** Etik kurul onayını takiben cerrahi ve dahiliye asistanlarından iş stresi, Kopenhag tükenmişlik ölçeği ve öfke yönetimi ile ilgili çevrimiçi bir anket doldurmaları istendi. **Bulgular:** Toplam 139 asistan (cerrahi, n=74 ve dahiliye, n=65) için cutoff değerine göre tükenmişlik düzeyi %73 olup, cerrahi asistanlarında dahiliye asistanlarına göre daha yüksek prevalans gözlemlendi (%77 ve %68, p=0.01). Toplam ve işe bağlı tükenmişlik, sürekli öfke ve iş stresi ölçeklerinin cerrahi grupta anlamlı olarak daha yüksek olduğu belirlendi. Tükenmişlik tüm asistanlarda değerlendirildiğinde iş stresi ölçeği ile güçlü, öfke ile orta düzeyde bir korelasyon gösterdi. İş stresi ölçeği de öfkeyle orta düzeyde korelasyon gösterdi. İş stresi (p=0.019) ve kişisel tükenmişliğin (p=0.002) kadınlarda, özellikle cerrahi asistanlarında, erkeklere göre daha yüksek olduğu belirlendi. **Sonuç:** Bu çalışma, cerrahi asistanlarında (ameliyathanede) tükenmişlik, iş stresi ve sürekli öfkenin dahiliye asistanlarına göre daha yüksek olduğunu, ayrıca tükenmişliğin iş stresi ile güçlü, öfke ile orta düzeyde bir korelasyona sahip olduğunu gösterdi.

**Anahtar Kelimeler:** Asistanlar, Cerrahi, Tükenmişlik, İş Stresi, Öfke.

**Sorumlu Yazar / Corresponding Author:** Selda SEN, Adnan Menderes University Faculty of Medicine, Department of Anesthesiology and Reanimation, Aydın, Turkey

**E-mail:** drseldasen@yahoo.com

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## INTRODUCTION

The 'burnout syndrome,' referred to as professional deformation by the World Health Organization (WHO), is explained as the physical, emotional, and behavioral exhaustion, desensitization, and lack of desire to accomplish anything as a result of prolonged intense and stressful work (Edu-Valsania, Laguía & Moriano, 2022). The concept of burnout was first defined in the mid-1970s by two researchers, Maslach and Freudenberg (Maslach & Leiter, 2016). While many studies in literature have used the Maslach Burnout Inventory (MBI), the reliability of this scale has begun to be questioned. As a result, Kristensen and colleagues developed the Copenhagen Burnout Inventory (CBI), which evaluates burnout in three sections: personal, work related, and customer (patient) related burnout (Kristensen et al., 2005). This syndrome, also described as 'chronic workplace stress that has not been successfully managed', was listed by the WHO in the 11<sup>th</sup> revision of the International Classification of Diseases and Related Health Problems (ICD-11) in 2019 (World Health Organization, 2022). Individuals with burnout syndrome may experience physical symptoms such as chronic fatigue, weakness, loss of energy, frequent headaches, nausea, muscle cramps, sleep disturbances, as well as emotional exhaustion symptoms such as depressive mood, feeling unsupported, insecure, and hopeless (Bianchi, Boffy, Hingray, Truchot, & Laurent, 2013). In recent years, particularly with the impact of the COVID-19 pandemic, an increase in burnout and job stress among healthcare workers has been noticed (Stodolska, Wójcik, Barańska, Kijowska, & Szczerbińska, 2023). As a result of burnout in physicians, anger, irritability, impatience, increased absenteeism, decreased productivity and decreased quality of patient care can be observed (Alahmari, et al. 2022 and Cochran and Elder, 2014). There are many studies examining the level of burnout in physicians working in surgical branches (Galaiya, Kinross, & Arulampalam, 2020 and Wan et al., 2023). Although recent studies have examined the effects of burnout and job stress on medical doctors, we have not come across a study that simultaneously investigates anger management, job stress, and burnout in internal medicine and surgical residencies physicians. The primary aim of the study is to determine whether there is a difference in anger management, job stress, and burnout levels among residencies physicians in internal medicine and surgical departments, and our secondary aim is to examine whether there is a correlation between these three measures.

## MATERIALS AND METHODS

### Study type and sampling

The study was conducted through online of questionnaires between residencies physicians of a university hospital in Aydin on 2022. After receiving

approval from the university's ethics committee (Ethics number: 2022/199), it was sent the online survey form to assistant physicians working in the internal and surgical departments of our hospital. While assistant physicians who had a face-to-face relationship with the patient were included in the study, assistants working in the basic medicine department were not included in the study. In addition, emergency medicine assistants with heavy workload were not included in the study.

### Data collection

The survey form aimed to collect information about age, gender, marital status, parental status, city of work, job satisfaction and department satisfaction, as well as "Trait Anger and Anger Expression Scale", "Job stress scale" and "Copenhagen Burnout Inventory".

"Trait Anger and Anger Expression Scale" was first created by Spielberger (Spielberger, Jacobs, Russell & Crane, 1983) and adapted into Turkish by Ozer (Ozer, 1994) in our country. The Cronbach-alpha reliability level of the scale was determined by Ozer to be between 0.73 and 0.84. The Cronbach-alpha reliability level of the CBI scale was found to be 0.82 in this study. The scale comprises 34 questions with responses on a four-point Likert scale: 1-None, 2-Slightly, 3-Moderately, 4-Completely (Knight, Chisholm, Paulin, Waal-Manning, 1988). It consists of four sections: Trait anger, anger inside, anger outside, and anger control. The first 10 items measure chronic anger, while the remaining 24 items assess anger expression styles. A high score from the trait anger section indicates that the person who answers the test has a high level of anger, while a high score from the anger-inside section indicates that the anger is suppressed and kept inside. On the other hand, high scores on the anger-out scale indicate that anger is expressed easily, and high scores on the anger-control scale indicate that anger can be controlled. To measure the level of burnout among the residencies, the Copenhagen Burnout Inventory (CBI) was applied. This scale consists of 22 questions with responses on a five-point Likert scale (0=never/almost never, 1=seldom, 2=sometimes, 3=often, 4=always.). A score of zero on the scale indicates no burnout, 1 point indicates a low level of burnout, 2 points indicates a moderate level of burnout, 3 points indicates a high level of burnout, and 4 points indicates a very high level of burnout. Scores are obtained by summing up the responses. The survey questions are divided into three parts: Personal burnout (6 items); work-related burnout (7 items); and client (patient)-induced burnout (6 items) (Kristensen, Borritz, Villadsen, & Christensen, 2005). The recommended cutoff scores for evaluating burnout levels are an average of 50, where scores below this indicate no/low burnout, 50-74 indicate moderate burnout, and scores of 75 and above indicate high burnout (Borritz, et al. 2006). The Cronbach-alpha reliability level of the CBI was found

to be 0.950 in this study. To assess job stress, the "Job Stress Scale" consisting of 10 questions, developed by Suzanne Haynes (Haynes, Feinleib, & Kannel, 1980) and adapted into Turkish with reliability testing by Aliye Mavili Aktaş (Aktaş, 2001), was used. Scoring for the answers to the 10 questions in the scale is as follows; I completely agree (5), I often agree (4), I sometimes agree (3), I rarely agree (2), I never agree (1). Scores below 20 suggest effective coping with job pressures, while scores of 30 and above indicate job stress at a potentially hazardous level. The Cronbach-alpha reliability level of the "Job Stress Scale" was found to be 0.83 in this study.

### Statistical analysis

Statistical analysis was performed using the SPSS program. The Kolmogorov-Smirnov test was used to assess the normality of numeric variables. Independent samples for normally distributed variables were compared using the independent sample t-test, with descriptive statistics presented as mean  $\pm$  standard deviation. For non-normally distributed variables, paired and independent samples were compared using the Friedman test or Mann-Whitney U test, with descriptive statistics presented as median (interquartile range). The chi-square test was used to compare qualitative variables across groups, with descriptive statistics presented as frequency (%). Relationships between variables were assessed using Spearman's correlation analysis. A p-value of less than 0.05 was considered statistically significant.

### Ethical considerations

Ethics committee approval for this study was obtained from Aydin Adnan Menderes University Rectorate, Faculty of Medicine Dean's Office Non-Interventional Clinical Research Ethics Committee (Date: 24.11.2022, Approval no: 2022/199). This study was conducted by the Declaration of Helsinki

## RESULTS

For the study, an online survey form was sent to 312 residencies working in internal medicine and surgical departments, and 139 residencies (surgical n=74, internal medicine n=65) completed the survey form entirely. No significant differences were observed between surgical and internal department residencies regarding age, gender, and marital status, parenthood status, city of work, job satisfaction, and departmental satisfaction. However, satisfaction with salary was found to be lower in the surgical group compared to the internal group (p=0.015), (Table 1).

The level of burnout among all residencies, according to the cutoff value (50 points and above), was 73%, with a higher prevalence observed among surgical residencies (77%) compared to internal medicine residencies (68%) (p=0.01). In the surgical department, the highest rates of burnout were observed among general surgery (72%) and

anesthesia residencies (81%), while in the internal medicine department, radiology residencies (70%) had the highest rates of burnout. There was no difference between the two groups regarding personal and patient-related burnout and anger-inside, anger-outside, and anger control; however, trait anger (p=0.019) and total anger (p=0.031) were higher among surgical residencies.

**Table 1. Basic information of residencies in terms of 2 groups.**

	Surgical	Internist	p
Age (year)	28.9 $\pm$ 2.1	29.9 $\pm$ 3.2	0.243
Gender (%) (Female/Male)	47.3 /52.7	63.1/ 36.9	0.062
residencies year	2.56 $\pm$ 1.29	2.27 $\pm$ 1.29	0.304
Medicine year	4.1 $\pm$ 2.3	4.7 $\pm$ 2.8	0.945
Single/Married (%)	59.5/ 40.5	50.8/49.2	0.304
Children (%) (absent/present)	81.1/18.9	81.5/18.5	0.882

Work-related burnout (p=0.042) and job stress scale scores were also higher in the surgical group (p=0.032) Table 2. When evaluating burnout among all residencies, a strong correlation was found between the job stress scale and burnout, and a moderate correlation was observed between anger and burnout. A moderate correlation was also found between job stress and anger (Table 3). In this study, the importance level of the factors affecting burnout using the decision tree method is shown in Figure 1. According to this method, the factor that has the most impact on burnout is job stress (work stress scale), while anger and other factors were found to be less than 50% effective. When all residencies were evaluated, job stress (p=0.019) and personal burnout (p=0.002) were found to be higher in females compared to males, although no significant difference was observed in anger management. Among females in the surgical group, job stress (p=0.027), personal burnout (p=0.011), and work-related burnout (p=0.012) were found to be higher compared to males. In females in the internal group, only personal burnout (p=0.013) was observed to be higher compared to males.

**Table 2. Job stress scale, anger management and burnout values in surgical and internal medicine residencies.**

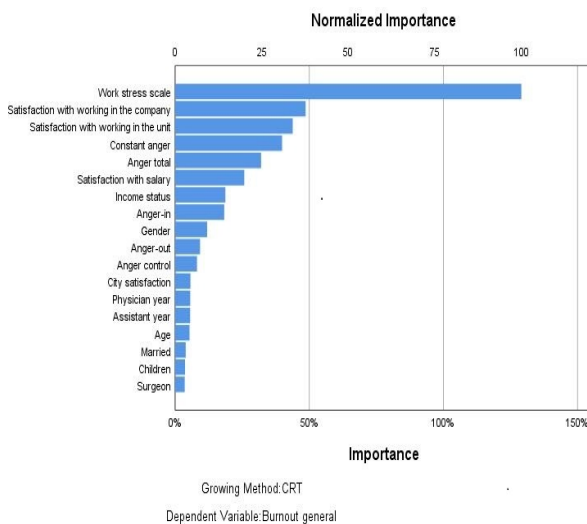
	Surgical	Internist	p
Job stress scale	37.20±6.44	34.67±7.34	<b>0.032</b>
Anger-inside	20.18±4.60	19.43±4.07	0.309
Anger-outside	16.59±5.06	14.92±3.78	0.067
Anger trait	22.52±6.58	20.03±5.75	<b>0.019</b>
Anger management	23.27±4.99	23.40±5.20	0.881
Anger total	82.58±12.54	77.78 ±9.58	<b>0.018</b>
Personal burnout	21.02±5.38	19.40±5.61	0.084
Patient-related burnout	22.14±4.90	21.13±4.71	0.219
Work-related burnout	26.6 ±5.38	23.49 ±4.79	<b>0.042</b>
*Burnout total (%)	77	68	<b>0.010</b>

\* Total burnout rate (according to cut off value)

**Table 3. Correlation and significance values of job stress, anger management and burnout scales (for all residencies).**

(r/p)	Job stress scale	Anger trait	Anger total	Personal burnout	Work-related burnout	Patient-related burnout
Job stress scale	1.0	0.36 0.001	0.36 0.001	<b>0.75</b> 0.001	<b>0.77</b> 0.001	<b>0.66</b> 0.001
Anger trait	0.365 0.001	1.0	0.76 0.001	0.33 0.001	0.32 0.001	0.34 0.001
Anger Total	0.36 0.001	0.76 0.001	1.0	0.31 0.001	0.32 0.001	0.35 0.001
Personal burnout	0.75 0.001	0.33 0.001	0.31 0.001	1.0	0.88 0.001	0.66 0.001
Work-related burnout	0.77 0.001	0.32 0.001	0.32 0.001	0.88 0.001	1.0	0.78 0.001
Patient-related burnout	0.66 0.001	0.34 0.001	0.35 0.001	0.66 0.001	0.78 0.001	1.0

r: Correlation Coefficient; p: sig. (2-tailed)



**Figure 1. The importance level of factors affecting burnout with the decision tree method.**

**DISCUSSION**

In this study, job stress, trait anger scores and the prevalence of burnout, work-related burnout were found to be significantly higher among surgical residencies compared to internal medicine residencies. For the first time in literature, this study examined the correlation between burnout, anger, and job stress among medical residencies, revealing a moderate correlation between burnout and anger, and a strong correlation between burnout and job stress. Physicians working in surgical departments work long hours, deal with patients who are stressed due to life-threatening conditions, pay attention to details, and spend little time in their private areas. Most surgeons in the USA work more than 60 hours per week, which is higher than physicians working in other specialties (Galaiya, Kinross, & Arulampalam, 2020). In fact, it is suggested that long working hours and high patient density during physician assistantships are the biggest sources of stress, leading to difficulty in balancing personal and professional life (Mahoney, et al., 2020 and Wan et al., 2023). In addition, in the operating room, teamwork, increased workload, the feeling of technical performance and time pressure, and the necessity to remain constantly vigilant due to the possibility of making sudden and critical decisions can increase job stress among employees. Similarly, job stress was found to be higher in surgical departments than in other physicians in this study. In this study, while total anger and trait anger were found to be higher in surgery residents than in internal



medicine residents, there was no difference in anger in, anger out and anger control. Consistent with our findings, previous studies have shown higher levels of anxiety and trait anger among surgical residencies compared to internal medicine residencies (Koçer et al., 2011; Satar et al., 2005). In fact, surgeons who have specialized are known to be the physicians with the highest rates of disruptive behavior. If anger control is inadequate, destructive behaviors ranging from verbal attacks to throwing objects or hitting people can be observed in these people. Situational stressors (such as something goes wrong during the operation and working with unfamiliar team members), cultural conditions and personality factors may also play a role in inadequate anger control (Cochran, & Elder, 2014). Since this study was conducted on medical assistants, not on specialized surgeons, only trait anger scores may have been higher. Really, in recent years, hospital administrations have shown zero tolerance for destructive behavior resulting from anger, and support communication skills and peer education during the training of residents. Emotional intelligence, defined as awareness of one's own emotions, self-regulation, and adaptability to changing environments, has been shown to play a role in anger management. Developing emotional intelligence has been associated with increased well-being in the workplace, and it is essential for surgeons to manage professional challenges constructively (Abi-Jaoudé et al., 2022; Sen et al., 2018). Recent years have seen numerous articles attempting to determine the level of burnout among physician. A study conducted in Canada found a general prevalence of burnout among residencies physicians to be 58.2%, with a higher prevalence observed among surgical residencies compared to internal medicine residencies (Shalaby et al., 2023). On the other hand, factors such as a closed and noisy environment can also contribute to increased burnout among surgeons and anesthesiologists working in the operating room. Problems with communication and anger management may arise during teamwork due to burnout and job stress (Galaiya, Kinross, & Arulampalam, 2020). Consistent with the literature, this study found that only work-related burnout was higher in surgery residents than in internal medicine residents. In addition, in the surgical department, the highest rates of burnout were observed among general surgery (72%) and anesthesia residencies (81%), while in the internal medicine department, radiology residencies (70%) had the highest rates of burnout in this study. Meta-analyses focusing on medical residencies report that higher burnout rates are seen in general surgery and in radiology departments (Low et al., 2019; Wan et al., 2023). Similarly, a meta-analysis by Chong and colleagues found high levels of burnout among anesthesia residencies within surgical specialties (Chong et al., 2022). Burnout among surgical residencies is influenced by a

multitude of factors, including protracted working durations, high-stress occupational settings, the intricacy of medical cases encountered, exigent demands for rapid decision-making, arduous nocturnal duties, recurrent rotations, strained interpersonal dynamics with peers and supervisory staff, hierarchical organizational frameworks, dearth of psychological assistance, constrained leisure time, and financial anxieties (Shalaby, et al., 2023). A review article examining job stress and residencies burnout before and during the COVID-19 pandemic reported a wide range of burnout prevalence (26-76%), with observed risk factors including increased workload and job stress, female gender, surgical specialties, lack of sleep, and difficulty balancing family/work life (Navinés et al., 2021). In this study, we also observed higher levels of job stress and personal burnout among female residencies. Nearly half of doctors feel burnt out, according to Medscape 2023 survey data. According to this research, the leading causes of burnout include working too long hours (41%) and disrespect towards colleagues (40%) (<https://www.medscape.com/slideshow/2024-lifestyle-burnout-6016865>). Work-related stress results from disruptions in work organization (such as busy work hours and lack of communication between colleagues). It affects employees' behavior (i.e., leads to increased work-related burnout) and can therefore lead to a decrease in the quality of patient care (Yuan, 2023). Consistent with this data, a strong correlation was observed between job stress and burnout in this study. Solutions proposed to reduce burnout include cognitive-behavioral therapy modules, personalized surgical training and mentorship programs, protection against gender-based biases, peer-based information and support sessions, fertility support, standardized guidelines for parental leave and childcare, ensuring work-life balance, and providing psychiatric support as needed. In individuals experiencing emotional exhaustion, negative emotions such as anger, impatience, restlessness, and increased potential for tension and arguments may arise, while positive emotions such as kindness, respect, and friendship may decrease (Bianchi, Boffy, Hingray, Truchot & Laurent, 2013). With burnout, unrest, outbursts of anger and arguments may occur in work environments. On the other hand, in a study examining burnout and risk factors in physicians, it was reported that high levels of anger and anxiety may be risk factors for burnout (Grover, Adarsh, Naskar, & Varadharajan, 2018). In other words, just as high levels of anger can lead to burnout, burnout can also lead to increased levels of anger. In this study, a moderate correlation was found between anger and burnout. The limitations of this study may be that it was conducted in a single center and the number of participants was small. However, we found a strong correlation between job stress and burnout, which is one of this study hypotheses.

The empirical strength of this correlation is 100% for  $n=139$ ,  $\alpha=0.05$ .

## CONCLUSION

In conclusion, this study found that job stress, burnout rates, work-related burnout, and trait anger were significantly higher among surgical residencies (in the operating room) compared to internal medicine residencies. We also observed a strong correlation between burnout and job stress, and a moderate correlation between burnout and anger. Furthermore, this study revealed that female surgical residencies experienced significantly higher levels of job stress, work-related burnout, and personal burnout. However, we believe that further research is needed in this area, and there is a need for individual and institutional interventions aimed at preventing burnout.

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## Conflict of Interest

The author declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

## Author Contributions

**Plan, design:** CBS, SS; **Material, methods and data collection:** MA, MD; **Data analysis and comments:** IKO; **Writing and corrections:** CBS, SS.

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## Ethical Approval

**Institution:** Aydın Adnan Menderes University Faculty of Medicine Non-Interventional Clinical Research Ethics Committee

**Date:** 24.11.2022

**Approval No:** 2022/199

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