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Healing the Healers: Adressing Occupational Stress and Promoting Well-Being Among Anaesthesiology and Reanimation Physicians in Türkiye

Türkiye'de Anesteziyoloji ve Reanimasyon Hekimlerinde Meslek İlişkili Stres ve Tükenmişlik: Çok Merkezli Anket Çalışması

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ABSTRACT

Objective: Anesthesiology and reanimation is a high-performance specialty where physicians are constantly exposed to stressors. This study primarily aims to evaluate the physical and mental health status of physicians working in anesthesiology and reanimation in Turkey, and to further identify the major occupational stress factors that could be eliminated by fatigue-management strategies.

Methods: Our study was conducted through an online 63-item questionnaire. 115 anaesthesiologists working at various institutions in Türkiye were included. The questionnaire consists of multiple-choice and open-ended questions, designed with a 4-point Likert scale. The cumulative Likert scores for the responses were statistically evaluated, and further analyses were performed through comparisons among different groups of physicians with various descriptive characteristics.

Results: 57.4% of physicians reported near-miss incidents caused by fatigue. Burnout levels were highest among trainees, followed by specialists, with faculty members experiencing the least burnout; physicians with children reported lower burnout, while female anaesthesiologists experienced more Imposter Syndrome symptoms. Hospital conditions for physician health were poorest in training and research hospitals and best in university hospitals, with a significant difference between the two (*P*=.004).

Conclusion: Early recognition and treatment of the negative effects of occupational stress on anesthesiologists are crucial for improving patient safety and work performance. There is a need for more research in this field in Türkiye for raising awareness of burnout and fatigue amongst anaesthesiologists and hospital managements.

Keywords: Anaesthesiology and reanimation, residency, burnout, fatigue, imposter syndrome, mental health

ÖZ

Amaç: Anesteziyoloji ve reanimasyon, hekimlerin sürekli olarak stres uyaranlarına maruz kaldığı yüksek performans gerektiren bir uzmanlık alanıdır. Bu çalışmada, ilk olarak Türkiye'de anesteziyoloji ve reanimasyon alanında görev yapan hekimlerin fiziksel ve zihinsel sağlık düzeylerini farklı açılardan değerlendirmek ve ikincil olarak ise buna etki eden meslek ilişkili stres faktörlerini ortaya koymaktır.

Yöntemler: Çalışmamız 63 soruluk bir anketin internet üzerinden Türkiye'nin çeşitli kurumlarında anestezi alanında görev yapan 115 hekime ulaştırılması yoluyla yürütülmüştür. Bu anket, farklı kategorilerde katılımcıların soru öbeği ile fikir uyumunu değerlendiren 4 aşamalı Likert ölçeği ile oluşturulmuş çoktan seçmeli ve açık uçlu soruları da içermektedir. Bu kategoriler altında cevaplanan sorulara ait kümülatif Likert skorları istatistiksel olarak değerlendirmeye alınmış ve ileri analizler yapılmıştır.

Bulgular: Hekimlerin %57,4'ü yorgunluk nedeniyle meydana gelen ramak-kala vakaları bildirmiştir. Tükenmişlik seviyeleri en yüksek asistan hekimlerde, ardından uzmanlarda görülürken, öğretim üyelerinde en düşük düzeyde olduğu tespit edilmiştir. Çocuk sahibi olan hekimler daha düşük tükenmişlik bildirmiş, kadın anesteziyologlar ise daha fazla Imposter Sendromu semptomları yaşamıştır. Hekim sağlığını destekleyen fiziksel koşullar, eğitim ve araştırma hastanelerinde en kötü, üniversite hastanelerinde ise en iyi seviyede bulunmuş ve iki grup arasında anlamlı bir fark gözlenmiştir (*P*=.004).

Sonuç: Mesleki stresin anesteziyologlar üzerindeki olumsuz etkilerinin erken tanınması ve tedavi edilmesi, hasta güvenliğinin artırılması ve iş performansının iyileştirilmesi açısından büyük önem taşımaktadır. Bu alanda daha fazla araştırma ve hastane yönetimlerinde tükenmişlik farkındalığını artırmayı hedefleyen somut gelişmelere ihtiyaç bulunmaktadır.

Anahtar kelimeler: Anesteziyoloji ve Reanimasyon, Asistanlık, Tükenmişlik Sendromu, Yorgunluk, Imposter Sendromu, Zihin Sağlığı

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INTRODUCTION

Anesthesiology and reanimation is a demanding expertise requiring sharp skills, quick decision-making, and sustained focus. Physicians face constant high-pressure expectations and long hours, where even brief lapses can have catastrophic consequences, activating their physiological defense mechanisms. Stress is the body's nonspecific adaptation response to changes, pressures, challenges, threats, or trauma.[1] In essence, the stress response is the individual's effort to maintain balance and survive, shaped by their environment, family and friends, as well as internal behavioral patterns acquired consciously or unconsciously. However, prolonged exposure to such adverse conditions can lead to pathological changes, known as "Diseases of Adaptation" or "General Adaptation Syndrome," emphasizing the harm of chronic stress on the body and mind.[2]

There are only a few studies conducted to assess the occupational stress of anesthesiologists in Turkiye. One of these is a study from 2015, where a survey was applied to 41 resident physicians working in the Department of Anesthesiology at Istanbul Faculty of Medicine to investigate their levels of professional satisfaction and stress.[3] In the mentioned study, 43% of physicians responded to the question "When does performing your job become difficult?" as "After a night shift", while 10% answered "Due to long working hours." In the same study, 41.5% of resident physicians described their education level as practically sufficient but theoretically inadequate. Another study of 159 trainee anesthesiologists from Türkiye found that older age correlated with lower burnout (emotional exhaustion and depersonalization) and higher personal accomplishment.[4] Moreover, having two or more children was associated with higher personal accomplishment and lower burnout.

While anaesthesiologists focus on optimizing clinical outcomes and meeting patient expectations, how often do they prioritize their own mental health and well-being? When occupational stress reaches a level that impacts ethical judgment, physical endurance, and patient safety, how well do we recognize it? And when we do, how do we ensure we seek the care and support needed to heal ourselves? The primary aim of this study is to assess the physical and mental health status of physicians working in the field of anesthesiology in Türkiye and secondly, to identify the stress factors influencing them in order to determine how far hospitals and administrations are contributing to physician health.

METHODS

This study, approved by the Ethics Committee of Atatürk University Faculty of Medicine (7/41), was conducted in November 2024. An online survey, created using an interface (Google Forms, 2024), was distributed to 115 physicians working in the field of anesthesiology at various institutions across Turkey. The survey includes a total of 63 questions, combining multiple-choice and open-ended items, designed with a 4-point Likert scale to evaluate participants' responses across different categories. These categories aim to assess the alignment of participants' opinions under specific categories, as detailed below;

1. Workload: Questions evaluating the monthly number of shifts, work schedule and working hours

2. Availability of physical conditions that support physician health in the hospital: Questions on the presence of facilities that provide healthy diet, hydration, resting areas in the hospital.

2.a. In our hospital, there is a secure and comfortable room available for resting during night shifts.
2.b. Our hospital provides a space for on-call staff to rest before heading home after their shift.
2.c. Our hospital provides nutritious meals, coffee, tea, and continuous water service for on-call physicians.
2.d. During my days at the hospital, I am able to maintain a healthy diet.

3. Presence of burnout, fatigue, and illness indicators in physicians: Questions on mood changes, ability to conserve work-life balance, and health issues

3.a. In the past week, I have felt exhausted and as though I couldn't continue due to work-related reasons.
3.b. In the past week, I found it difficult to smile at or show patience toward my patients because of fatigue or burnout.
3.c. I am unable to enjoy the time spent with my family due to work-related stress and worries.
3.d. I cannot fulfill my responsibilities at home adequately because I keep thinking about work.
3.e. I do not feel like engaging in my hobbies due to work fatigue.

4. Presence of symptoms of imposter syndrome in physicians: Questions on internalisation of success as stated in Clance Imposter Phenomenon Scale

4.a. I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task.
4.b.When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.
4.c.I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.
4.d.'m afraid people important to me may find out that I'm not as capable as they think I am.
4.e.Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.
4.f.I rarely do a project or task as well as I'd like to do it.

The cumulative Likert scores for the questions answered under these categories were statistically evaluated, and further analysis was conducted through comparisons between physician groups with different descriptive characteristics.

Statistical analysis

Statistical analysis was performed using the SPSS 20.0 (IBM SPSS Corp. Armonk, NY, USA) software. Data are presented as mean ± standard deviation (SD), numbers, and minimum-maximum values. The Kolmogorov-Smirnov test was used to assess the distribution of the data. For the evaluation of numerical data, Student's t-test and ANOVA were applied to variables with normal distribution. Statistical significance was considered at a level of $P < .05$.

RESULTS

Descriptive data regarding the work schedules of the 115 participants who responded to the survey are presented in Table 1. As shown, the average number of night shifts per month for participants is 5, while the average on-call shift number is 1.46. Anesthesiologists working in Türkiye have average of 2 free weekends per month, and the average longest continuous work period is 26 hours. Subgroup analysis revealed that 65 participants were trainees, 46 were specialists, and 4 were faculty members. It was observed that the average number of night shifts increases in the following order: faculty members, specialists, and residents.

In Table 2, the cumulative Likert scores on hospital conditions for physician health showed the poorest conditions in training and research hospitals, followed by private, provincial state, and district state hospitals, with the best in university hospitals. A significant difference was found only between university hospitals and training and research hospitals. (P=.004).

Table 1: Descriptive data on the working schedule of participants. (n:115)

	Mean±SD	[min-max]
Age	33.6±6.74	[25-60]
Night shifts (day)	5.08±2.30	[0-10]
Days being on-call (day)	1.46±4.73	[0-30]
Shift-free weekends in a month (day)	2.16±,7.24	[1-4]
Maximum continuous working time (hours)	26.1±6.07	[12-36]

Values are expressed as mean±SD and [min-max],

Table 2: Presence of healthy physical conditions in different hospital types.

	n	Mean±SD	[min-max]
University Hospital	35	10.71±3.31	[5-19]
Research And Training Hospital	54	12.70±2.90	[5-19]
Provincial state hospitals,	8	11.37±3.66	[5-17]
District state hospitals	14	11.21±2.99	[8-19]
Private Hospital	4	12.00±4.76	[5-15]

Values are expressed as mean±SD and [min-max],

In Table 3, the cumulative Likert scores related to physicians displaying burnout symptoms were analyzed according to their level of professional experience. In this analysis, where lower scores represent higher levels of burnout, it was found that trainees exhibited significantly higher burnout symptoms compared to faculty members (P=.001), and specialists also showed significantly higher burnout symptoms compared to faculty members (P=.002). Furthermore, it was observed that physicians with children exhibited significantly lower levels of burnout. It was also

displayed on Table 4 that residents and female anaesthesiologists experienced significantly more symptoms of Imposter Syndrome.

DISCUSSION

In Turkiye, physicians were granted the right to a full day off after a 24-hour night shift in 2022.[5] However, as of 2024, 13% still lack this benefit, though legislative changes over the past decade seem to have had a positive impact. In our sample, only 19.1% of physicians found their hospital's theoretical education "mostly" sufficient, compared to 53.9% for practical training. This suggests higher expectations for theoretical education, potentially reflecting deficiencies in hospital educational programs.

In 1999, Jackson identified factors contributing to operating room stress, such as noise, poor workspace design, long hours, and fatigue.[6] In our study, physicians highlighted similar challenges, including prolonged standing (79.1%), lack of natural daylight (68.7%), inadequate radiographic protection (63.5%), and excessive noise and stimuli (58.3%). Other stressors included exposure to anesthetic gases (49.6%), radiation from phone calls (47%), and wearing masks (43.5%).

Table 3: Signs of burnout in physicians with different levels of work experience.

Different Levels of Work Experience	Mean±SD	*P* [α]
Trainee (n:65)	8.13±2.31 [β]	.004
Specialist (n:46)	8.47±2.65 [β]	
Faculty Member (n:4)	12.5±3.41	

Values are expressed as mean±SD.
[α] ANOVA test
[β] Difference between faculty member.

Table 4: Signs of Imposter Syndrome According to Gender and Different Levels of Work Experience.

		n	Mean±SD	*P*
Different Levels of Work Experience.	Trainee	65	8.81±3.30	.047 [α]
	Specialist	46	9.60±3.21	
	Faculty Member	4	12.75±3.20 [γ]	
Gender	Female	71	8.15±2.91	<.001 [β]
	Male	44	11.06±3.19	

Values are expressed as mean±SD,
[α] ANOVA test
[β] Student T test
[γ] Difference between faculty member and trainee

During residency, managing patient safety is a key concern for physicians still learning to navigate their work environment. Our study found that residents with less experience and more on-call shifts reported significantly higher burnout. Early-career anesthesiologists face the pressure of proving their competence, while experienced physicians often stress about keeping up with advancing technologies. A study measuring chronic stress through hair cortisol levels showed the highest stress at the beginning and end of careers, with the lowest levels around 10 years of experience.[7] For physicians nearing the end of their careers, chronic stress may be linked to the physical and mental strain of coping with the decline in cognitive abilities, vision, and hearing. In our study, although the average age of participants was 33.6 years, 76.5% expressed significant concern about managing night shifts as they age.

Burnout is a syndrome that depletes physical and mental energy, causing emotional exhaustion and disengagement. It can lead to irritability, forgetfulness, sleep issues, and increase the risk of depression, anxiety, chronic pain, and cardiovascular or gastrointestinal problems.[8] Burnout and poor working conditions can make anesthesiologists more vulnerable to physical and mental health issues. During emergency intubations, residents often experience tachycardia, which can lead to premature ventricular complexes or ST depression.[9] A 2019 analysis indicated that shift workers have a 20% higher risk of cardiovascular mortality[10] and hypertension[11] compared to day workers. Another study found a linear correlation between the number of shifts worked and the risk of developing Type 2 diabetes.[12] Responses to the question, "Have you been diagnosed with any health issues since starting anesthesiology residency?" revealed a range of conditions, including anxiety (4), depression (4), burnout (2), varicose veins (2), hypertension (2), diabetes (2), rheumatoid arthritis (4), and skin issues. Other reported conditions

included asthma, osteoporosis, musculoskeletal problems, arrhythmias, lumbar disc herniation, hyperlipidemia, duodenal polyps, and obesity. While factors like medical history and genetics play a role, chronic stress likely contributes significantly, often creating a domino effect where one issue exacerbates another.

Imposter syndrome, defined by Clance and Imes in 1978[13], refers to the inability to internalize success, attributing it to external factors such as luck, mistakes, or knowing the right people. In our study, it was found that physicians at the trainee level, with less professional experience, exhibit significantly more severe symptoms of imposter syndrome. The strengthening of personal feelings of success with advancing age may help explain this phenomenon. On the other hand, in line with study by Saxena et. al.[14] indicating that female anaesthesiologists experience imposter syndrome more frequently, our research revealed that female physicians in Türkiye exhibited significantly higher symptoms, too.

Humans are naturally diurnal beings, designed to be active during the day and rest at night in harmony with the cycles of nature. Disruptions to this intrinsic rhythm can cause significant changes in the physiology. As an individual remains awake for extended periods, adenosine levels in the brain rise, triggering increased receptor activity in the hypothalamus, which in turn intensifies the feeling of sleepiness. [15] After 12 hours of wakefulness, cognitive functions such as empathy, attention, and motor skills begin to decline. As it extends to 18 hours, the ability to respond effectively to rapidly changing situations significantly diminishes. Consequently, key cognitive abilities such as attention, memory, reaction time, hand-eye coordination, and the capacity for performing arithmetic tasks are all adversely impacted.[16] Traffic accidents are twice as likely after 12-hour shifts compared to 8-hour ones. Being awake for 18 hours impairs cognition as much as a blood alcohol level of 0.05%, double Norway's legal driving limit. Suicides are also more frequent during night hours when alertness is lowest.[17] Anesthesiologists face higher rates of suicide and substance abuse, with studies showing increased suicide rates among those involved in malpractice cases compared to other specialties.[18] In our study, 57.4% of physicians reported near-miss incidents caused by fatigue. Common errors included increased failures in interventional procedures (55.6%), delayed response to hemodynamic disturbances (34.7%), reviewing the wrong patient file (27.8%), and medication errors (26.4%).

Stress and fatigue experienced in the professional field can be significantly reduced by having a supportive and protective spouse, and it has been shown that satisfaction gained within the context of marriage can also predict job satisfaction.[19] While no link was found between relationship status and burnout, individuals with children experienced less burnout. This may reflect the cultural significance of family in Turkish society, where family ties enhance fulfillment and life satisfaction. Children may boost resilience and coping ability, while the positive emotions from time spent with them improve mental health. Research also suggests that not having children is associated with a higher risk of negative psychological outcomes.[20]

Accidents and errors in medicine are often seen as inherent risks, unlike fields like aviation, nuclear energy, and railways, which have formal burnout management strategies due to the critical need for risk control. Do these industries better understand human physiology, or have they simply learned from past disasters? To address burnout in anesthesiology, the European Board of Anaesthesiology (EBA) launched the Burnout Project in 2020.[21] In 2019, the diagnosis of "occupational burnout" was included under the ICD-11 code[22], and in the 2024 ESAIC sustainability report, under Scope 4, recommendations were made to increase awareness of mental health and burnout-related risks in the field of anaesthesia.[23] The European Working Time Directive (EWTD), which was defined in Ireland in 1998, became applicable to resident doctors in 2009. [24] As seen, global efforts have been underway for a long time to prevent burnout syndrome in physicians, particularly in the field of anesthesiology, and promising studies on this topic are increasingly growing.

Our study has several limitations. First, the voluntary survey may have attracted more engaged participants, possibly skewing results, as those in negative emotional states may have been less likely to participate. Additionally, the uneven distribution of professional experience in the sample suggests the need for a larger, more balanced sample for more generalizable findings.

In conclusion, our study highlights the urgent need for hospital administrators and clinical educators in Türkiye to address burnout. Significant gaps in risk management systems call for systematic reforms aligned with international standards. Recognizing and addressing burnout symptoms with tailored interventions is essential to maintaining a capable healthcare workforce. To mitigate burnout effectively, comprehensive strategies should include targeted screening programs, particularly for vulnerable residents in the early stages of their training. Anesthesiologists, who are exposed to stressors more intensely, must first develop a profound understanding of these challenges, recognise and acknowledge their issues, and then work on developing individual and institutional coping mechanisms to improve resilience and manage stress. After all, work should be a tool for an individual's personal growth in life, and overglorifying work in an

unhealthy manner may lead to significant risks considering patient safety. Healthcare leaders and educators must not overlook the fact that proactively addressing these issues will not only safeguard the well-being of healthcare professionals but also enhance the overall quality of patient care. Further research with larger populaton is required on anaesthesiologists in Türkiye to reveal the factors that may lead to higher burnout and Imposter phenomenon amongst residents and provide solutions.

Ethics Committee Approval: This study, approved by the Ethics Committee of Atatürk University Faculty of Medicine (7/41), was conducted in November 2024.
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