ResearchGate

See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/383360682

The Effect of Improvements in Monthly Income, Employment Conditions, and Working Hours on Quality of Life, Anxiety, and Burnout Among Anesthesiology Residents: A Before-After Study

Article *in* Journal of Clinical Practice and Research · August 2024

DOI: 10.14744/cpr.2024.98453

CITATIONS
0

READS
79

8 authors, including:

Mehmet Nuri Yakar
Şişli Hamidiye Etfal Training and Research Hospital
44 PUBLICATIONS **147** CITATIONS
SEE PROFILE

Mehmet Celal Öztürk
Izmir Bozkaya Research and Education Hospital
11 PUBLICATIONS **16** CITATIONS
SEE PROFILE

Ozlem Oner
Dokuz Eylül University
32 PUBLICATIONS **222** CITATIONS
SEE PROFILE

Murat Küçük
Dokuz Eylül University
26 PUBLICATIONS **64** CITATIONS
SEE PROFILE

All content following this page was uploaded by Mehmet Nuri Yakar on 24 August 2024.

The user has requested enhancement of the downloaded file.

Official Journal of Erciyes University Faculty of Medicine

DOI: 10.14744/cpr.2024.98453
J Clin Pract Res 2024;46(4):325–332

The Effect of Improvements in Monthly Income, Employment Conditions, and Working Hours on Quality of Life, Anxiety, and Burnout Among Anesthesiology Residents: A Before-After Study

Mehmet Nuri Yakar,[1] Ali Salih Bıyıkoğlu,[2] Zeynep Erbay,[3] Mehmet Celal Öztürk,[4] Özlem Öner,[5] Murat Küçük,[6] Ali Necati Gökmen,[3] Volkan Hancı[7]

[1]Division of Intensive Care, Department of Anaesthesiology and Reanimation, University of Health Sciences, Sisli Hamidiye Etfal Training and Research Hospital, Istanbul, Türkiye
[2]Department of Anaesthesiology and Reanimation, University of Health Sciences, Basaksehir Cam and Sakura City Hospital, Istanbul, Türkiye
[3]Department of Anaesthesiology and Reanimation, Dokuz Eylul University Faculty of Medicine, Izmir, Türkiye
[4]Division of Intensive Care, Department of Anaesthesiology and Reanimation, University of Health Sciences, Izmir City Hospital, Izmir, Türkiye
[5]Division of Intensive Care, Department of Anaesthesiology and Reanimation, Izmir Democracy University, Buca Seyfi Demirsoy Training and Research Hospital, Izmir, Türkiye
[6]Division of Intensive Care, Department of Internal Medicine, Batman Training and Research Hospital, Batman, Türkiye
[7]Department of Anaesthesiology and Reanimation, Ankara Training and Research Hospital, Ankara, Türkiye

Cite this article as:
Yakar MN, Bıyıkoğlu AS, Erbay Z, Öztürk MC, Öner Ö, Küçük M, et al. The Effect of Improvements in Monthly Income, Employment Conditions, and Working Hours on Quality of Life, Anxiety, and Burnout Among Anesthesiology Residents: A Before-After Study. JClinPractRes2024;46(4):325–332.

Address for correspondence:
Mehmet Nuri Yakar.
Division of Intensive Care, Department of Anaesthesiology and Reanimation, University of Health Sciences, Sisli Hamidiye Etfal Training and Research Hospital, Istanbul, Türkiye
Phone: +90 212 373 50 00
E-mail: mnuriyakar@gmail.com

Submitted: 10.03.2024
Revised: 18.04.2024
Accepted: 14.06.2024
Available Online: 23.08.2024

Erciyes University Faculty of Medicine Publications - Available online at www.jcpres.com

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

ABSTRACT

Objective: The primary aim of this study is to evaluate the effect of improvements in working conditions and monthly income on burnout. The secondary aim is to evaluate the effect on quality of life and anxiety among anesthesiology residents.

Materials and Methods: This prospective before-and-after study was conducted at Dokuz Eylul University between August and November 2022, and anesthesiology residents were enrolled. Residents were evaluated using the Professional Quality of Life Scale, Beck Anxiety Inventory, and Maslach Burnout Inventory twice: before and after the legal regulation.

Results: After the exclusion of three participants, 44 residents were enrolled in the study. Of them, 50% were female. The median age was 28.0 (27.0–29.0) years. Participants' median working hours (87.0 [74.8–100.0] vs. 68.0 [52.5–72.0] hours/week, p<0.001), the median number of monthly night shifts (7 [7–9] vs. 6 [5–7], p<0.001), and monthly income (18,000 [17,000–18,000] vs. 25,000 [20,750–26,000] ₺, p<0.001) were significantly improved after regulations. The median scores of the subscales of the Professional Quality of Life Scale, compassion satisfaction (25 [18–34] vs. 28 [24–36], p=0.011), and burnout (30 [24–32] vs. 23 [20–28], p<0.001), Beck Anxiety Inventory (18 [7–26] vs. 11 [5–19], p=0.004), and the emotional exhaustion subscale of the Maslach Burnout Inventory (24 [18–29] vs. 20 [13–24], p=0.007) were significantly improved compared to before the regulations.

Conclusion: Current regulations regarding work hours and income improved burnout, anxiety, compassion satisfaction, and emotional exhaustion among anesthesiology residents.

Keywords: Anesthesiology, anxiety, burnout, education, quality of life.

INTRODUCTION

Working conditions in many fields of medicine negatively impact job satisfaction and affect life quality, anxiety, and burnout.[1,2] Despite improvements in anesthesiology training programs, these multifactorial problems persist for anesthesiology residents.[3,4]

The underlying reasons related to decreased life quality, anxiety, and burnout in anesthesiology are broad. Stressors derived from organizations, colleagues, or patients,[5] harsh working conditions, such as those experienced during the Coronavirus Disease 2019 (COVID-19) pandemic,[6] and mobbing are possible causes.[7] Additionally, the income of residents and working conditions, such as working hours and the monthly number and frequency of night shifts, clearly impact this issue. Night shift work can lead to memory problems, lack of concentration, fatigue, depression, anxiety, anger, and hostility.[8,9] In Türkiye, the Ministry of Health revised the Resident Education in Medicine and Dentistry Regulation on September 3, 2022.[10] According to the current regulation, the number of monthly night shifts was limited to eight, and the frequency of night shifts was fixed to be no more than one every three days. Residents were prohibited from working in healthcare delivery after night shifts. A novel payment system also increased residents' salaries.[11] We hypothesized that interventions increasing monthly income, improving working conditions, and decreasing working hours would primarily ameliorate burnout and secondarily improve quality of life and anxiety among anesthesiology residents.

In this study, we analyzed the quality of life, anxiety, and burnout of anesthesiology residents using the Professional Quality of Life Scale (PQoLS), Beck Anxiety Inventory (BAI), and Maslach Burnout Inventory (MBI) before and after the above mentioned regulations. Additionally, we determined the changes in working hours, number of night shifts, and incomes of the residents.

MATERIALS AND METHODS

Participants

This prospective longitudinal cohort study was designed with consecutive before-and-after data collection. The study was approved by the Non-Interventional Clinical Research Ethics Committee of Dokuz Eylul University (date: 27.07.2022, decision number: 2022/24-02; and revised version date: 23.11.2022, decision number: 2022/37-05) after modifying the methodology of another study designed to evaluate psychological effects of shift work among anesthesiology residents. The evaluations performed in the first phase of the study belong to the previously designed study. The evaluations of the second phase were carried out three months later after the legal regulations. The study was performed following the ethical standards described in the 1975 Declaration of Helsinki, as revised in 2013.[12] Anesthesiology trainees who graduated from the Faculty of Medicine and were working as residents in the Department of Anaesthesiology and Reanimation at the Faculty of Medicine, Dokuz Eylul University were enrolled in the study. In total, 55 anesthesiology residents in our center were asked to participate. Residents who could not be evaluated in both the first and second phases of the study were excluded. Written informed consent was obtained from all participants.

KEY MESSAGES

- New regulations reducing work hours and limiting night shifts, along with increased income, have significantly decreased burnout, anxiety, and emotional exhaustion among anesthesiology residents.
- Improved working conditions and income have positively impacted residents' quality of life and compassion satisfaction, enhancing overall well-being and job satisfaction.
- Despite these improvements, challenges like compassion fatigue, depersonalization, and professional accomplishment persist, indicating the need for ongoing efforts and research to further improve anesthesiology education and working conditions.

Measurements

Demographic data (age, sex, marital status), the duration of professional experience and anesthesiology carrier, self-defined socioeconomic level, the presence of chronic diseases and psychiatric diseases, and addictions such as smoking and alcohol consumption were recorded. All participants were asked to complete the PQoLS, BAI, and MBI twice, in August and November 2022. The PqoLS, defined by Stamm et al.,[13] consists of thirty items rated on a 6-point Likert scale, including the following three subscales: Compassion Satisfaction (CS) (10 items), Compassion Fatigue (CF) (10 items), and Burnout (BO) (10 items). The scale focuses on experiences in the previous month. The CS subscale determines an employee's satisfaction from performing their profession, while the CF subscale reveals symptoms that emerge due to a stressful event. The burnout subscale measures burnout levels stemming from difficulties in overcoming problems in professional life. The Turkish validation of the PQoLS was conducted in 2010.[14]

The BAI measures anxiety based on experiences in the last week. The inventory comprises 21 items rated on a 4-point Likert scale.[15] Total scores between 0 and 7 indicate minimal anxiety; 8 and 15 indicate mild anxiety; 16 and 25 indicate moderate anxiety; and 26 and 63 indicate severe anxiety.[16] Ulusoy et al.[17] provided the Turkish validation of the BAI.

Maslach et al.[18] defined the MBI in 1981. The inventory consists of 22 items. Ergin et al.[19] ensured the Turkish validation of the inventory, with each item rated on a 5-point Likert scale. The MBI includes the following three subscales: emotional exhaustion (9 items), depersonalization (5 items), and professional accomplishment (8 items). Each subscale score is categorized into three levels: low, moderate, and high. The levels of the emotional exhaustion subscale are defined as 0–16 = low, 17–26 = moderate, and ≥27 = high. For the depersonalization subscale: 0–6 = low, 7–12 = moderate, and ≥13 = high. For the professional accomplishment subscale: ≥39 = low, 32–38 = moderate, and 0–31 = high.

Power Analysis

To determine the sample size, a power analysis was performed using the website "https://clincalc.com/stats/samplesize.aspx". Based on the hypothesis and the primary outcome of the study, we used previous research that analyzed burnout among anesthesia residents and determined a burnout rate of 75%.[11] To detect a 30% difference between the pre- and post-regulation periods with 90% power and a 0.05 alpha error, the analysis indicated that at least 44 participants were required.

Statistical Analysis

The SPSS statistics software (Statistical Package for the Social Sciences Version 24.0; IBM Corp., Armonk, NY, USA) was used for the statistical analysis. The normality of the data was analyzed using the Kolmogorov-Smirnov test. Continuous and categorical variables were expressed as the median and interquartile range, and counts and percentages, respectively. Continuous variables were analyzed using the Wilcoxon signed-rank test. A two-tailed p-value <0.05 was considered statistically significant.

RESULTS

A total of 55 anesthesia residents at our center were asked to participate in the study. Of these, 47 residents were evaluated in the first phase of the study. After three dropouts, a total of 44 residents were included in the second phase of the study, resulting in a response rate of 80% (Fig. 1). Of them, 22 (50%) were female (Table 1). The median age was 28.0 (27.0–29.0) years. Most participants were single (72.7%). The participants defined their socioeconomic levels as middle and low, with rates of 65.9% and 29.5%, respectively. The median duration of professional experience was 3.0 (1.5–4.0) years. None of the participants had a chronic illness. Of them, 9 (20.5%) had a psychiatric disease without exacerbation that required no or simple medication. The rates of smoking and alcohol consumption among the participants were 43.2% and 63.6%, respectively.

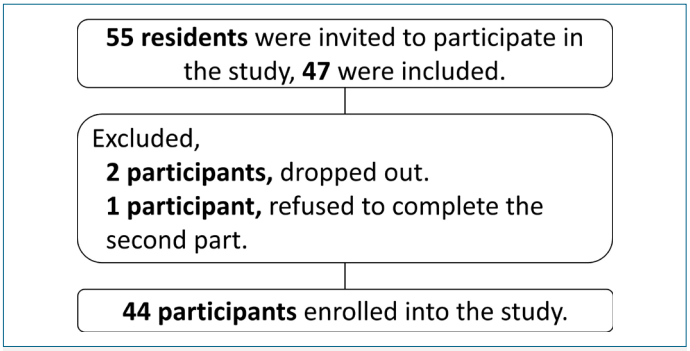

Figure 1. Study flowchart.

Table 1. Participant characteristics and demographic data

Characteristics/demographics	All participants
Age, years	28.0 (27.0–29.0)
Sex, female	22 (50.0)
Marital Status	
Single	32 (72.7)
Married	12 (27.3)
Self-defined socioeconomic level	
Low	13 (29.5)
Middle	25 (65.9)
High	2 (4.5)
Professional experience, years	3.0 (1.5–4.0)
Experience in residency, years	3.0 (2.0–4.0)
First year	7 (15.9)
Second year	9 (20.5)
Third year	8 (18.2)
Fourth year	12 (27.3)
Fifth year	8 (18.2)
Chronic disease	0 (0.0)
Psychiatric disease[1]	9 (20.5)
Smoking history	19 (43.2)
Alcohol consumption	28 (63.6)

All values are expressed as n (%) or median (interquartile range). 1: Required no or simple medication.

Participants' working hours, number of night shifts, and the amount of smoking and alcohol consumption are presented in Table 2. Current regulations provided a significant increase in monthly median income (18,000 [17,000–18,000] vs. 25,000 [20,750–26,000] ₺, p<0.001). Monthly median income also increased according to euro parity (982.3 [927.8–982.3] vs. 1293.2 [1073.3–1344.9] €, p=0.002) and dollar parity (1003.3 [947.6–

Table 2. Addictions, working conditions, and monthly income of participants

Variables	Before	After	p
Cigarettes per day (pcs/day)	10 (7–20)	10 (4–20)	1.00
Alcohol (standard drinks[1]/week)	3 (2–6)	2 (1–4)	0.64
Working hours (hours/week)	87.0 (74.8–100.0)	68.0 (52.5–72.0)	<**0.001**
Number of night shifts (monthly)	7 (7–9)	6 (5–7)	<**0.001**
Monthly income			
Turkish Lira (₺)	18,000 (17,000–18,000)	25,000 (20,750–26,000)	<**0.001**
Euro (€)[2]	982.3 (927.8–982.3)	1293.2 (1073.3–1344.9)	**0.002**
Dollar ($)[3]	1003.3 (947.6–1003.3)	1245.1 (1116.4–1398.9)	**0.001**

All values are expressed as median (interquartile range). 1: One standard alcoholic drink equals 33 cl of beer, one glass of wine, or a single shot of raki, whiskey, gin, or vodka. 2: Euro conversion based on the indicative forex buying rates from the Central Bank of the Republic of Türkiye as of 15:30 on August 15th, 2022, and November 15th, 2022 (before: 1 € = 18.3238 ₺, after: 1 € = 19.3327 ₺). 3: Dollar conversion based on the indicative forex buying rates from the Central Bank of the Republic of Türkiye as of 15:30 on August 15th, 2022, and November 15th, 2022 (before, 1 $ = 17.9411 ₺, after: 1 $ = 18.5864 ₺).

1003.3] vs. 1245.1 [1116.4–1398.9] $, p=0.001). The regulations also ensured a decrease in weekly median working hours (87.0 [74.8–100.0] vs. 68.0 [52.5–72.0] hours, p<0.001) and the median number of monthly night shifts (7 [7–9] vs. 6 [5–7], p<0.001). However, the amount of alcohol and cigarette consumption did not significantly change compared to before the regulations.

We presented the comparison of the scores of PQoLS, BAI, and MBI in Table 3. The improvements in working conditions and monthly income did not significantly affect the compassion fatigue subscale of PQoLS. However, the score of the compassion satisfaction subscale (25 [18–34] vs. 28 (24–36), p=0.011), and the burnout subscale (30 [24–32] vs. 23 [20–28], p<0.001) significantly decreased compared to before. Similarly, the BAI score (18 [7–26] vs. 11 [5–19], p=0.004) significantly improved compared to the conditions before the regulations.

The regulations decreased the rate of participants with moderate or severe anxiety and increased the rate of participants with minimal or moderate anxiety based on the BAI compared to before (Fig. 2). However, the BAI scores did not significantly change in participants with minimal, mild, moderate, or severe anxiety.

Another improvement was shown in the emotional exhaustion subscale of the MBI (24 [18–29] vs. 20 [13–24], p=0.007). Additionally, the rate of participants with low emotional exhaustion increased, while those with moderate or high levels decreased (Fig. 3).

The scores of the other subscales of MBI, depersonalization, and professional accomplishment did not indicate significant changes despite the improvements in working conditions and monthly income. Similarly, the number of participants in these subscales did not present significant variation.

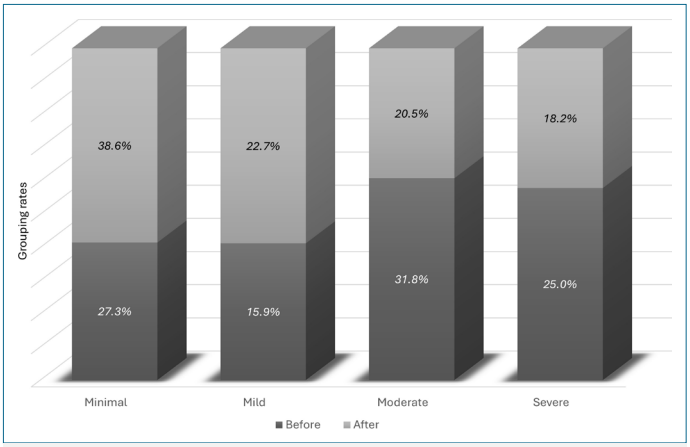

Figure 2. Participants grouping rates on Beck Anxiety Inventory subscales before and after implementing regulations.

DISCUSSION

This study examines the impact of current regulations that reduce work hours, prohibit work after night shifts, and improve monthly income on quality of life, anxiety, and burnout among anesthesiology residents. The regulations significantly reduced weekly work hours, and the number of night shifts, and improved monthly income. Additionally, the study determined that the current regulations have reduced burnout, anxiety, and emotional exhaustion, and improved compassion satisfaction among anesthesiology residents.

The characteristics of the participants showed that most trainees defined their socioeconomic level as low or middle. The income of the residents has a clear impact on their mental health. In a previous study, 42.0% of European Society of Anaesthesiology and Intensive Care residents cited residency

Table 3. Comparison of scores on the professional quality of life scale, Beck Anxiety Inventory, and Maslach Burnout Inventory

	Before	After	p
Professional Quality of Life Scale			
Compassion satisfaction	25 (18–34)	28 (24–36)	0.011
Compassion fatigue	21 (16–27)	19 (12–26)	0.45
Burnout	30 (24–32)	23 (20–28)	<**0.001**
Beck Anxiety Inventory	18 (7–26)	11 (5–19)	**0.004**
Minimal	5 (3–6)	5 (4–6)	0.50
Mild	14 (11–14)	11 (9–14)	0.11
Moderate	19 (18–21)	18 (17–19)	0.79
Severe	33 (30–40)	26 (26–27)	0.50
Maslach Burnout Inventory			
Emotional exhaustion	24 (18–29)	20 (13–24)	**0.007**
Low	12 (12–14)	10 (6–13)	1.00
Moderate	23 (18–26)	21 (18–23)	0.67
High	30 (29–32)	27 (26–28)	0.066
Depersonalization	9 (6–11)	8 (5–10)	0.34
Low	5 (4–6)	3 (1–6)	0.38
Moderate	10 (8–11)	8 (8–10)	0.27
High	16 (15–16)	14 (13–15)	0.32
Professional accomplishment	18 (14–21)	16 (12–20)	0.46
Low	0 (0–0)	0 (0–0)	N/A
Moderate	0 (0–0)	32 (32–32)	N/A
High	18 (14–21)	16 (12–19)	0.23

All values are expressed as median (interquartile range). N/A indicates not applicable.

costs as a leading reason for not training abroad.[20] Another study from China revealed that monthly income is an independent factor for burnout among anesthesiology residents.[21] On the other hand, regional differences in incomes cause the migration of skilled anesthesiologists from low- to high-income economies, negatively impacting the health systems of the source countries.[22] The present study showed that the participants achieved higher economic conditions than before the regulations. However, the content and terms of the novel payment system should be debated among stakeholders.

Short-term physiological effects of night shifts, such as disruption of circadian rhythm, inadequate sleep duration, and chronic and extreme stress, are linked to cancer and cardiac or metabolic diseases.[23,24] Fortunately, the rates of chronic diseases in this study population were low, except for mild psychiatric diseases. Current regulations on residents' working conditions limited the number and frequency of monthly night shifts and prohibited working after night shifts. As a result, decreased working time has had a cumulative effect on the residents' quality of life, burnout, and anxiety. However, cigarette and alcohol consumption remained relatively high after the regulations.

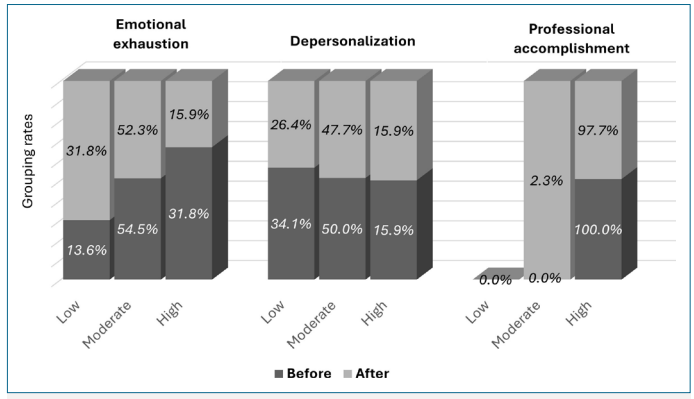

Figure 3. Participant grouping rates on Maslach Burnout Inventory subscales before and after implementing regulations.

The quality of life of anesthesiologists is related to team management, operating theater organization, long-term employment, family income, relations with hospital management and colleagues, human relations, and participation in team activities. A lesser weekly workload is another essential factor.[2,5,25] Current regulations decreased the workload on trainees and increased their family income, but possible problems in other conditions persisted. The regulations might indirectly improve relations with hospital management and colleagues. As a result, the burnout subscale score of the PQoLS significantly improved. However, the fatigue subscale score indicates that many issues in working conditions still need to be addressed.

Anxiety is common among anesthesiology residents. Excessive workload, lack of fairness, and social values impact residents' well-being. Additionally, personality types with a tendency towards high anxiety or acclimatization through chronic exposure to environmental stressors are other underlying reasons for anxiety among anesthesiology residents.[26] Anxiety is also one of the independent predictors of academic performance among anesthesiology residents.[27] The present study showed that current regulations significantly decreased the total BAI score. Additionally, participants with moderate or severe anxiety were healed and transformed to minimal or mild anxiety, though the scores of these levels did not significantly decrease. Improvements in these scores might also be due to the decreased workload. A recent study has shown that a well-being program using social support and active coping may reduce work and family stressors among anesthesiology residents.[28] Beyond the latest regulations, novel strategies such as the study mentioned above could be implemented to reduce anxiety. Personality types can also influence anxiety levels. However, in this study, we did not analyze the personality types of the residents.

Almost all residents in this study experienced the COVID-19 lockdown, which affected all aspects of their training programs. A previous study showed that the COVID-19 lockdown significantly affected the mental health of anesthesiology residents.[29] As a result, high anxiety levels in this population are reasonable. However, the routine use of standardized diagnostic tools to measure anxiety is essential to ensure a sustainable environment for the mental health of anesthesiology residents.

Residents are at high risk of burnout due to exposure to elevated stress levels.[2] An overall analysis revealed that prolonged working hours are the most common work-related stressor for burnout among anesthesiology residents.[23] Other factors for burnout include treating high-risk patients, frequent night shifts, unpredictable work schedules, medicolegal issues, lack of supervision, strained interpersonal relationships, and a dominant workplace hierarchy. A previous study identified monthly income, sleep quality, frequency of perceived challenging cases more than once per month, working hours exceeding 60 hours per week, and working in a tertiary hospital as contributing factors to burnout.[21] In the present study, reduced working hours and the frequency of night shifts improved the emotional exhaustion subscale of MBI, with high levels of professional accomplishment persisting. The reduced number of night shifts, working hours, and not working after night shifts likely contributed to this improvement. However, other work-related stressors, such as the frequency of perceived challenging cases more than once per month, were not evaluated. Additionally, all participants were working in a tertiary hospital. Financial debts were also identified as a personal stressor for burnout among anesthesiology residents.[30] A significant increase in the income of anesthesiology residents after the regulations might have also improved the MBI scores. However, the lack of change in the depersonalization subscale score of MBI is notable in the present study.

Limitations

The study has some limitations. First, the analysis was performed in a single center with a limited sample size. Further studies with large sample sizes are needed to generalize the results. Second, we did not consider the possible effects of other potential factors, such as changes in human relations, relations with colleagues, and operating theater organization, on residents' quality of life, anxiety, and burnout. Third, some participants in the study reported having a psychiatric illness. Although these participants did not have exacerbated conditions and required no or simple medications, their psychological conditions may have affected the results of the study. However, it is significant that the positive effects of improving working conditions and monthly income were found in the same sample group. Additionally, prospectively collected data provide reliable results. To our knowledge, this is the first study from Türkiye evaluating the quality of life, anxiety, and burnout in anesthesiology residents after the legal regulations that provide for not working after night shifts, increased monthly income, and decreased working hours.

CONCLUSION

In conclusion, current regulations, including reduced working hours, fewer night shifts, and higher salaries, positively affected anesthesiology residents' compassion satisfaction, burnout, anxiety, and emotional exhaustion levels. However, further efforts are needed to improve compassion fatigue, depersonalization, and professional accomplishment. Proper communication and routine use of diagnostic tools may guide the improvement of standards. Additionally, further studies may focus on how to improve educational standards in anesthesiology.

Ethics Committee Approval: The Dokuz Eylul University Non-Interventional Clinical Research Ethics Committee granted approval for this study (date: 27.07.2022, number: 2022/24-02).

Author Contributions: Concept – MNY, ASB, MCÖ, MK, VH; Design – MNY, ZE, ÖÖ, ANG, VH; Supervision – MNY, ANG, VH; Resource – MNY, VH; Materials – MNY, VH; Data Collection and/or Processing – ASB, ZE, MCÖ, ÖÖ; Analysis and/or Interpretation – NY, MK, ANG, VH; Literature Search – MNY, ASB, ZE; Writing – MNY, VH; Critical Reviews – NY, ASB, ZE, MCÖ, ÖÖ, MK, ANG, VH.

Conflict of Interest: The authors have no conflict of interest to declare.

Informed Consent: Written informed consent was obtained from residents who participated in this study.

Use of AI for Writing Assistance: Not declared.

Financial Disclosure: The authors declared that this study has received no financial support.

Peer-review: Externally peer-reviewed.

REFERENCES

1. Carneiro Monteiro GM, Marcon G, Gabbard GO, Baeza FLC, Hauck S. Psychiatric symptoms, burnout and associated factors in psychiatry residents. Trends Psychiatry Psychother 2021; 43(3): 207–16. [CrossRef]
2. Turgut N, Karacalar S, Polat C, Kıran Ö, Gültop F, Kalyon ST, et al. Burnout Syndrome During Residency. Turk J Anaesthesiol Reanim 2016; 44(5): 258–64. [CrossRef]
3. Castanelli DJ, Wickramaarachchi SA, Wallis S. Burnout and the learning environment of anaesthetic trainees. Anaesth Intensive Care 2017; 45(6): 744–51. [CrossRef]
4. Gurman GM, Klein M, Weksler N. Professional stress in anesthesiology: a review. J Clin Monit Comput 2012; 26(4): 329–35. [CrossRef]
5. Lapa TA, Carvalho SA, Viana JS, Ferreira PL, Pinto-Gouveia J. Stressors in anaesthesiology: development and validation of a new questionnaire: A cross-sectional study of Portuguese anaesthesiologists. Eur J Anaesthesiol 2016; 33(11): 807–15. [CrossRef]
6. Raudenská J, Steinerová V, Javůrková A, Urits I, Kaye AD, Viswanath O, et al. Occupational burnout syndrome and post-traumatic stress among healthcare professionals during the novel coronavirus disease 2019 (COVID-19) pandemic. Best Pract Res Clin Anaesthesiol 2020; 34(3): 553–60. [CrossRef]
7. Aykut G, Efe EM, Bayraktar S, Şentürk S, Başeğmez İ, Özkumit Ö, et al. Mobbing Exposure of Anaesthesiology Residents in Turkey. Turk J Anaesthesiol Reanim 2016; 44(4): 177–89. [CrossRef]
8. Chiara C, Stefania M, Elvira M, Giuliano I, Andrea LA, Ermanno V, et al. Night shift work in resident physicians: does it affect mood states and cognitive levels? J Affect Disord 2020; 272: 289–94. [CrossRef]
9. Jaradat R, Lahlouh A, Mustafa M. Sleep quality and health related problems of shift work among resident physicians: a cross-sectional study. Sleep Med 2020; 66: 201–6. [CrossRef]
10. Resmi Gazete. Regulation on Trainee Education in Medicine and Dentistry. Available from: URL: https://www.resmigazete.gov.tr/eskiler/2022/09/20220903-2.htm. Accessed Sept 3, 2022.
11. Resmi Gazete. Regulation on Amending the Ministry of Health Additional Payment Regulation. Available from: URL: https://www.resmigazete.gov.tr/eskiler/2022/11/20221109-1.htm. Accessed Sept 03, 2022.
12. Association WM. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. JAMA 2013; 310(20): 2191–4. [CrossRef]
13. Stamm B. The concise manual for the professional quality of life scale. 2nd ed. Pocatello: The ProQOL.org; 2010.
14. Yeşil A, Ergün Ü, Amasyalı C, Er F, Olgun NN, Aker AT. Validity and reliability of the Turkish adaptation of the quality-of-life scale for employees. Noro Psikiyatr Ars 2010; 47(2): 111.
15. Fydrich T, Dowdall D, Chambless DL. Reliability and validity of the beck anxiety inventory. J Anxiety Disord 1992; 6(1): 55–61. [CrossRef]
16. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. J Consult Clin Psychol 1988; 56(6): 893. [CrossRef]
17. Ulusoy M, Sahin NH, Erkmen H. Turkish version of the Beck Anxiety Inventory: psychometric properties. J Cogn Psychother 1998; 12(2): 163.
18. Maslach C, Jackson SE, Leiter MP. Maslach Burnout Inventory manual. In: Zalaquett P, Wood RJ, editors. Evaluating stress: a book of resources. Lanham, MD: The Scarecrow Press; 1997.p.191–218.
19. Ergin C. Adaptation of burnout and Maslach burnout scale in doctors and nurses. 7th National Psychology Congress Scientific Studies; 1992 Sept 22; Ankara, Turkey. 1992. pp. 143–54.
20. Valeanu L, Stefan M, Fernandes DS, Rauseo M, Matias B, Predoi C, et al. Anaesthesiology trainees and their needs: a Romanian perspective. Results from a European survey. Rom J Anaesth Intensive Care 2018; 25(1): 37–42. [CrossRef]
21. Li H, Zuo M, Gelb AW, Zhang B, Zhao X, Yao D, et al. Chinese anesthesiologists have high burnout and low job satisfaction: A cross-sectional survey. Anesth Analg 2018; 126(3): 1004–12. [CrossRef]

22. Mitre C, Breazu C, Mitre I, Filipescu D. Migration of skilled anaesthesiologists from low to high-income economies: Urgent action needed. Eur J Anaesthesiol 2016; 33(3): 157–9.
23. Chong MYF, Lin SHX, Lim WY, Ong J, Kam PCA, Ong SGK. Burnout in anaesthesiology residents: a systematic review of its prevalence and stressors. Eur J Anaesthesiol 2022; 39(4): 368–77. [CrossRef]
24. Garde AH, Begtrup L, Bjorvatn B, Bonde JP, Hansen J, Hansen ÅM, et al. How to schedule night shift work in order to reduce health and safety risks. Scand J Work Environ Health 2020; 46(6): 557–69. [CrossRef]
25. Gafsou B, Becq MC, Michelet D, Julien-Marsollier F, Brasher C, Dahmani S. Determinants of work-related quality of life in French anesthesiologists. Anesth Analg 2021; 133(4): 863–72. [CrossRef]
26. Danhakl V, Miltiades A, Ing C, Chang B, Edmondson D, Landau R, et al. Observational study evaluating obstetric anesthesiologist residents' well-being, anxiety and stress in a North American academic program. Int J Obstet Anesth 2019; 38: 75–82. [CrossRef]
27. De Oliveira Filho GR, Vieira JE. The relationship of learning environment, quality of life, and study strategies measures to anesthesiology resident academic performance. Anesth Analg 2007; 104(6): 1467–72. [CrossRef]
28. Saadat H, Snow DL, Ottenheimer S, Dai F, Kain ZN. Wellness program for anesthesiology residents: A randomized, controlled trial. Acta Anaesthesiol Scand 2012; 56(9): 1130–8. [CrossRef]
29. Sneyd JR, Mathoulin SE, O'Sullivan EP, So VC, Roberts FR, Paul AA, et al. Impact of the COVID-19 pandemic on anaesthesia trainees and their training. Br J Anaesth 2020; 125(4): 450–5. [CrossRef]
30. Sun H, Warner DO, Macario A, Zhou Y, Culley DJ, Keegan MT. Repeated cross-sectional surveys of burnout, distress, and depression among anesthesiology residents and first-year graduates. Anesthesiology 2019; 131(3): 668–77.

View publication stats