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Beyond Working Hours: Mental Workload, Burnout, Workplace Violence, and Organizational Support Among Physicians in Sivas, Türkiye: A Multi-Institutional Cross-Sectional Study

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Abstract

Background

This study aimed to determine the levels of mental workload and burnout among physicians working in different healthcare institutions and to evaluate their associations with sociodemographic, occupational, economic, and psychosocial factors.

Methods

This cross-sectional study included 409 physicians working in different healthcare institutions in the city center of Sivas, Türkiye. Mental workload was assessed using the unweighted NASA Task Load Index (NASA-TLX), while burnout was evaluated using the Copenhagen Burnout Inventory (CBI). Data were analyzed using appropriate parametric or non-parametric tests and correlation analyses.

Results

The mean age of the participants was 40.09 ± 11.31 years, and the mean total NASA-TLX score was 74.55 ± 17.06. The highest NASA-TLX subscale scores were observed for mental demand (84.05 ± 20.35) and effort (82.82 ± 20.03). Mean work-related, personal, and patient-related burnout scores were 61.01 ± 24.63, 59.74 ± 22.65, and 54.22 ± 24.73, respectively. Mental workload differed significantly according to specialty, direct patient care responsibilities, daily patient volume, weekly working hours, on-call duty and frequency, perceived economic status, indebtedness, and additional income. Physicians who worked on-call, had experienced workplace violence, or were considering leaving their jobs had higher levels of both mental workload and burnout. The mental demand, physical demand, temporal demand, effort, and frustration dimensions of the NASA-TLX were positively correlated with the burnout dimensions of the CBI. The strongest correlations were observed between frustration and both personal and work-related burnout.

Conclusions

Physicians experienced high levels of mental workload and burnout. Long working hours, on-call duties, economic difficulties, workplace violence, and insufficient organizational support were important associated factors. Interventions aimed at reducing physicians' mental workload and burnout should simultaneously address working conditions as well as organizational and psychosocial risk factors.

Introduction

Mental workload is a multidimensional concept that refers to the level of attentional, perceptual, working memory, decision-making, and problem-solving resources required to meet the cognitive demands of a task [1–3]. Workload is not determined solely by the number of tasks performed or the duration of work; rather, it emerges from the interaction between task complexity, time pressure, concurrent task demands, uncertainty, level of responsibility, and the individual's available cognitive capacity. According to Wickens' multiple resource theory, the simultaneous performance of tasks that rely on the same cognitive resources may lead to resource overload and impaired performance [3]. Therefore, evaluating mental workload in addition to physical workload is important for protecting occupational health and safety, maintaining employee performance, and improving the quality of services [1,2].

Healthcare is among the occupational settings characterized by high cognitive demands and the need for sustained attention. Physicians, in particular, are required to perform multiple interrelated tasks, including making decisions under diagnostic uncertainty, simultaneously processing large amounts of clinical information, detecting critical changes in patients' conditions, planning treatment under time pressure, communicating with patients and their relatives, and assuming responsibility for adverse clinical outcomes. These demands may be further intensified by high patient volumes, long working hours, on-call duties, documentation burden, staffing shortages, and frequent interruptions in workflow, thereby placing additional strain on physicians'

cognitive resources. A study conducted among outpatient physicians in China demonstrated that mental workload was not homogeneous and that physicians could be classified into distinct workload profiles ranging from low to very high levels [4]. This finding suggests that physicians' workload cannot be adequately explained by patient volume alone and should instead be considered in relation to individual characteristics, professional factors, and the broader work environment.

High mental workload may be associated in the short term with reduced attention, impaired decision-making, fatigue, and fluctuations in performance, while in the longer term it may contribute to work-related stress, burnout, job dissatisfaction, and intentions to leave the profession. A recent scoping review examining factors associated with burnout among healthcare workers identified excessive workload, limited control over work, low pay, perceived unfairness, insufficient organizational support, and work–life conflict as major risk domains [5]. Similarly, occupational stress and burnout have been reported to be associated with perceived performance, while work arrangements may influence the strength and direction of these relationships [6]. Accordingly, assessing mental workload among physicians is important not only for employee well-being, but also for patient safety, quality of care, and the sustainability of the healthcare workforce.

Mental workload can be assessed using objective physiological measures, performance indicators, and subjective assessment tools. However, because workload also encompasses an individual's appraisal of task demands, effort expenditure, time pressure, and experienced frustration or strain, subjective measures play an important role in its evaluation. The NASA Task Load Index (NASA-TLX) is a multidimensional instrument widely used across different occupational settings to assess perceived workload across six dimensions: mental demand, physical demand, temporal demand, performance, effort, and frustration. Developed by Hart and Staveland, this approach enables the different components of workload to be examined separately rather than reducing overall workload to a single task-related indicator [7]. More recently developed instruments, such as the CarMen-Q, likewise support the multidimensional assessment of mental workload across cognitive, temporal, and emotional domains [2].

Although several studies in Türkiye have evaluated mental workload in the healthcare sector, research specifically focusing on physicians remains limited [1,8]. In a study conducted by Karadağ and Cankul among 178 physicians, mental workload was reported to be high [8]. However, physicians' working conditions have become increasingly complex in recent years due to high patient volumes, expanding electronic health record and documentation requirements, prolonged working hours, workplace violence, economic pressures, and changes in the healthcare workforce. Moreover, previous studies from Türkiye have provided limited comprehensive evidence examining mental workload together with burnout, working hours, on-call burden, institutional conditions, economic status, workplace violence, organizational support following violent incidents, incident reporting, and intention to leave. The scarcity of studies simultaneously including physicians from different healthcare institutions and medical specialties within the same sample also represents an important gap in the national literature.

The aim of this study was to determine perceived mental workload, assessed using the NASA Task Load Index (NASA-TLX), and burnout levels, assessed using the Copenhagen Burnout Inventory (CBI) [9], among physicians working in different healthcare institutions in the city center of Sivas, Türkiye, and to examine their associations with sociodemographic, occupational, institutional, and economic characteristics. The study also aimed to evaluate the relationships of mental workload and burnout with direct patient care, daily patient volume, weekly working hours, on-call burden, incident reporting, exposure to workplace violence, organizational support following violent incidents, and intention to leave.

By addressing these factors together, this study is expected to contribute to a broader understanding of physicians' workload and burnout beyond individual characteristics, with particular emphasis on organizational and psychosocial working conditions, and to inform the planning of preventive occupational health interventions.

Methods

This cross-sectional study was conducted to evaluate mental workload and burnout levels among physicians working in different healthcare institutions in the city center of Sivas, Türkiye, and to examine the sociodemographic, occupational, institutional, economic, and psychosocial factors associated with these outcomes. The study was coordinated by the Department of Public Health, Faculty of Medicine, Sivas Cumhuriyet University.

The study population comprised physicians who were actively employed in healthcare institutions located in the city center of Sivas in 2026, including Sivas Cumhuriyet University Hospital, Sivas Numune Hospital, Sivas State Hospital, private hospitals, family health centers, and community health centers.

According to institutional data obtained during the planning phase of the study, the Faculty of Medicine at Sivas Cumhuriyet University employed 66 faculty members and 193 resident physicians in surgical medical sciences, 91 faculty members and 333 resident physicians in internal medical sciences, and 15 faculty members and 20 resident physicians in basic medical sciences. Accordingly, the total number of physicians at Sivas Cumhuriyet University Hospital who were potentially eligible for inclusion in the study population was 718.

In the other healthcare institutions located in the city center of Sivas, there were 341 physicians at Sivas Numune Hospital, 53 at Sivas State Hospital, 56 in private hospitals, 226 in family health centers, and 25 in community health centers. Thus, the total physician population across the included institutions was 1,419.

Sample Size

The minimum required sample size was calculated using the finite population sample size formula. The population size was set at 1,419, with a 95% confidence level, a 5% margin of error, and an expected prevalence of 50% ($p = 0.50$), which provides the maximum required sample size when the prevalence of the outcome of interest is unknown.

Based on these assumptions, the minimum sample size was calculated to be approximately 302 physicians. To account for potential non-participation, incomplete data, and planned subgroup analyses according to healthcare institution and professional characteristics, the target sample size was increased to approximately 400 physicians. At the end of the data collection period, a total of 409 physicians who had completed the study questionnaire with sufficient data quality were included in the final analysis.

Sampling Method

A stratified sampling approach based on proportional quotas was used to ensure representation of physicians working across different healthcare institutions and medical specialties.

In the first stage, the study population was stratified according to institution type as follows:

1. Sivas Cumhuriyet University Hospital,
2. Sivas Numune Hospital and Sivas State Hospital,
3. Private hospitals,
4. Family health centers,
5. Community health centers.

Sivas Cumhuriyet University Hospital was further divided into three substrata: surgical medical sciences, internal medical sciences, and basic medical sciences. Within these substrata, efforts were made to ensure representation of both faculty members and resident physicians in each medical discipline.

Physicians working at Sivas Numune Hospital and Sivas State Hospital were further stratified into internal medicine specialties, surgical specialties, and emergency medicine. Family health centers, community health centers, and private hospitals were treated as separate institutional strata.

Inclusion Criteria

Physicians were eligible for inclusion if they:

- were actively practicing medicine in one of the healthcare institutions included in the study within the city center of Sivas;
- were actively employed during the study period;
- voluntarily agreed to participate in the study; and

- completed the data collection form with sufficient completeness for analysis.

Exclusion Criteria

Physicians who were on long-term leave, unpaid leave, or temporary assignment outside their institution during the study period were excluded. Those who declined to participate and participants who left essential sections of the data collection form incomplete were also excluded from the study.

Data Collection Tools

Following ethics committee approval and the necessary institutional permissions, data were collected using both face-to-face and online survey methods.

The following instruments were used for data collection:

1. A structured questionnaire developed by the researchers to assess sociodemographic, occupational, institutional, and economic characteristics;
2. The NASA Task Load Index (NASA-TLX);
3. The Copenhagen Burnout Inventory (CBI); and
4. Additional questions assessing intention to leave, incident reporting, exposure to workplace violence, and organizational support following violent incidents.

Sociodemographic, Occupational, and Economic Information Form

A structured information form was developed by the researchers based on the relevant literature to assess participants' sociodemographic, occupational, institutional, and economic characteristics.

Sociodemographic variables included age, sex, marital status (married, single, or other), and number of children.

Occupational and Institutional Variables

The occupational and institutional variables assessed were:

- professional position: general practitioner, specialist physician, faculty member, or resident physician;
- specialty group: internal medical sciences, surgical medical sciences, basic medical sciences, family medicine, or emergency medicine;
- total duration of professional practice;
- type of institution: university hospital, state/Numune hospital, private hospital, family health center, or community health center;
- level of involvement in patient care: no direct patient care, indirect patient care, or direct patient care;
- average number of patients seen per day: 1–50, 51–99, or ≥100;
- weekly working hours: 45 hours, 46–99 hours, or ≥100 hours;
- on-call duty status: yes or no; and
- average number of on-call duties per month: 1–3, 4–6, or ≥7.

Economic Variables

The economic variables assessed were:

- perceived economic status: poor, moderate, or good;
- debt status: yes or no;
- housing tenure: renter or homeowner;
- presence of additional income: yes or no; and

- spouse's employment status: employed or not employed.

NASA Task Load Index

The primary outcome variable of the study was physicians' perceived overall workload. Workload was assessed using the six-dimensional, unweighted version of the NASA Task Load Index (NASA-TLX).

The instrument consists of the following six dimensions:

1. mental demand;
2. physical demand;
3. temporal demand/time pressure;
4. perceived performance;
5. effort; and
6. frustration.

Participants rated each dimension on a scale of 0, 25, 50, 75, or 100. Higher scores for mental demand, physical demand, temporal demand, effort, and frustration indicated greater perceived workload. The performance item was coded so that its direction was consistent with the overall workload score, with higher scores reflecting greater workload.

The total NASA-TLX workload score was calculated by summing the scores of the six dimensions and dividing the total by six. The resulting score ranged from 0 to 100, with higher scores indicating greater perceived workload. In addition to the overall workload score, each NASA-TLX dimension was analyzed separately.

Copenhagen Burnout Inventory

Burnout was one of the secondary outcome variables of the study and was assessed using the Copenhagen Burnout Inventory (CBI).

The CBI consists of three dimensions:

1. personal burnout;
2. work-related burnout; and
3. patient-related burnout.

The personal burnout dimension assesses the degree of general physical and psychological fatigue and exhaustion experienced by an individual. The work-related burnout dimension evaluates fatigue and exhaustion perceived as being related to work, whereas the patient-related burnout dimension assesses exhaustion associated with working with patients or other recipients of care.

Responses to individual items were converted to scores of 0, 25, 50, 75, and 100 in accordance with the scoring instructions of the instrument. Each subscale score was calculated as the arithmetic mean of the relevant item scores. Subscale scores ranged from 0 to 100, with higher scores indicating higher levels of burnout.

The Turkish version of the Copenhagen Burnout Inventory has previously undergone validity and reliability testing and has been reported to demonstrate adequate internal consistency in samples of healthcare professionals.

Intention to Leave

Participants' intention to leave their current job was assessed using the question, "Are you considering leaving your current job within the next year?" Response options were "Yes," "No," and "Undecided."

Incident Reporting

Incident reporting was assessed using the question, “Have you reported a medical error or patient safety incident within the past 12 months?” Responses were recorded as “Yes” or “No.”

This question was not intended to determine whether the participant had personally committed an error. Rather, it was used to identify whether the participant had submitted any report concerning a patient safety incident or medical event during the previous 12 months.

Experience of Workplace Violence

Participants were asked whether they had been exposed to physical and/or verbal violence while providing healthcare services during their professional careers. The frequency of exposure to workplace violence was assessed using a five-point Likert-type scale.

Physicians who reported exposure to violence were additionally asked about the type of violence, the setting in which it occurred, and whether they had received adequate support from their institution following the incident. Organizational support after workplace violence was categorized as “Yes,” “No,” or “Partially.”

Participants were also asked open-ended questions that allowed them to provide suggestions for reducing workplace violence in healthcare settings and to describe their perceptions of the effects of violence on workload and burnout. Responses to these questions were evaluated thematically.

All responses were read and statements with similar meanings were grouped under common themes. Suggestions for preventing workplace violence were categorized under the following main themes: legal sanctions, security measures, public and patient education, reduction of workload, improvement of appointment and performance systems, management support, preservation of physicians’ social and professional status, media and political discourse, communication training, and psychosocial support.

Responses concerning the effects of workplace violence on physicians were grouped into themes including burnout, emotional exhaustion, loss of professional motivation, intention to leave, avoidance of patient care, reduced quality of care, anxiety, fear, feelings of insecurity, and depressive affect.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 22.0 (IBM Corp., Armonk, NY, USA).

The distributional characteristics of continuous variables were assessed using histograms, Q–Q plots, skewness and kurtosis values, and the Kolmogorov–Smirnov or Shapiro–Wilk tests, as appropriate.

Continuous variables were summarized as mean ± standard deviation, median, interquartile range, and minimum–maximum values according to their distributional properties. Categorical variables were presented as frequencies and percentages.

For comparisons of continuous variables between two independent groups, the independent-samples t-test was used when parametric assumptions were satisfied, whereas the Mann–Whitney U test was used when these assumptions were not met. For comparisons involving more than two independent groups, one-way analysis of variance (ANOVA) was applied when parametric assumptions were satisfied, and the Kruskal–Wallis test was used otherwise.

Homogeneity of variances was assessed using Levene’s test. When a statistically significant overall difference was identified by one-way ANOVA, Tukey’s honestly significant difference (HSD) test was used for post-hoc comparisons when the assumption of homogeneity of variances was met, whereas the Games–Howell test was used when variances were unequal. Following a significant Kruskal–Wallis test, pairwise comparisons with Bonferroni adjustment were performed.

Associations between categorical variables were evaluated using Pearson’s chi-square test. When the assumptions regarding expected cell frequencies were not satisfied, Fisher’s exact test or the Fisher–Freeman–Halton exact test was used, as appropriate.

Relationships between continuous variables were assessed using Pearson's or Spearman's correlation analysis according to the distributional characteristics of the variables. The absolute value of the correlation coefficient was interpreted as weak when ranging from 0.00 to 0.29, moderate from 0.30 to 0.49, and strong when ≥0.50.

Multivariable linear regression analysis was planned to evaluate the independent associations between the total NASA-TLX workload score and individual, occupational, institutional, economic, and psychosocial factors. Variables considered for inclusion in the regression model were selected based on their relevance in the existing literature, clinical and conceptual plausibility, and findings from univariable analyses.

Before multivariable linear regression analysis, the assumptions of linearity, normality of residuals, homoscedasticity, influential observations, and multicollinearity were evaluated. Multicollinearity was assessed using tolerance values and variance inflation factors.

Linear regression results were planned to be reported as regression coefficients with 95% confidence intervals, whereas logistic regression results were planned to be presented as odds ratios with 95% confidence intervals.

All statistical tests were two-sided, and a p-value < 0.05 was considered statistically significant. Appropriate adjustment procedures were applied for multiple pairwise comparisons to control the probability of Type I error.

Ethical Approval

Ethical approval for this study was obtained from the Sivas Cumhuriyet University Non-Interventional Clinical Research Ethics Committee (decision no. 26709, dated January 5, 2026).

Results

A total of 409 physicians were included in the study. The mean age of the participants was 40.09 ± 11.31 years, with an age range of 25–79 years. Of the participants, 40.3% (n = 165) were aged 25–34 years and 50.6% (n = 207) were male. Overall, 77.0% (n = 315) of the physicians were married. Among married participants, having two children was the most common category, accounting for 38.7% (n = 122).

Regarding professional position, 40.1% (n = 164) of the participants were specialist physicians and 16.4% (n = 67) were faculty members. Of all physicians, 44.3% (n = 181) worked at the university hospital, whereas 6.1% (n = 25) worked at community health centers. In terms of specialty group, physicians working in internal medical sciences constituted 36.2% (n = 148) of the sample, followed closely by those working in surgical medical sciences at 35.9% (n = 147). Approximately half of the participants (n = 200) had 1–10 years of professional experience.

Most physicians (86.3%, n = 353) reported providing direct patient care. Among those providing direct patient care, 61.5% (n = 217) reported seeing 1–50 patients per day. Overall, 57.0% (n = 233) of the participants reported working 45 hours per week, while 50.9% (n = 208) reported undertaking on-call duties. Among physicians with on-call duties, 22.1% (n = 46) had 1–3 on-call duties per month, 42.8% (n = 89) had 4–6, and 35.1% (n = 73) had ≥7 on-call duties per month.

Regarding economic characteristics, 67.5% (n = 276) of the participants perceived their economic status as moderate, whereas 6.6% (n = 27) rated it as poor. More than half of the physicians (54.3%, n = 222) reported owning the home in which they lived. Among married participants, 87.3% (n = 275) reported that their spouse was employed. The sociodemographic and occupational characteristics of the participants are presented in Table 1.

Table 1. Sociodemographic and occupational characteristics of the study group

Variable	Category	n	%
Age, years	Mean ± SD (min–max)	40.09±11,31	25–79
Age group			
	25–34	165	40.3
	35–44	113	27.6
	45–54	71	17.4
	≥55	60	14.7
Sex			
	Female	202	49.4
	Male	207	50.6
Marital status			
	Married	315	77.0
	Single	89	21.8
	Other	5	1.2
Number of children			
	0	57	18.1
	1	109	34.6
	2	122	38.7
	3	20	6.3
	≥4	7	2.2
Professional position			
	General practitioner	58	14.2
	Specialist physician	164	40.1
	Faculty member	67	16.4
	Resident	120	29.3
Employing institution			
	University hospital	181	44.3
	State/Numune hospital	118	28.9
	Private hospital	49	12.0
	Family health center	36	8.8
	Community health center	25	6.1
Medical specialty			
	Internal medical sciences	148	36.2
	Surgical medical sciences	147	35.9
	Basic medical sciences	17	4.2
	Family medicine	65	15.9

Variable	Category	n	%
	Emergency medicine	32	7.8
Total duration of professional practice			
	1–5 years	100	24.4
	6–10 years	100	24.4
	11–15 years	45	11.0
	16–20 years	44	10.8
	21–30 years	63	15.4
	≥31 years	57	13.9
Involvement in patient care			
	Direct patient care	353	86.3
	Indirect patient care	20	4.9
	No patient care	36	8.8
Average number of patients seen per day			
	1–50	217	61.5
	51–99	107	30.3
	≥100	29	8.2
Weekly working hours			
	45 hours	233	57.0
	46–99 hours	118	28.9
	≥100 hours	58	14.2
On-call duty status			
	Yes	208	50.9
	No	201	49.1
Average number of on-call duties per month			
	1–3	46	22.1
	4–6	89	42.8
	≥7	73	35.1
Perceived economic status			
	Good	106	25.9
	Moderate	276	67.5
	Poor	27	6.6
Housing tenure			
	Homeowner	222	54.3
	Tenant	187	45.7
Spouse's employment status			

Variable	Category	n	%
	Employed	275	87.3
	Not employed	40	12.7

Among the NASA-TLX dimensions, the highest mean score was observed for mental demand (84.05 ± 20.35), followed by effort (82.82 ± 20.03), temporal demand (75.12 ± 27.13), performance (74.94 ± 21.40), physical demand (67.05 ± 27.13), and frustration (63.33 ± 31.74). The mean total NASA-TLX workload score was 74.55 ± 17.06, with a median of 79.16 (IQR: 62.50–87.50) (Table 2).

Table 2. Descriptive Statistics for the NASA-TLX Total Workload and Subscale Scores

NASA-TLX dimension	Mean ± SD	Median (Q1–Q3)	Min–Max
Mental demand	84.05±20.35	100.00 (75-100)	0–100
Physical demand	67.05±27.13	75.00 (50-100)	0–100
Temporal demand	75.12±27.13	75.00 (50-100)	0–100
Performance	74.94±21.40	75.00 (75-100)	0–100
Effort	82.82±20.03	75.00 (75-100)	0–100
Frustration	63.33±31.74	75.00 (25-100)	0–100
Overall workload	74.55±17.06	79.16 (62.50-87.50)	16.67–100

Table 3. Distribution of physicians' responses across NASA-TLX workload dimensions

	0		25		50		75		100	
Variables	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Mental demand	2	0.5	6	1.5	58	14.2	119	29.1	224	54.8
Physical demand	14	3.4	39	9.5	125	30.6	116	28.4	115	28.1
Temporal demand	13	3.2	33	8.1	71	17.4	114	27.9	178	43.5
Performance	3	0.7	17	4.2	81	19.8	185	45.2	123	30.1
Effort	1	0.2	8	2.0	57	13.9	139	34.0	204	49.9
Frustration	22	5.4	81	19.8	94	23.0	81	19.8	131	32.0

More than half of the participants (54.8%) rated their mental demand at the maximum score of 100, while 49.9% rated effort and 43.5% rated temporal demand at the same maximum level. These findings indicate particularly high levels of perceived mental demand and effort among physicians (Table 3).

The total NASA-TLX workload score showed a borderline difference by sex. Although women had higher scores than men, the difference did not reach statistical significance (p = 0.051). A significant difference was observed across age groups (p = 0.018), with the highest workload scores among physicians aged 45–54 years and the lowest among those aged ≥55 years. No significant

association was found between marital status and total workload. Workload also differed significantly according to the number of children ($p = 0.038$), with the highest scores observed among physicians with one or three children.

Table 4. Comparison of NASA-TLX Total Workload Scores According to the Sociodemographic and Occupational Characteristics of Physicians

Variables	n	Overall NASA-TLX workload Mean ± SD	(95% CI)	p
Sex				
Female	202	76.21±17.35	73.80-78.62	0.051
Male	207	72.92±16.66	70.64-75.20	
Age group				
25-34	165	73.38±17.50	70.69-76.07	**0.018**
35-44	113	77.17±15.14	70.69-76.07	
45-54	71	77.75±16.12	73.94-81.57	
≥55	60	69.02±18.92	64.13-73.91	
Marital status				
Married	315	76.33±16.58	73.59-77.27	0.159
Single	89	71.74±18.63	67.42-75.27	
Other	5	75.69±18.63	67.42-75.27	
Number of children				
0	57	71.89±18.87	68.02-74.35	**0.038**
1	109	79.78±13.05	76.70-81.48	
2	122	75.00±16.86	71.49-77.49	
3	20	79.39-16.68	69.90-85.51	
4	7	61.92±23.35	41.41-80.46	
Professional position				
General practitioner	58	73.75±20.27	67.15-77.81	0.333
Specialist physician	164	74.32±15.76	71.55-76.41	
Faculty member	67	75.20±15.69	70.73-78.39	
Resident	120	77.50±17.85	73.09-79.54	
Institution type				
University hospital	181	76.12±17.13	72.62-77.65	0.090
State/Numune hospital	118	76.09±14.23	73.50-78.68	
Private hospital	49	74.93±17.90	69.17-79.46	
Family health center	36	74.71±21.62	65.94-80.58	
Community health center	25	64.95±18.19	57.82-72.84	
Medical specialty				
Internal medical sciences	148	73.64±17.88	70.12-75.93	**0.001**
Surgical medical sciences	147	79.29±14.35	76.03-80.71	
Basic medical sciences	17	64.76±18.69	55.33-74.56	
Family medicine	65	70.79±18.95	65.11-74.50	
Emergency medicine	32	79.42±15.05	73.34-84.20	

Total duration of professional practice				
1–5 years	100	73.37±18.66	68.79-76.20	**0.007**
6–10 years	100	76.89±14.45	73.50-79.24	
11–15 years	45	75.20±16.55	70.11+80.06	
16–20 years	44	77.94±15.31	72.61-81.92	
21–30 years	63	78.69-17.63	73.27-82.15	
≥31 years	57	68.93±18.26	64.08-73.77	
Hasta bakma durumu				
No patient care	36	63.19±18.44	57.18-69.66	**<0.001**
Indirect patient care	20	65.00±19.74	55.75-74.24	
Direct patient care	353	77.12±16.18	74.53-77.92	
Average number of patients seen per day (n=353)				
1–50	217	74.23±16.15	71.42-75.69	**<0.001**
51–99	107	80.98±15.46	76.85-82.67	
≥100	29	76.87±19.78	69.22-82.05	
Weekly working hours				
45 hours	233	72.15±17.48	69.22-73.73	**<0.001**
46–99 hours	118	76.08±16.68	72.20-78.28	
≥100 hours	58	86.11±10.33	82.77-88.20	
On-call duty				
No	201	70.58±18.16	67.45-72.51	**<0.001**
Yes	208	79.82±14.66	76.96-80.97	
Average number of on-call duties per month (n=208)				
1–3	46	70.10±15.81	65.41-74.80	**<0.001**
4–6	89	81.36±14.08	78.39-84.33	
≥7	73	82.35±12.45	78.41-84.52	
Perceived economic status				
Poor	27	84.25±12.43	79.03-88.86	**0.008**
Moderate	276	75.00±17.30	72.94-77.05	
Good	106	70.99±16.51	67.80-74.17	
Debt status				
Yes	238	77.01±16.12	74.95-79.07	**<0.001**
No	171	71.66±17.78	68.44-73.81	
Housing tenure				
Tenant	187	75.85±17.75	72.19-77.31	0.825
Homeowner	222	74.96±16.50	72.19-76.56	

Additional income				
Yes	46	68.93±16.47	64.03-73.82	**0.006**
No	363	76.20±17.02	73.50-77.02	
Spouse's employment status (n=315)				
Employed	275	76.78±15.95	74.16-77.85	0.163
Not employed	40	71.59±20.16	66.63-76.54	

When evaluated according to professional position, resident physicians had higher total NASA-TLX workload scores; however, the difference was not statistically significant. Workload scores were also higher among physicians working at the university hospital and lower among those working at community health centers, although the difference across institutions did not reach statistical significance (p = 0.090).

Total NASA-TLX workload scores differed significantly across specialty groups (p = 0.001). The highest scores were observed among physicians working in emergency medicine and surgical specialties, whereas the lowest scores were found among those working in basic medical sciences. A significant difference was also observed according to total duration of professional practice (p = 0.007), with the highest workload scores among physicians with 21–30 years of professional experience and the lowest among those with ≥31 years of experience (Table 4).

Physicians who provided direct patient care had significantly higher total NASA-TLX workload scores than those who did not provide direct patient care or who were involved only indirectly in patient care (p < 0.001). Workload scores also differed significantly according to daily patient volume (p < 0.001), with the highest scores observed among physicians seeing 51–99 patients per day. Total workload increased with longer weekly working hours; physicians working ≥100 hours per week had a mean NASA-TLX score of 86.11 ± 10.33, and the difference between groups was statistically significant (p < 0.001).

Physicians who undertook on-call duties had significantly higher total NASA-TLX workload scores than those who did not (p < 0.001). Among physicians with on-call duties, workload also differed significantly according to the number of on-call shifts per month (p < 0.001). The mean workload score was 70.10 ± 15.81 among those with 1–3 on-call shifts per month, 81.36 ± 14.08 among those with 4–6 shifts, and 82.35 ± 12.45 among those with ≥7 shifts per month. These findings indicate a progressive increase in perceived workload with increasing on-call frequency.

Physicians who perceived their economic status as poor had higher total NASA-TLX workload scores (p = 0.008). Those with debt also had significantly higher workload scores than those without debt (p < 0.001). Physicians without additional income had higher workload scores than those with additional income (p = 0.006). No significant differences were observed according to housing tenure or spouse's employment status (p = 0.825 and p = 0.163, respectively) (Table 4).

Table 5. Copenhagen Burnout Inventory Scores and Prevalence of Burnout Among Physicians

CBI subscale	Mean ± SD	Median (Q1–Q3)	Min–Max
Personal burnout	59.74**±**22.65	58.33 (41.67-75.00)	0–100
Work-related burnout	61.01**±**24.63	60.71 (41.66-75.00)	0–100
Client-related burnout	54.22**±**24.73	50.00 (41.67-73.95)	0–100

The mean CBI scores were 61.01 ± 24.63 for work-related burnout, 59.74 ± 22.65 for personal burnout, and 54.22 ± 24.73 for patient-related burnout. The highest mean score was observed for work-related burnout, whereas the lowest was observed for patient-related burnout (Table 5).

Female physicians had significantly higher personal burnout scores than male physicians ($p = 0.027$). Similarly, patient-related burnout scores were significantly higher among women ($p = 0.003$). Although work-related burnout scores were also higher among women, the difference between sexes was not statistically significant ($p = 0.121$).

With regard to marital status, single physicians had higher personal and work-related burnout scores, while participants in the "other" marital status category had higher patient-related burnout scores; however, none of these differences reached statistical significance.

Significant differences across age groups were observed for personal, work-related, and patient-related burnout ($p < 0.001$, $p = 0.002$, and $p = 0.014$, respectively). Physicians aged ≥55 years had lower burnout scores across all three CBI dimensions.

When burnout scores were evaluated according to the number of children, physicians with three children had higher personal, work-related, and patient-related burnout scores; however, these differences were not statistically significant.

Personal burnout and patient-related burnout differed significantly according to professional position ($p = 0.006$ and $p = 0.020$, respectively). Personal burnout was highest among specialist physicians, whereas patient-related burnout was lower among faculty members.

Burnout scores also differed significantly according to institution type for personal, work-related, and patient-related burnout ($p < 0.001$, $p = 0.004$, and $p = 0.016$, respectively). Tukey HSD post-hoc analysis showed that physicians working at state/Numune hospitals had significantly higher personal burnout scores than those working at the university hospital, private hospitals, and family health centers ($p < 0.001$, $p = 0.002$, and $p = 0.019$, respectively). Work-related burnout was also significantly higher among physicians working at state/Numune hospitals than among those working at the university hospital ($p = 0.013$). Although the overall group difference for patient-related burnout was statistically significant, no significant differences were identified in the pairwise Tukey HSD comparisons.

No statistically significant differences were observed across specialty groups in personal, work-related, or patient-related burnout scores ($p = 0.499$, $p = 0.097$, and $p = 0.063$, respectively). Descriptively, all three burnout dimensions were highest among physicians working in emergency medicine and lowest among those working in basic medical sciences; however, these differences did not reach statistical significance.

Personal and work-related burnout scores differed significantly according to total duration of professional practice ($p = 0.015$ and $p = 0.017$, respectively). Personal burnout was higher among physicians with more than 11–15 years of professional experience, whereas burnout scores were lower among those with ≥31 years of professional experience. No significant difference was observed between professional experience groups for patient-related burnout ($p = 0.150$).

When evaluated according to involvement in patient care, physicians providing direct patient care had significantly higher work-related and patient-related burnout scores than those who did not provide direct patient care or were involved only indirectly in patient care (both $p < 0.001$). Personal burnout was also higher among physicians providing direct patient care, although this difference was not statistically significant ($p = 0.293$). CBI personal, work-related, and patient-related burnout scores did not differ significantly according to average daily patient volume ($p = 0.566$, $p = 0.731$, and $p = 0.065$, respectively).

With regard to weekly working hours, a significant difference was observed only for work-related burnout ($p = 0.017$), with higher scores among physicians working ≥100 hours per week. Personal and patient-related burnout scores did not differ significantly according to weekly working hours.

Physicians who undertook on-call duties had significantly higher personal, work-related, and patient-related burnout scores than those who did not ($p = 0.003$, $p < 0.001$, and $p = 0.018$, respectively). However, among physicians who undertook on-call duties, no significant differences were observed according to the number of on-call shifts per month for personal burnout ($p = 0.526$), work-related burnout ($p = 0.438$), or patient-related burnout ($p = 0.850$). In other words, although undertaking on-call duties was associated with higher burnout, increasing on-call frequency among those already undertaking such duties was not associated with a significant further increase in burnout scores.

Perceived economic status was significantly associated with all three burnout dimensions (all $p < 0.001$). Physicians who rated their economic status as poor had higher burnout scores, whereas those who rated it as good had lower scores. Work-related burnout was significantly higher among physicians with debt than among those without debt ($p = 0.002$), while differences in personal and patient-related burnout were not statistically significant. Physicians without additional income had significantly higher personal, work-related, and patient-related burnout scores than those with additional income ($p = 0.013$, $p < 0.001$, and $p = 0.006$, respectively). No significant differences in burnout scores were observed according to housing tenure or spouse's employment status (Table 6).

Table 6. Burnout levels according to sociodemographic, occupational, and economic characteristics

Variables	n	CBI personal burnout Mean ± SD (95% CI)	p	CBI work-related burnout Mean ± SD (95% CI)	p	CBI client-related burnout Mean ± SD (95% CI)	p
Sex			**0.027**				
Female	202	62.25±22.56 (59.12-65.38)		62.92±25.01 (59.45-66.39)	0.121	57.85±24.28 (54.48-61.22)	**0.003**
Male	207	57.30±22.52 (54.21-60.39)		59.14±24.16 (55.83-62.45)		50.64±24.70 (47.25-54.04)	
Marital status							
Married	314	58.76±22.92 (56.22-61.31)	0.314	60.41±24.30 (57.72-63.11)	0.629	54.51±23.84 (51.86-57.15)	0.802
Single	89	63.15±21.36 (58.65-57.65)		63.08±25.80 (57.64-68.51)		52.94±27.46 (47.16-58.73)	
Other	5	60.83±26.77 (27.58-94.08)		61.42±27.36 (27.45-95.40)		58.33±33.20 (17.10-99.56)	
Age group							
25-34	165	60.32±22.35 (56.89-63.76)	**<0.001**	61.66±23.34 (58.07-65.25)	**0.002**	54.24±24.32 (50.50-57.98)	**0.014**
35-44	113	62.16±21.57 (58.14-66.19)		62.01±25.34 (57.28-66.73)		56.25±25.22 (51.52-60.97)	
45-54	71	64.84±23.31 (58.38-69.42)		66.09±27.39 (59.63-72.58)		58.33±24.90 (52.43-64.22)	
≥55	60	48.68±21.77 (43.05-54.30)		51.30±21.00 (45.88-56.73)		45.48±23.17 (39.50-51.47)	
Number of children							
0	57	63.60±21.43 (60.01-57.20	0.068	64.69±24.37 (60.60-68.78)	0.052	56.68±26.38 (52.25-61.10)	0.096
1	109	57.01±22.33 (53.74-61.92)		61.35±23.02 (57.13-65.57)		56.26±22.05 (52.22-60.30)	
2	122	57.56±23.62 (53.36-61.76)		57.34±25.91 (52.73-61.95)		50.13±24.97 (45.67-54.59)	
3	20	66.25±24.02 (55.00-77.49)		65.17±25.33 (53.32-77.03)		56.87±23.15 (46.04-67.70)	
4	7	41.66±13.54 (30.34-52.99)		40.62±15.73 (27.47-53.77)		35.93±23.66 (16.15-55.72)	
Professional position							

Variables	n	CBI personal burnout Mean ± SD (95% CI)	p	CBI work-related burnout Mean ± SD (95% CI)	p	CBI client-related burnout Mean ± SD (95% CI)	p
General practitioner	58	56.17±22.16 (50.35-62.00)	**0.006**	59.85±25.24 (53.21-66.49)	0.178	54.88±22.78 (48.89-60.87)	**0.020**
Specialist physician	163	64.50±21.83 (61.14-67.87)		64.79±25.01 (60.10-67.81)		56.56±25.75 (52.58-60.55)	
Faculty member	67	56.21±23.30 (50.53-61.90)		56.39±25.34 (50.21-62.57)		44.65±24.43 (38.69-50.61)	
Resident	120	56.94±22.75 (52.83-61.05)		60.11±23.16 (55.93-64.30)		56.04±23.38 (51.81-60.26)	
Institution type							
University hospital	181	56.49±22.55 (53.18-59.79)	**<0.001**	58.26±23.60 (54.80-61.73)	**0.004**	51.91±24.57 (48.30-55.51)	**0.016**
State/Numune hospital	118	68.31±20.70 (64.58-72.13)		67.43±24.16 (63.02-71.83)		59.49±23.29 (55.25-63.74)	
Private hospital	49	54.08±24.30 (47.10-61.06)		56.34±27.52 (48.43-64.24)		48.26±27.56 (40.25-56.26)	
Family health center	36	55.43±21.21 (48.26-62.61)		65.07±23.09 (57.26-72.89)		59.37±21.16 (52.21-66.53)	
Community health center	25	60.00±21.10 (51.28-68.71)		53.85±24.74 (43.64-64.07)		50.00±27.45 (38.66-61.33)	
Medical specialty							
Internal medical sciences	148	61.43±23.89 (57.54-65.31)	0.499	59.65±26.33 (55.37-63.93)	0.097	52.22±26.29 (47.95-56.49)	0.063
Surgical medical sciences	147	59.55±22.02 (55.96-63.14)		62.46±22.60 (58.77-66.14)		56.09±23.45 (52.27-59.91)	
Basic medical sciences	17	54.90±19.16 (45.04-64.75)		50.21±24.33 (37.69-62.72)		39.95±25.08 (27.05-52.85)	
Family medicine	64	56.53±20.96 (51.34-61.73)		60.43±24.69 (54.31-66.55)		55.92±23.33 (50.09-61.75)	
Emergency medicine	32	62.78±24.74 (53.05-70.90)		69.02±24.46 (58.70-76.34)		58.98±23.57 (50.48-67.48)	
Total duration of professional practice							
1–5 years	100	60.16±22.89 (55.62-64.70)	**0.015**	60.89±24.49 (56.03-65.75)	**0.017**	57.08±22.81 (52.55-61.60)	0.150
6–10 years	100	60.16±19.98		61.32±21.50		52.83±24.25	

Variables	n	CBI personal burnout Mean ± SD (95% CI)	p	CBI work-related burnout Mean ± SD (95% CI)	p	CBI client-related burnout Mean ± SD (95% CI)	p
		(55.57-63.50)		(57.05-65.58)		(48.01-57.64)	
11–15 years	45	67.68±23.57 (60.60-74.76)		64.84±27.24 (56.65-73.02)		56.11±27.37 (47.88-64.33)	
16–20 years	44	59.56±25.39 (51.84-67.28)		59.57±28.46 (50.92-68.23)		53.12±27.44 (44.77-61.47)	
21–30 years	63	61.64±23.18 (55.80-67.48)		67.74±24.36 (61.60-73.88)		58.00±23.81 (52.00-63.99)	
≥31 years	57	51.16±21.19 (45.54-56.79)		45.26±22.79 (45.26-57.36)		46.65±24.63 (40.05-53.24)	
Hasta bakma durumu							
No patient care	36	54.97±19.30 (48.44-61.51)	0.293	48.90±20.66 (41.91-55.90)	**<0.001**	42.01±29.93 (31.88-52.14)	**<0.001**
Indirect patient care	20	54.79±31.15 (40.20-69.37)		45.00±30.15 (30.88-59.11)		39.37±25.01 (27.66-51.08)	
Direct patient care	353	60.51±22.38 (58.17-62.86)		63.15±24.03 (60.63-65.66)		56.30±23.53 (53.84-58.77)	
Average number of patients seen per day (n=353)							
1–50	217	59.84±21.99 (56.94-62.74)	0.566	61.08±23.82 (57.93-64.22)	0.731	53.34±24.95 (50.04-56.64)	0.065
51–99	107	59.60±24.85 (54.93-64.28)		64.12±25.62 (59.30-68.94)		59.98±21.27 (55.98-63.98)	
≥100	29	63.99±22.67 (56.64-71.34)		62.91±27.09 (54.12-71.69)		54.05±23.52 (46.43-61.68)	
Weekly working hours							
45 hours	233	59.78±21.67 (56.98-62.57)	0.826	59.82±24.76 (56.62-63.02)	**0.017**	55.36±25.39 (52.08-58.64)	0.201
46–99 hours	118	59.99±23.17 (55.76-64.21)		60.65±24.63 (56.16-65.14)		51.17±24.89 (46.61-55.73)	
≥100 hours	58	59.12±25.66 (52.37-65.87)		66.50±23.72 (60.26-72.74)		55.74±21.35 (50.13-61.36)	
On-call duty							
No	201	56.40±22.77 (53.23-59.57)	**0.003**	56.29±25.80 (52.70-59.87)	**<0.001**	51.27±26.98 (47.50-55.03)	**0.018**
Yes	208	62.98±22.11 (59.95-66.00)		65.57±22.57 (62.48-68.66)		57.05±22.05 (54.03-60.06)	

Variables	n	CBI personal burnout Mean ± SD (95% CI)	p	CBI work-related burnout Mean ± SD (95% CI)	p	CBI client-related burnout Mean ± SD (95% CI)	p
Average number of on-call duties per month (n=208)							
1–3	46	62.68±18.98 (57.04-68.31)	0.526	62.03±21.19 (55.74-68.32)	0.438	56.06±19.27 (50.34-61.79)	0.850
4–6	89	64.88±23.07 (60.02-69.74)		66.93±23.06 (62.07-71.79)		58.19±24.18 (53.09-63.28)	
≥7	73	60.84±22.82 (55.51-66.17)		66.14±22.89 (60.80-71.48)		56.27±21.19 (51.33-61.22)	
Perceived economic status							
Poor	27	75.00±20.44 (66.91-83.08)	**<0.001**	80.29±18.40 (73.00-87.57)	**<0.001**	62.80±22.81 (53.78-71.83)	**<0.001**
Moderate	276	61.41±22.31 (58.76-64.05)		62.84±23.49 (60.06-65.63)		57.03±24.31 (54.15-59.91)	
Good	106	51.53±21.24 (47.44-55.62)		51.31±25.07 (46.48-56.14)		44.60±23.83 (39.99-49.21)	
Debt status							
Yes	238	61.55±22.61 (58.66-64.44)	0.057	62.27±24.59 (59.13-65.41)	**0.002**	55.88±23.52 (52.87-58.88)	0.108
No	171	57.23±22.53 (53.83-60.63)		59.25±24.64 (55.53-62.97)		51.88±26.22 (47.91-55.85)	
Housing tenure							
Tenant	187	61.25±22.07 (58.06-64.43)	0.219	62.94±22.88 (59.64-66.25)	0.144	56.79±24.25 (53.29-60.29)	0.052
Homeowner	222	58.48±23.10 (55.42-61.54)		59.37±25.94 (55.94-62.81)		52.03±24.97 (48.72-55.34)	
Additional income							
Yes	46	50.27±19.86 (44.37-56.17)	**0.013**	49.61±24.49 (42.33-56.88)	**<0.001**	44.62±23.44 (37.58-51.67)	**0.006**
No	363	60.95±22.72 (58.60-63.29)		62.45±24.30 (59.94-64.96)		55.40±24.66 (52.80-57.95)	
Spouse's employment status (n=315)							
Employed	275	59.23±23.14 (56.56-61.91)	0.744	61.13±25.02 (58.24-64.02)	0.655	54.69±24.06 (51.91-57.47)	0.083
Not employed	40	59.65±21.73 (54.31-65.00)		59.74±22.22 (54.27-65.20)		48.84±26.33 (42.32-55.37)	

Table 7. Correlation analysis between NASA-TLX workload dimensions and Copenhagen Burnout Inventory subscales

NASA-TLX dimension	CBI personal burnout r	p	CBI work-related burnout ρ	p	CBI client-related burnout r	p
Mental demand	0.373	<0.001	0.452	<0.001	0.230	<0.001
Physical demand	0.255	<0.001	0.376	<0.001	0.217	<0.001
Temporal demand	0.332	<0.001	0.469	<0.001	0.262	<0.001
Performance	-0.147	0.003	-0.093	0.060	-0.069	0.166
Effort	0.268	<0.001	0.397	<0.001	0.229	<0.001
Frustration	0.715	<0.001	0.770	<0.001	0.404	<0.001

When the correlations between the NASA-TLX and CBI dimensions were examined, the strongest associations were observed between frustration and burnout. Frustration was strongly and positively correlated with personal burnout ($p < 0.001$) and work-related burnout ($p < 0.001$), and moderately and positively correlated with patient-related burnout ($p < 0.001$).

Higher scores for mental demand, physical demand, temporal demand, and effort were associated with higher scores for personal, work-related, and patient-related burnout. Mental demand showed a moderate positive correlation with work-related burnout ($p < 0.001$). Similarly, temporal demand was moderately and positively correlated with work-related burnout ($p < 0.001$). The performance score was weakly and negatively correlated with personal burnout ($p = 0.003$); however, its correlations with work-related and patient-related burnout were not statistically significant (Table 7).

Only 8.6% (n = 35) of the participants reported having submitted any incident report within the previous 12 months, whereas the vast majority (91.4%, n = 374) reported that they had not submitted an incident report. Overall, 13.9% (n = 57) of physicians stated that they were considering leaving their current job within the next year, while 19.1% (n = 78) were undecided.

When lifetime exposure to workplace violence was evaluated, 32.5% (n = 133) of the participants reported never having experienced violence, whereas 39.6% (n = 162) reported rare exposure, 25.4% (n = 104) occasional exposure, 1.7% (n = 7) frequent exposure, and 0.7% (n = 3) very frequent exposure. Accordingly, approximately two-thirds of the participants (67.5%) had experienced workplace violence at least once during their professional careers.

Among the 276 physicians who had experienced workplace violence and responded to the question regarding institutional support, only 15.5% (n = 43) reported receiving adequate support from their institution. In contrast, 52.9% (n = 146) reported receiving inadequate support, while 31.5% (n = 87) reported receiving only partial support (Table 8).

Table 8. Incident reporting, intention to leave, frequency of workplace violence, and institutional support following violence among physicians

Variables	n	%
Incident reporting within the past 12 months		
Yes	35	8.6
No	374	91.4
Intention to leave within the next year		
Yes	57	13.9
No	274	67.0
Undecided	78	19.1
Frequency of workplace violence during professional career		
Never	133	32.5
Rarely	162	39.6
Sometimes	104	25.4
Often	7	1.7
Very often	3	0.7
Adequate institutional support following violence (n=276)		
Yes	43	15.5
No	146	52.9
Partially	87	31.5

No statistically significant difference was observed in total NASA-TLX workload scores between physicians who had and had not submitted an incident report within the previous 12 months ($p = 0.095$). However, physicians who had submitted an incident report had significantly higher personal, work-related, and patient-related burnout scores than those who had not (all $p < 0.001$).

Total NASA-TLX workload and personal, work-related, and patient-related burnout scores differed significantly according to intention to leave the current job within the next year (all $p < 0.001$). Overall, the highest NASA-TLX and burnout scores were observed among physicians who were undecided about leaving their jobs, whereas the lowest scores were observed among those who reported no intention to leave.

Physicians who had experienced workplace violence during their professional careers had significantly higher total NASA-TLX workload scores than those who had not experienced workplace violence ($p = 0.003$). Similarly, personal, work-related, and patient-related burnout scores were significantly higher among physicians exposed to workplace violence (all $p < 0.001$).

Significant differences were also observed according to the level of organizational support received following workplace violence for total NASA-TLX workload ($p < 0.001$), personal burnout ($p = 0.002$), work-related burnout ($p < 0.001$), and patient-related burnout ($p = 0.024$). Physicians who reported receiving adequate organizational support generally had lower workload and burnout scores, whereas those who reported receiving no support or only partial support had higher scores (Table 9).

Table 9. Comparison of NASA-TLX workload and Copenhagen Burnout Inventory subscale scores according to incident reporting, intention to leave, exposure to workplace violence, and institutional support

Variable	n	Overall NASA-TLX workload Mean ± SD (95% CI)	p	Personal burnout Mean ± SD (95% CI)	p	Work-related burnout Mean ± SD (95% CI)	p	Client-related burnout Mean ± SD (95% CI)	p
Incident reporting									
Yes	35	79.28±15.17 (74.07-84.49)	0.095	75.00±19.33 (68.35-81.64)	**<0.001**	79.28±23.01 (71.38-87.19)	**<0.001**	67.26±25.60 (58.46-76.05)	**<0.001**
No	374	74.10±17.18 (72.36-75.85)		58.32±22.43 (56.04-60.60)		59.30±24.10 (56.84-61.75)		52.99±24.32 (50.51-55.47)	
Intention to leave									
Yes	57	78.94±14.35 (75.13-82.75)	**<0.001**	68.64±21.11 (63.03-74.24)	**<0.001**	73.05±24.71 (66.49-79.61)	**<0.001**	60.38±23.71 (54.08-66.67)	**<0.001**
No	274	72.06±17.58 (69.97-74.15)		54.72±22.28 (52.07-57.39)		54.61±23.27 (51.84-57.38)		49.77±24.43 (46.86-52.67)	
Undecided	78	80.07±15.15 (76.65-83.49)		70.88±18.98 (66.60-75.16)		74.67±20.20 (70.12-79.23)		65.47±22.11 (60.45-70.49)	
Exposure to workplace violence									
No	133	68.85±18.28 (65.72-71.99)	**0.003**	55.67±22.93 (51.73-59.60)	**<0.001**	54.32±26.17 (49.83-58.81)	**<0.001**	49.05±26.51 (44.48-53.61)	**<0.001**
Yes	276	77.29±15.75 (75.42-79.16)		61.71±22.29 (59.07-64.35)		64.23±23.22 (61.48-66.98)		56.68±23.48 (53.90-59.47)	
Institutional support									
Yes	43	72.09±15.99 (67.16-77.01)	**<0,001**	50.77±19.86 (44.66-56.88)	**0.002**	51.24±22.99 (44.16-58.32)	**<0.001**	44.57±22.72 (37.58-51.56)	**0.024**
No	146	79.59±13.76 (77.34-81.84)		63.38±23.05 (59.61-67.15)		66.51±22.70 (62.79-70.22)		59.36±22.79 (55.63-63.08)	
Partially	87	76.00±18.05 (72.15-79.85)		64.31±20.70 (59.90-68.73)		66.83±22.28 (62.08-71.58)		58.18±23.41 (53.19-63.18)	

The thematic evaluation of open-ended responses regarding strategies to reduce workplace violence showed that the most frequently suggested measures were the implementation of stronger deterrent legal sanctions and enhanced security measures. These were followed by educating the public and patients about violence against healthcare workers, reducing daily patient volumes and workload, and restructuring performance-based and appointment systems. Participants also emphasized the need to preserve physicians' social and professional status, strengthen managerial support for healthcare workers, change media and political discourse, and introduce restrictions on healthcare services or social security benefits for individuals who perpetrate

violence. Less frequently mentioned suggestions included communication and empathy training, improvements in working conditions, and strengthening psychosocial support.

The thematic evaluation of open-ended responses also indicated that the majority of participants perceived workplace violence as having substantial adverse effects on workload and, particularly, burnout. Participants reported that violence increased emotional strain and burnout, reduced professional motivation and willingness to work, and adversely affected work performance and the quality of healthcare delivery. They also described potential consequences such as alienation from the profession, thoughts of resignation, avoidance of patient care, and changes in specialty preferences. Frequently reported psychological effects included anxiety, fear, feelings of insecurity, depressive affect, and loss of motivation. Some participants stated that violence did not directly increase workload but markedly increased burnout, whereas a small number reported that its effects were limited or absent.

Discussion

In this study, mental workload and burnout were evaluated together among 409 physicians working in healthcare institutions in the city center of Sivas, Türkiye. The main findings showed that physicians experienced high levels of perceived overall workload, with mental demand, effort, and temporal demand emerging as the most prominent components. The NASA-TLX dimensions were also closely associated with different dimensions of burnout. Higher workload was associated with direct patient care, high patient volume, longer working hours, on-call duties, more frequent on-call shifts, adverse economic conditions, and exposure to workplace violence. Burnout was higher among women, younger and middle-aged physicians, those working in certain institutional settings, physicians providing direct patient care, those undertaking on-call duties, those experiencing economic difficulties or workplace violence, those reporting inadequate organizational support, and those expressing an intention to leave their current job.

The mean total NASA-TLX workload score in this study was 74.55 ± 17.06. Among the subdimensions, mental demand (84.05 ± 20.35) and effort (82.82 ± 20.03) had the highest scores, indicating that physicians' workload cannot be explained solely by working hours or patient volume. Clinical practice requires physicians to make complex decisions, manage uncertainty, monitor critical information, communicate with patients and their relatives, complete documentation, and assume responsibility under time constraints, often simultaneously. It is therefore not unexpected that mental demand and sustained effort constitute major components of physicians' perceived workload.

A national study conducted in the United States across multiple medical specialties similarly reported that physician task load measured using the NASA-TLX was strongly associated with burnout, and that mental demand, temporal demand, physical demand, and effort were each relevant to burnout [10]. In that study, the association between task load and burnout persisted after accounting for factors such as age, sex, specialty, practice setting, and weekly working hours. Accordingly, the high overall workload identified in the present study should be considered a central finding in understanding burnout among physicians.

In a meta-analytic review by Hertzum that included 87 studies using the NASA-TLX in healthcare settings, the mean TLX score among healthcare professionals working in real clinical environments was reported to be 49 [11]. The mean total workload score of 74.55 observed in the present study was substantially higher than this pooled estimate. However, direct comparison of absolute NASA-TLX scores should be interpreted cautiously because the meta-analysis included heterogeneous studies involving different healthcare professions, clinical tasks, countries, and NASA-TLX administration methods. Nevertheless, the marked difference supports the conclusion that physicians in our study experienced a high level of perceived workload.

When the relationships between the NASA-TLX dimensions and CBI subscales were examined, the strongest correlations were observed between frustration and both personal and work-related burnout. The correlation coefficient between frustration and personal burnout was 0.715, while the correlation with work-related burnout was 0.770. This finding suggests that burnout may reflect not only the quantitative burden of work, but also how work demands are experienced emotionally and psychologically. Although mental demand, temporal demand, and effort were also positively associated with burnout, the stronger association with frustration may indicate that emotional responses such as loss of control, perceived obstruction, conflict, and feelings of inadequacy could play a particularly important role in the development of chronic exhaustion.

Doğan et al., in a study involving 703 healthcare professionals working in emergency medical services across three major cities in Türkiye, showed that perceived workload was associated with higher employee burnout, whereas perceived organizational support was associated with lower burnout [12]. This finding is consistent with the positive associations observed in our study between NASA-TLX workload dimensions and personal, work-related, and patient-related burnout. In addition, the lower workload and burnout scores observed among physicians who reported receiving adequate organizational support following workplace violence suggest that organizational support may help buffer the adverse effects of high job demands. However, the study by Doğan et al. included different professional groups working in emergency medical services, whereas our study focused exclusively on physicians employed across different healthcare institutions. Therefore, although the direction of the findings is similar, differences in study populations and measurement instruments should be taken into account.

The weak negative association between the NASA-TLX performance dimension and personal burnout, together with the absence of significant associations with work-related and patient-related burnout, is noteworthy. This finding may suggest that physicians are able to maintain their perceived professional performance despite high mental demand, time pressure, and effort. In the national physician study by Harry et al., burnout was similarly associated with mental demand, temporal demand, effort, and frustration, whereas the performance dimension showed a more limited relationship compared with other workload components [10]. Likewise, Blazin et al. reported higher mental demand, temporal demand, effort, and frustration scores among physicians with burnout, with temporal demand remaining particularly important in multivariable analysis [13]. Taken together, these findings suggest that burnout may emerge before an overt perceived decline in performance and that physicians may sustain performance at a substantial personal and cognitive cost. Nevertheless, because interpretation of the performance item depends on its scoring direction, the coding approach should be clearly specified when interpreting this dimension.

Although female physicians had higher total NASA-TLX scores than male physicians, the difference did not reach statistical significance. In contrast, female physicians had significantly higher personal and patient-related burnout scores. Higher burnout among female physicians may be related to multiple factors, including professional demands, domestic responsibilities, caregiving burden, work–family conflict, discrimination, differences in professional autonomy, and patient expectations. However, because not all of these factors were directly measured in the present study, causal interpretations regarding the mechanisms underlying sex differences should be avoided. In a one-year longitudinal study of Swedish physicians, work–private life conflict was associated with subsequent burnout, job dissatisfaction, and thoughts of leaving the profession [14]. This finding supports the possibility that, particularly among female physicians, personal burnout may be shaped not only by workload within the workplace but also by the combined demands of work and private life.

With respect to age, workload scores were highest among physicians aged 45–54 years, whereas both workload and burnout scores were lower among those aged ≥55 years. Similarly, physicians with ≥31 years of professional experience had lower scores. Several explanations may account for this pattern. More experienced physicians may have developed more efficient pattern-recognition skills in clinical decision-making, greater ability to cope with uncertainty, better management of workflow, and higher levels of professional autonomy, all of which may reduce perceived workload. In addition, fewer on-call duties and reduced responsibility for intensive patient care at older ages may also have contributed to these findings. However, this pattern may also reflect a healthy worker effect, whereby physicians who are more adversely affected by high workload may gradually leave highly demanding clinical roles, transition to lower-intensity positions, or leave the profession altogether. Therefore, the cross-sectional design does not allow age itself to be interpreted as a directly protective factor. In a study of 1,053 physicians in Türkiye, younger age, frequent night shifts, shorter consultation times, lower income, workplace violence, and mobbing were associated with higher burnout [15]. These findings are broadly consistent with our results regarding age, on-call duties, economic conditions, and workplace violence.

The highest NASA-TLX scores were observed in emergency medicine and surgical specialties. This may be explained by the nature of these fields, which require sustained attention, rapid decision-making, high-risk clinical judgments, work under time pressure, and responsibility for potential complications. In emergency medicine, unpredictable patient flow, the need to make critical decisions within short timeframes, and a higher risk of workplace violence may increase both cognitive and emotional demands. In surgical specialties, prolonged procedures, technical precision, intraoperative decision-making, and the risk of complications represent important sources of workload. The national NASA-TLX study conducted in the United States also reported that task load varied across specialties and tended to be higher in specialties characterized by acute care demands [10]. Nevertheless, no

statistically significant differences were observed between specialty groups in any of the CBI burnout dimensions in our study. This may suggest that burnout is influenced less by specialty itself than by factors shared across specialties, such as institutional culture, job control, working hours, on-call duties, economic conditions, workplace violence, and organizational support. A recent multicenter study similarly showed that limited control over patient volume, work schedules, team structure, and areas of responsibility was independently associated with physician burnout and career intentions [16].

Physicians who provided direct patient care had higher overall mental workload as well as higher work-related and patient-related burnout scores, suggesting that clinical contact represents an important source of burden in medical practice. Patient care involves not only diagnostic and therapeutic decision-making, but also sustained attention, rapid information processing, decision-making under uncertainty, communication with patients and their relatives, management of emotionally demanding situations, and responsibility for potentially adverse outcomes. These demands frequently occur simultaneously. It is therefore plausible that direct patient care is associated with greater cognitive workload as well as higher work-related and patient-related burnout.

The finding that the highest NASA-TLX score was observed among physicians seeing 51–99 patients per day suggests that the relationship between patient volume and mental workload may not be simple or linear. The smaller number of participants in the group seeing ≥100 patients per day, shorter and more standardized patient encounters, or differences in institutional workflows may have influenced this pattern. Patient volume alone should therefore not be regarded as a sufficient indicator of workload. Factors such as consultation time per patient, case complexity, documentation burden, team support, clinical autonomy, and control over workflow may also play important roles in shaping physicians' perceived mental workload.

The total NASA-TLX score of 86.11 ± 10.33 among physicians working ≥100 hours per week indicates a particularly high level of perceived mental workload in this group. Although personal and patient-related burnout did not differ significantly according to weekly working hours, work-related burnout was significantly higher among physicians with longer working hours. This finding suggests that excessive working hours may be particularly relevant to fatigue and exhaustion attributed directly to work. Long working hours not only increase the amount of time spent performing occupational tasks, but may also reduce opportunities for rest, sleep, and cognitive recovery and contribute to greater interference between work and private life.

In a one-year follow-up study of Swedish physicians, Gynning et al. found that work–private life conflict was associated with an increased risk of high burnout in the subsequent year and was also related to job dissatisfaction and intention to leave [14]. These associations persisted after adjustment for factors such as working hours, overtime, and baseline burnout. Similarly, a study conducted among solo general practitioners in Denmark reported a higher risk of burnout among physicians who worked five days per week and spent more than 7.5 hours per day on patient-related tasks [17]. These findings are consistent with the high NASA-TLX and work-related burnout scores observed in the present study. However, because of the cross-sectional design, causal relationships between working hours and either workload or burnout cannot be established. Nevertheless, our findings suggest that physicians' work patterns should be evaluated not only in terms of total weekly working hours, but also in relation to the number of intensive workdays, time devoted to patient care, night work, opportunities for recovery, and work–life balance.

Physicians who undertook on-call duties had higher total NASA-TLX workload as well as higher personal, work-related, and patient-related burnout scores, suggesting that on-call work is accompanied by substantial cognitive, physical, and psychosocial demands. Among physicians with on-call duties, NASA-TLX scores increased with the number of on-call shifts per month, whereas the CBI dimensions did not differ significantly according to on-call frequency. This pattern may indicate that perceived workload responds more directly to increasing on-call frequency, whereas burnout is a more complex and cumulative process that cannot be explained by the number of on-call shifts alone. The duration of on-call duty, night work, clinical intensity during shifts, opportunities for post-call recovery, sleep quality, and work–life balance may be more important determinants of burnout than shift frequency itself.

Hacimusalar et al., in a study of 1,053 physicians in Türkiye, similarly reported that working night shifts or being on call was associated with all dimensions of burnout and that poor sleep quality was more common among physicians working at night [15]. In the same study, other adverse working conditions, including high patient volume, short consultation times, low income, exposure to violence, and workplace mobbing, were also associated with burnout and poor sleep quality, indicating that the effects of on-call work cannot be considered independently of other psychosocial demands within the work environment [15]. Although our findings are consistent with this study, the absence of a further increase in burnout scores with increasing numbers of on-call

shifts in our sample may suggest that undertaking on-call duty itself exerts a threshold effect, or that unmeasured characteristics such as the duration and intensity of on-call shifts influenced the results. Although the cross-sectional design does not allow us to conclude that on-call work causes burnout, the findings suggest that scheduling policies should consider not only the number of on-call shifts per month, but also shift duration, intensity of night work, and opportunities for post-call recovery.

In our study, total NASA-TLX workload scores were higher among physicians who perceived their economic status as poor, had debt, and had no additional income. In addition, all three CBI dimensions were higher among physicians who perceived their economic status as poor, while personal, work-related, and patient-related burnout scores were all higher among those without additional income. These findings suggest that financial difficulties may represent an important psychosocial stressor associated with both perceived workload and burnout. Financial concerns may limit physicians' ability to reduce working hours or on-call burden, increase the need for additional work, and reduce the time available outside work for rest and psychological recovery. A recent study conducted among physicians and dentists in Türkiye similarly found that low perceived income, inadequate physical working conditions, and insufficient support from non-healthcare personnel were associated with all dimensions of burnout. The same study also reported associations between higher burnout and exposure to violence or mobbing, high patient volume, and night-shift work [18]. These findings are consistent with the clustering of economic difficulties, on-call work, workplace violence, and limited organizational support observed in our study. However, because of the cross-sectional design, financial difficulties cannot be interpreted as a cause of higher workload or burnout; conversely, high levels of burnout and demanding working conditions may also adversely influence physicians' perceptions of their economic circumstances.

When the CBI scores were considered together, work-related burnout had the highest mean score, followed by personal burnout and patient-related burnout. This pattern suggests that fatigue and exhaustion may be more strongly linked to working conditions than to patient contact itself. The lower patient-related burnout score should not be interpreted as indicating that working with patients is unimportant; rather, it may suggest that physicians attribute their exhaustion more strongly to factors such as work organization, time pressure, on-call duties, staffing shortages, administrative burden, and economic conditions than to interactions with patients themselves. This distinction is important for intervention planning. Framing burnout primarily as a problem of individual resilience or patient communication may overlook important organizational determinants. Current evidence indicates that job control, organizational support, team structure, and managerial support are potentially modifiable factors associated with physician burnout [10,12].

The higher personal and work-related burnout scores observed among physicians working in state and Numune hospitals may be related to institutional differences in patient volume, staffing levels, referral burden, work schedules, management practices, and employee autonomy. The finding that NASA-TLX scores were high among physicians working at the university hospital, whereas burnout scores were lower than those observed in state/Numune hospitals, further highlights that workload and burnout are related but distinct constructs. Despite a high workload, academic activities, team support, opportunities for professional development, case diversity, or greater control over work may help limit burnout in some physicians. Conversely, the combination of high job demands, low job control, and insufficient organizational support may increase vulnerability to burnout. Therefore, differences between institutions should be interpreted not simply in terms of which setting is "busier," but within the broader balance between job demands and available resources.

The finding that only 8.6% of participants had submitted a patient safety or medical incident report within the previous 12 months is noteworthy. However, this proportion should not be interpreted as reflecting the true frequency of patient safety incidents, as the occurrence, recognition, and formal reporting of an incident represent distinct processes. Concerns about blame or punishment, fear of damage to professional reputation, complex or time-consuming reporting systems, lack of feedback from managers, and an insufficiently developed non-punitive safety culture may all contribute to low reporting rates.

Although total NASA-TLX scores did not differ significantly between physicians who had and had not submitted an incident report, those who had reported an incident had higher personal, work-related, and patient-related burnout scores. This association may be bidirectional. Involvement in a patient safety incident may lead to guilt, anxiety, loss of self-confidence, repeated recollection of the event, and questioning of professional competence, potentially contributing to the psychological distress described within the "second victim" phenomenon and to greater burnout. Conversely, higher burnout may adversely affect attention, decision-making, and communication, potentially increasing vulnerability to patient safety incidents. In a systematic review and meta-analysis including 170 studies and 239,246 physicians, Hodkinson et al. reported that physician burnout was associated with

approximately twice the odds of involvement in patient safety incidents [19]. Nevertheless, the cross-sectional design of the present study does not allow the direction of this relationship to be established. Moreover, physicians who report incidents should not be assumed to make more errors. Physicians with greater safety awareness or those working in institutions with stronger reporting cultures may simply be more likely to report adverse events. Incident reporting should therefore be considered not as an individual marker of error, but within the broader context of patient safety culture and organizational learning capacity.

Regarding intention to leave, 13.9% of participants reported that they were considering leaving their current job within the next year, while 19.1% were undecided. Thus, approximately one-third of the physicians expressed either a definite or potential intention to leave. Higher NASA-TLX and burnout scores among physicians considering departure, and particularly among those who were undecided, suggest that intention to leave may be associated with prolonged workload, exhaustion, and dissatisfaction with working conditions. However, the finding that some scores were higher in the undecided group than in the “yes” group should be interpreted cautiously. Physicians who remain undecided may be experiencing conflict between continuing to work under high job demands and the professional, economic, and personal consequences of leaving. Nevertheless, without post-hoc comparisons, it cannot be determined which specific groups differed significantly from one another.

In a study by Aiken et al. involving physicians and nurses working in hospitals across six European countries, 29% of physicians reported an intention to leave their current job; poor work–life balance, high burnout, and job dissatisfaction were also common [20]. Better work environments and adequate staffing levels were associated with lower burnout and lower intention to leave. Although this proportion is higher than the definite intention-to-leave rate observed in our study, the overall patterns become more comparable when undecided participants are also considered. Direct comparison of these proportions should nevertheless be made cautiously because of differences in countries, healthcare systems, and measurement approaches.

In a one-year follow-up study of Swedish physicians, Gynning et al. showed that work–private life conflict was associated with subsequent burnout, job dissatisfaction, and thoughts of leaving the profession [14]. Sinsky et al. reported that limited control over patient volume and overall workload was associated with an intention to reduce clinical working hours, whereas limited control over various aspects of work was associated with intention to leave the organization [16]. In addition, a study of 958 physicians in Lombardy demonstrated that burnout was significantly associated with greater intention to leave [21]. These findings support the potential relevance of the high workload and burnout levels observed in our study to physicians’ intentions to remain in their current workplaces. However, because of the cross-sectional design of our study, workload and burnout cannot be interpreted as causes of intention to leave. It is also possible that physicians considering departure perceive their working environment more negatively.

In our study, 67.5% of physicians reported having experienced workplace violence at least once during their professional careers, indicating that violence represents a common occupational risk in medical practice. Physicians who had experienced workplace violence had higher total NASA-TLX workload scores as well as higher personal, work-related, and patient-related burnout scores. These findings suggest that workplace violence is not only a threat to physical safety, but also an important occupational health issue associated with mental workload, employee well-being, and the sustainability of the healthcare workforce. Fear of recurrent violence, heightened vigilance for potential threats in the work environment, and the need for greater caution when communicating with patients or their relatives may increase the cognitive and emotional resources required to perform the same clinical tasks.

A recent review reported that violence against healthcare workers was associated with poorer mental health, burnout, workforce loss, patient safety problems, and medical errors [22]. Similarly, a nationwide network analysis among physicians in training found that workplace violence was interconnected with burnout, depressive symptoms, suicidal ideation, and intention to leave within the same psychosocial network [23]. Together, these findings support the view that workplace violence should not be considered an isolated event, but rather as part of a broader adverse work environment associated with physicians’ psychological well-being and their intention to remain in the profession.

Studies conducted in Türkiye also indicate that workplace violence is a widespread and multidimensional problem in medical practice. In a cross-sectional study of intensive care physicians, the frequency and types of violence experienced during the previous year, together with associated working conditions, were evaluated, demonstrating that the intensive care setting carries a substantial risk of workplace violence for physicians [24]. A recent qualitative study examining the perspectives of managers and physicians in Türkiye further emphasized that violence in healthcare cannot be explained solely by individual patient–physician

conflict, but should be understood in relation to the functioning of the healthcare system, communication problems, managerial practices, and broader social conditions [25]. Accordingly, the lifetime exposure rate of 67.5% observed in our study may be interpreted not merely as a regional characteristic, but as a local manifestation of a broader structural problem within the Turkish healthcare system. However, the fact that verbal and physical violence were not analyzed separately and that exposure was based on lifetime self-report limits direct comparison with studies reporting 12-month prevalence estimates.

One of the most striking findings of the present study was that only 15.5% of physicians who had experienced workplace violence reported receiving adequate support from their institutions, whereas 52.9% reported receiving no adequate support. The generally lower workload and burnout scores among physicians who perceived institutional support as adequate suggest that organizational support may help mitigate the adverse psychological consequences of workplace violence. Being left unsupported after a violent incident may reinforce feelings of injustice, devaluation, insecurity, and alienation from the organization. In contrast, prompt communication from managers, provision of legal and administrative support, reassessment of workplace safety risks, psychological first aid, and mobilization of peer support may help reduce the longer-term consequences of such events. A study evaluating peer support groups for physicians exposed to workplace violence or aggression reported that structured and timely support may be beneficial in reducing outcomes such as isolation, self-blame, and burnout [26].

A recent study conducted among healthcare workers in Türkiye also demonstrated that workplace violence was associated with burnout and professional attitudes [27]. However, before using this study to support statements such as “the majority did not receive managerial support” or “work motivation was substantially reduced,” the full results tables of the article should be reviewed, as the currently accessible records do not confirm these two statements with precise estimates. Therefore, a more cautious interpretation based on the available evidence is that organizational support following workplace violence should be considered not merely as a determinant of employee satisfaction, but as a potentially protective occupational health intervention that may reduce psychological harm, burnout, and disengagement from the profession.

Our findings suggest that interventions aimed at reducing workload and burnout among physicians should not be limited to individual stress-management programs. Priority should be given to reducing excessive working hours and on-call burden, ensuring adequate recovery after on-call duties, aligning patient volume with team capacity, reducing administrative and electronic documentation burden, and increasing physicians’ control over clinical workflow. Prevention of workplace violence should extend beyond increasing the number of security personnel and should include identification of high-risk units, rapid-response systems, effective legal procedures, structured post-incident organizational follow-up, and zero-tolerance policies. With regard to incident reporting, healthcare institutions should promote a non-punitive patient safety culture, provide easily accessible reporting systems, and establish visible feedback mechanisms following submitted reports.

This study has several strengths. The inclusion of a relatively large sample of physicians working across different healthcare institutions, academic positions, and medical specialties enabled comparisons across diverse working environments within the same study. Assessing mental workload across all six NASA-TLX dimensions and burnout across the three distinct CBI dimensions—personal, work-related, and patient-related burnout—allowed both constructs to be examined in greater detail rather than being reduced to single overall scores. In addition, the simultaneous evaluation of economic conditions, working hours, on-call duties, workplace violence, organizational support, incident reporting, and intention to leave broadened the scope of the study.

Nevertheless, the findings should be interpreted in light of several limitations. First, because of the cross-sectional design, causal relationships or temporal directionality among workload, burnout, workplace violence, incident reporting, and intention to leave cannot be established. Second, because of the sampling approach and the single-city setting, the findings may have limited generalizability to physicians working in other regions of Türkiye or to the national physician population as a whole.

Conclusion

In conclusion, this study showed that physicians experienced high levels of perceived mental workload, particularly in the domains of mental demand, effort, temporal demand, and frustration. The relationship between workload and burnout was especially strong for the frustration dimension. Longer working hours, on-call duties, direct patient care, economic difficulties, and exposure to workplace violence were associated with less favorable outcomes, whereas adequate organizational support was associated with lower workload and burnout scores.

The higher burnout levels observed among physicians who submitted incident reports and the greater workload and burnout among those expressing an intention to leave indicate that these problems extend beyond individual worker well-being and may also have implications for patient safety and the sustainability of the healthcare workforce. Accordingly, prevention of physician burnout should move beyond approaches focused primarily on strengthening individual coping capacity and instead prioritize system-level interventions addressing work organization, on-call schedules, job control, economic security, prevention of workplace violence, and organizational support mechanisms.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the Declaration of Helsinki and was approved by the Sivas Cumhuriyet University Non-Interventional Clinical Research Ethics Committee on 05 January 2026 (Decision No. 26709). Informed consent to participate was obtained from all participants prior to their inclusion in the study.

Consent for publication

Not applicable. The manuscript does not contain any individual person's identifiable data, images, or other material requiring consent for publication.

Availability of data and materials

The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

SÇ: Conceptualization, study design, methodology, supervision, data interpretation, drafting of the manuscript, and critical revision of the manuscript. He also served as the corresponding author.

NEK: Methodology, data acquisition, data interpretation, literature review, and substantive revision of the manuscript.

AA: Data acquisition, data curation, statistical analysis, interpretation of the results, and substantive revision of the manuscript.

EHY: Data acquisition, literature review, interpretation of the findings, and substantive revision of the manuscript.

TK: Data acquisition, data curation, literature review, and contribution to drafting and revising the manuscript.

İA: Methodology, statistical analysis, interpretation of data, and critical revision of the manuscript for important intellectual content.

NN: Study design, methodology, interpretation of the findings, supervision, and critical revision of the manuscript.

EHS: Conceptualization, methodology, interpretation of data, supervision, and critical revision of the manuscript for important intellectual content.

All authors made substantial contributions to the work, reviewed and approved the submitted version of the manuscript, and agreed to be personally accountable for their own contributions and to ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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