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Title: Burnout Among Ukrainian Healthcare Workers Amid Prolonged Armed Conflict: A National Cross-Sectional Study

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Conflict of interest

The authors declare no conflict of interest regarding the publication of this paper.

Data sharing statement

Deidentified individual participant data underlying this article and a data dictionary will be available upon reasonable request to the corresponding author at antonivmd@gmail.com. No identifiable participant data or additional study documents will be shared. The data will be available for 5 years following publication. Access will be granted to researchers with a methodologically sound proposal approved by the study investigators and after completion of a signed data access agreement. Data will be shared by secure electronic transfer.

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RESEARCH in CONTEXT

Evidence before this study

We searched PubMed, Scopus, Web of Science, and Embase from database inception to May 1, 2026, with no language restrictions, using combinations of the terms “burnout”, “emotional exhaustion”, “depersonalization”, “personal accomplishment”, “healthcare worker”, “physician”, “nurse”, “Ukraine”, “war”, “armed conflict”, and “conflict-affected”. Previous evidence show that burnout is common among healthcare workers and is associated with workload, staffing shortages, younger career stage, workforce attrition, and poorer patient safety and quality of care. However, evidence from conflict-affected health systems remains limited. In Ukraine, available studies have described burnout before and during the COVID-19 pandemic, and one recent study focused on anesthesiologists during the ongoing full-scale war. We found no national study assessing burnout domains and associated demographic, professional, and workplace factors among Ukrainian healthcare workers during the ongoing full-scale war.

Added value of this study

This study provides national, domain-specific evidence on burnout among Ukrainian healthcare workers during prolonged armed conflict. Among 1,142 respondents, high emotional exhaustion affected more than half of participants, while low personal accomplishment was present in about two-fifths. Emotional exhaustion was associated with age 31-40 years, internal/family medicine and military medicine specialties, and longer workdays, whereas low personal accomplishment was more common among younger clinicians and anesthesiologists. These findings show that burnout in wartime Ukraine is not uniform and that different burnout domains may reflect various patterns of occupational strain.

Implications of all the available evidence

Taken together, the available evidence suggests that burnout among healthcare workers in conflict-affected settings should not be addressed primarily as a problem of individual resilience. Workforce protection in Ukraine should prioritize structural interventions, including staffing stabilization, workload redistribution, protected recovery time, peer support, and longitudinal monitoring of healthcare workers' wellbeing. Future studies should validate Ukrainian-language burnout measures, follow workers over time, and evaluate organization-level interventions adapted to health systems operating under prolonged conflict.

ABSTRACT

Background. Burnout undermines health workforce stability and quality of care, yet data remain limited from conflict-affected health systems, where its burden may be amplified. We assessed burnout prevalence, domains, and associated factors among healthcare workers in wartime Ukraine.

Methods. We conducted a cross-sectional study using a nationwide anonymous web-based survey of Ukrainian healthcare providers (January-February 2025). Burnout was assessed utilizing the Ukrainian-language Maslach Burnout Inventory-Human Services Survey for medical personnel. Outcomes were high emotional exhaustion, high depersonalization, and low personal accomplishment. Logistic regression analysis identified associated demographic, professional, and workplace factors.

Findings. Among 1,142 respondents, 73·1% were attending physicians, 15·1% – residents, and 11·7% – nurses; 83·3% were female and 52·8% were younger than 30 years. High emotional exhaustion was present in 51·4%, high depersonalization in 97·5%, and low personal accomplishment in 40·6%. In adjusted analyses, high emotional exhaustion was associated with age 31-40 years (OR 1·42; 95%CI: 1·05-1·92), internal/family medicine (OR 2·01; 95%CI: 1·40-2·89) and military medicine specialties (OR 7·57; 95%CI: 1·60-35·81), and longer workdays. Nurses had lower odds of high emotional exhaustion than attendings (OR 0·58; 95%CI: 0·39-0·88). Respondents aged 41-50 years had lower odds of high DP (OR 0·30; 95%CI: 0·11-0·82). Low personal accomplishment was less common with older age and more common among anesthesiologists (OR 1·84; 95%CI: 1·16-2·92).

Interpretation. Burnout was highly prevalent among Ukrainian healthcare workers during prolonged armed conflict. Domain-specific risk patterns suggest workforce protection strategies

should prioritize structural interventions for frontline specialties, early-career clinicians, and those working extended hours.

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INTRODUCTION

Burnout among healthcare professionals has escalated into a global occupational health crisis. During the COVID-19 pandemic, more than half of healthcare staff worldwide reported symptoms of burnout. Moreover, the prevalence has remained alarmingly high in the post-pandemic period.¹ In the United States, rates increased by nearly 10 percentage points between 2018 and 2022, demonstrating a worsening trend even in well-resourced health systems.² Burnout not only affects the well-being of healthcare professionals but also poses a direct threat to patient safety and patient experience.³ Extensive evidence confirms the adverse effects of burnout on healthcare delivery. A 2024 umbrella review encompassing 288,581 nurses across 85 studies in 32 countries demonstrated strong associations between burnout and higher rates of nosocomial infections, medication errors, patient falls, and other subsequent events, alongside lower patient satisfaction and perceived quality of care.⁴ Among physicians, this relationship is also well supported, with one meta-analysis showing that burnout was associated with nearly threefold higher odds of self-reported medical errors.³

Multiple individual and organizational factors contribute to burnout. High workloads, staff shortages, long or rotating shifts, and administrative burden are among the most consistent workplace determinants.⁵ Younger age, female sex, fewer years of practice, and limited coping resources further amplify vulnerability.⁶ Burnout drives early retirement and workforce attrition, thereby compounding systemic staffing shortages.² Addressing burnout has become a policy priority, with the World Health Organization recognizing health workforce well-being as a cornerstone of system resilience.⁷ In Ukraine, these challenges are intensified by a combination of chronic underfunding, pandemic-related disruptions, and ongoing wartime pressures on the health system. Preliminary reports indicate a high prevalence of burnout among anesthesiologists during

the current conflict, while earlier studies from 2018-2022 documented burnout syndrome and related symptoms among physicians and nurses across multiple specialties, highlighting COVID-19 and combat-related stressors as important contextual contributors.^{8,9} However, despite extensive international evidence on burnout and its consequences, no comprehensive national study has quantified the prevalence, key domains, and determinants of professional burnout across healthcare professions, institutions, and varying levels of crisis exposure in Ukraine during the ongoing conflict.

This study aimed to provide a large-scale quantitative assessment of professional burnout among Ukrainian healthcare personnel using a validated instrument. Specifically, we assessed the prevalence of burnout, evaluated levels of emotional exhaustion, depersonalization, and personal accomplishment, and identified key demographic, specialty, and institutional predictors under current crisis conditions.

METHODS

Study design and setting

We conducted a nationwide cross-sectional anonymous survey of healthcare professionals in Ukraine using a secure digital data collection platform. The study was designed to capture clinicians practicing across all major geographic regions, reflecting variation in resource availability and wartime workload conditions. The survey was administered digitally using SurveyMonkey (SurveyMonkey Inc., San Mateo, CA, USA) from January to February 2025. Participants were recruited using convenience sampling through Ukrainian-language announcements posted on the Global Medical Knowledge Alliance (GMKA) website and social media channels, including Instagram, Facebook, and LinkedIn, with each post containing a direct

link to the survey. The online format allowed participation from clinicians across varied practice settings, including high-acuity environments (emergency departments, intensive care units, and military medical facilities).

Participants

Eligible participants were healthcare workers 18 years or older working in Ukraine at the time of the survey. Eligibility was based on self-report and could not be independently verified because the survey link was distributed openly. Respondents self-identified their professional role (attending physicians, resident physicians, or nurses). Military medicine specialty was based on self-reported specialty/practice area and may not capture all respondents working in military-affiliated settings. For the analysis, we included respondents who met the self-reported eligibility criteria and completed the burnout questionnaire. Participation was voluntary, and no incentives were provided.

Survey development and translation

Burnout was assessed using the Maslach Burnout Inventory-Human Services Survey (MBI-HSS) for medical personnel, a 22-item validated instrument comprising 3 subscales: Emotional Exhaustion (EE, 9 items), Depersonalization (DP, 5 items), and Personal Accomplishment (PA, 8 items).¹⁰ Items were scored on a 7-point Likert frequency scale (0 = never to 6 = daily). Subscale scores were calculated as the sum of their respective items. The primary modeled outcomes were high EE ($EE \geq 30$), high DP ($DP \geq 12$), and low PA ($PA \leq 33$). Consistent with the intended use of the MBI-HSS, analyses focused on domain-specific outcomes rather than a summed total score, because the subscales reflect distinct aspects of burnout and are not designed to function as a single composite measure.

In addition to the MBI-HSS, the survey collected self-reported demographic and work characteristics, including sex, age group, geographic region, professional role, specialty, hospital type, hospital bed capacity, and typical daily working hours.

The MBI-HSS is in English and thus required translation into Ukrainian language. The Ukrainian-language instrument underwent a multistep linguistic adaptation process: two independent forward translations from English, expert panel reconciliation, and backward translation by a separate translator to verify semantic equivalence.

The adapted Ukrainian-language survey was pilot-tested to assess clarity, comprehension, and usability in a convenience sample of 20 Ukrainian-speaking healthcare workers (attending and resident physicians) residing in Ukraine. Minor wording adjustments were made. Pilot participants were excluded from the analytic dataset.

Ethical considerations

All participants reviewed an online information sheet outlining the study objectives, risks, and confidentiality procedures and provided electronic informed consent. Participation was voluntary and anonymous, and data were stored in a password-protected environment accessible only to the designated data analyst. Given the minimal-risk nature of the anonymous survey, the study was consistent with internationally accepted criteria for exemption from full ethics review for social and behavioral research, including Council for International Organizations of Medical Sciences (CIOMS) guidance.¹¹ Under applicable local regulations, formal institutional review board approval was not required.

Statistical analysis

Respondent characteristics were summarized using counts and percentages. For each burnout outcome (high EE, high DP, and low PA), we fit univariable logistic regression models,

each including a single predictor, and multivariable logistic regression models including all predictors shown in the corresponding table. Unadjusted analyses were used to describe how burnout varied across respondent characteristics, and adjusted models were used to identify factors associated with burnout after accounting for co-occurring demographic and workplace characteristics. Models were estimated using complete-case analysis for included covariates. Because the MBI-HSS is interpreted by domain, and high DP was nearly universal in this sample, composite burnout definitions were reported descriptively rather than modeled as separate dependent variables. Results are reported as odds ratios (ORs) and adjusted odds ratios (aORs) with 95% confidence intervals (CIs). A two-sided P value < 0.05 was considered statistically significant. Analyses were conducted using IBM SPSS Statistics (Version 23.0; Armonk, NY, USA: IBM Corporation).

RESULTS

Respondent characteristics

A total of 1,142 respondents who completed the burnout questionnaire were included in the analysis (Table 1). Due to the open distribution of the survey via multiple channels, a response rate could not be calculated.

Overall, 73.1% (n=835) were attending physicians, 15.1% (n=173) were resident physicians, and 11.7% (n=134) were nurses. Most respondents were female (83.3%, n=951). Based on reported age, 52.8% (n=603) were younger than 30 years, 25.8% (n=295) were aged 31-40 years, 10.8% (n=123) were 41-50 years, and 4.6% (n=53) were older than 50 years.

Respondents across all provider groups represented a broad range of specialties, with internal/family medicine (24.2%, n = 276), surgery (23.2%, n=265), and anesthesiology (14.0%,

n=160) being the most common. Smaller proportions worked in oncology, pediatrics, emergency medicine, and military medicine, while 23·8% (n=272) practiced in other disciplines, including infectious diseases, dermatology, radiology, psychiatry/psychology, neurology, and additional fields such as dentistry and physical therapy. Respondents were drawn from all regions of the country, with the largest shares working in the North (39·3%) and West (30·6%).

Most participants were employed in public urban hospitals (53·2%, n = 607); the remainder worked in private hospitals, public rural hospitals, or research institutions. Hospital capacity was mixed, with 35·3% (n = 403) working in hospitals with fewer than 100 beds, 13·7% (n = 157) in hospitals with 100-200 beds, 25·9% (n=296) in hospitals with 200–500 beds, and 25·0% (n=286) in hospitals with more than 500 beds. Working-hours data were available for 1,079 respondents; among these, 381 (33·4%) reported working 8 hours or less per day, 492 (43·1%) reported 9-12 hours per day, and 206 (18·0%) reported working more than 12 hours per day.

Among 1,142 respondents, 587 (51·4%) met criteria for high EE, 1,113 (97·5%) met criteria for high DP, and 464 (40·6%) met criteria for low PA. Overall burnout prevalence was 97·5% when defined as high EE and/or high DP and 51·4% when defined as concurrent high EE and high DP. Because all respondents with high EE also had high DP, the concurrent composite definition was numerically identical to the EE outcome and was not modeled separately.

Burnout dimensions and factors associated with burnout

High emotional exhaustion

Overall, 587 of 1,142 respondents (51·4%) met criteria for high EE (Table 2). In univariable analyses, high EE was associated with age 31-40 years, internal/family medicine, anesthesiology, military medicine, selected hospital-capacity categories, and working more than 12 hours per day, whereas nurses and clinicians working in private hospitals had lower odds of

EE. In multivariable analysis, high EE was more common among clinicians aged 31-40 years compared with those younger than 30 years (aOR, 1.42; 95% CI, 1.05-1.92; $p=0.024$). Compared with other specialties, internal/family medicine was associated with higher odds of high EE (aOR, 2.01; 95% CI, 1.40-2.89; $p<0.001$), and military medicine showed the strongest association (aOR, 7.57; 95% CI, 1.60-35.81; $p=0.011$). Nurses had lower odds of high EE compared with attending physicians (aOR, 0.58; 95% CI, 0.39-0.88; $p=0.010$). Longer workdays were independently associated with higher odds of EE (9-12 hours/day vs ≤ 8 hours/day: aOR, 1.36; 95% CI, 1.01-1.81; $p=0.041$; >12 hours/day vs ≤ 8 hours/day: aOR, 1.62; 95% CI, 1.08-2.44; $p=0.020$). Sex, region, and hospital type were not significantly associated with high EE after adjustment.

High depersonalization

High DP was present in nearly all respondents, 1,113 of 1,142 (97.5%) (Table 3). In univariable analyses, only age 41-50 years was associated with lower odds of high DP; no other respondent or workplace characteristic showed a statistically significant association. In multivariable analysis, respondents aged 41-50 years had lower odds of high DP compared with those younger than 30 years (aOR, 0.30; 95% CI, 0.11-0.82; $p=0.019$), while sex, region, position, specialty, hospital type, hospital capacity, and working hours were not significantly associated with high DP.

Low personal accomplishment

Criteria for low PA were met by 464 of 1,142 respondents (40.6%) (Table 4). In univariable analyses, lower odds of low PA were observed among older respondents and in surgery and oncology, whereas higher odds were observed in the West and Central regions and specialties like anesthesiology and emergency medicine. In multivariable analysis, low PA was less common among respondents aged 31-40 years (aOR, 0.55; 95% CI, 0.40-0.75; $p<0.001$), 41-50 years (aOR,

0.53; 95% CI, 0.34-0.81; $p=0.004$), and >50 years (aOR, 0.33; 95% CI, 0.17-0.66; $p=0.002$) than among those <30 years. Respondents in the Central region had higher odds of low PA than those in the North (aOR, 1.88; 95% CI, 1.23-2.87; $p=0.004$), as did clinicians in anesthesiology compared with other specialties (aOR, 1.84; 95% CI, 1.16-2.92; $p=0.010$). Sex, position, hospital type, hospital capacity, and working hours were not significantly associated with low PA after adjustment.

DISCUSSION

To the best of our knowledge, this is the first national analysis of burnout among health care professionals in Ukraine that identified severe occupational strain during prolonged armed conflict and showed that the burnout domains may represent different patterns of risk. Among 1,142 respondents, 51.4% met criteria for high emotional exhaustion, 97.5% for high depersonalization, and 40.6% for low personal accomplishment. In adjusted analyses, high EE was independently associated with age 31-40 years, internal/family medicine, military medicine, and longer workdays. Respondents aged 41-50 years had lower odds of high DP, whereas low PA was less common with older age and more common among anesthesiologists. These findings suggest that burnout in this setting should be examined by domain, because each component may capture a different aspect of occupational distress, as reflected in the MBI-HSS framework.^{12,13}

Emotional exhaustion is the most interpretable signal in the burnout literature because it is common in crisis settings and more consistent across measurement approaches. In COVID-19-era meta-analyses, summary EE estimates cluster around one-half of clinicians, with overall burnout estimates in a similar range.¹³ Other large syntheses likewise place EE in the 40% to 50% range across many health workforce samples, supporting the epidemiologic plausibility of our findings

in a high-demand and chronically disrupted system.^{12,14} In wartime Ukraine, EE should be interpreted as a system-level indicator of chronic overload requiring structural, not merely individual, responses.^{12,15,16}

The occupational pattern we observed, particularly the higher burden of EE in internal/family medicine and among those working longer days, is consistent with prior evidence that front-line clinicians absorb both patient volume and system inefficiencies. Large physician surveys show that administrative and electronic health record (EHR)-related work consumes substantial time, especially in primary care, and is independently associated with burnout and lower professional satisfaction.^{15,17} Time-motion studies suggest that clinicians may spend nearly 2 additional hours on EHR and desk work for every hour of direct patient care, a workload structure that likely intensifies exhaustion even when scheduled hours appear fixed.¹⁸ Staffing conditions also appear important, as fully staffed teams have lower burnout odds, whereas turnover and panel overcapacity are associated with higher burnout, supporting the inference that staffing instability under conflict conditions may convert long workdays into sustained emotional depletion.¹⁶ Observational data further show that early-career and primary care physicians are at increased risk of burnout in other settings, suggesting that the specialty pattern observed here is consistent with known occupational risk.^{12,19}

What distinguishes burnout in a wartime setting is the persistence of system threat, as repeated disruption of facilities, transportation, and supply chains shifts workload from simple service volume to care delivered under danger, instability, and constraint. As of May 8, 2026, WHO had verified more than 3,000 attacks on Ukrainian healthcare since the start of the full-scale invasion, affecting healthcare facilities, medical transport, and other components of the system, with deaths and injuries among patients and personnel as well as widespread damage to health

infrastructure.^{20,21} Evidence from other conflict settings shows that attacks on hospitals, siege conditions, and resource scarcity force clinicians to ration care and make repeated impossible decisions, creating a credible pathway to both exhaustion and emotional detachment.^{22,23} In this context, burnout in Ukraine is better understood as a consequence of system disruption and prolonged uncertainty that overlaps with powerlessness, ethical conflict, and loss of meaning, features aligned with moral injury and particularly relevant to DP and low PA.^{24,25}

Psychometric studies suggest that the DP subscale may be less reliable than EE in some healthcare populations, while cross-cultural concerns regarding translated MBI versions make cultural-linguistic response patterns a plausible contributor to the extreme estimates observed here.^{26,27} However, emotional distancing is a recognized psychological adaptation to sustained threat and repeated exposure to suffering, and it has been documented across conflict-affected healthcare workforces.^{22,23} In a setting where clinicians face ongoing attacks on healthcare infrastructure, displacement, resource scarcity, and the moral strain of practicing under conditions that preclude ideal care, widespread depersonalization is not implausible; it may represent a normative defensive response to prolonged, uncontrollable occupational danger.^{22–24,28}

Personal accomplishment appears to behave differently from EE and DP, and the age gradient observed here is best understood as a career-stage pattern. Early training and early professional practice are recognized periods of heightened distress, especially when demands are high, and support is limited, and the association of low PA with attrition and lower job satisfaction in surgical trainees suggests that meaning in work, peer support, and constructive feedback may be important modifiable intervention targets.^{19,29}

The implications for intervention are therefore primarily structural. The strongest synthesis evidence suggests that organization-directed strategies are at least as important as, and often more

effective than, individual-level interventions. Meta-analyses show only modest overall benefit from direct burnout interventions, but greater benefit when interventions target the work environment itself, with some analyses showing effect sizes more than twice as large for organization-level change.³⁰ Observational system data also point to actionable targets consistent with our findings, including adequate staffing, lower turnover, manageable capacity, and greater team continuity.¹⁸ In primary care and related settings, redesign of documentation systems, inbox management, and team-based redistribution of non-visit work are likely to be especially important.^{15,17} Military medicine may also offer scalable models for occupational stress control that could be adapted to resource-constrained systems.²²

Our findings should be interpreted with several limitations. Burnout remains a non-diagnostic entity, prevalence estimates are sensitive to threshold selection, and cross-study comparisons are constrained by heterogeneity in definitions and psychometric instability, particularly for depersonalization.^{26,28} This study also relied on self-reported survey data, which may be subject to response bias. The open, social media-based distribution strategy may have introduced self-selection bias, potentially favoring participation by younger, more digitally connected respondents and those with greater interest in or personal experience with burnout. The high proportion of female respondents may also partly reflect wartime workforce dynamics, including the mobilization or reassignment of many male healthcare workers to military service. In addition, the small number of respondents in some specialty categories, including military medicine, limited the precision of subgroup estimates and precluded more detailed specialty-specific analyses. Cross-cultural psychometric concerns and potentially lower reliability of the depersonalization subscale may also have contributed to the high depersonalization prevalence observed in this conflict-affected population, supporting the need for future Ukrainian studies to

incorporate complementary outcomes and longitudinal designs. Finally, given security and operational sensitivities during the war, the survey did not include a separate military hospital category, limiting our ability to distinguish civilian from military-affiliated healthcare settings. Even so, the availability of national domain-specific data collected amid ongoing attacks on healthcare facilities provides an important empirical foundation for workforce protection strategies as part of Ukraine's health system recovery and reconstruction.^{16,19,21}

CONCLUSION

In the national survey of burnout among Ukrainian health care workers during prolonged armed conflict, more than half of the respondents had high emotional exhaustion, and low personal accomplishment was concentrated among younger clinicians. Although the near-universal prevalence of depersonalization should be interpreted cautiously, the overall pattern is consistent with severe and sustained occupational strain that extends beyond routine workload into the domains of system threat and moral injury. These findings argue against individualizing burnout as a problem of personal resilience and instead support organizational and policy responses focused on the conditions that produce workforce distress. Staffing stabilization, workload redistribution, protected recovery time, and peer-support infrastructure should be considered core strategies. As Ukraine's health system faces reconstruction amid continued conflict, domain-specific burnout data provide an empirical foundation for prioritizing workforce protection as an essential element of health system recovery.

TABLE 1. Characteristics of survey respondents

Variable	Category	N = 1,142
Sex, n (%)	Female	951 (83·3)
	Male	191 (16·7)
Age, years, n (%)	≤ 30	603 (52·8)
	31 – 40	295 (25·8)
	41 – 50	123 (10·8)
	> 50	53 (4·6)
Region, n (%)	North	449 (39·3)
	West	349 (30·6)
	East	150 (13·1)
	Center	131 (11·5)
	South	63 (5·5)
Position, n (%)	Attending physicians	835 (73·1)
	Resident physicians	173 (15·1)
	Nurse	134 (11·7)
Medical specialty, n (%)	Surgery	265 (23·2)
	Anesthesiology	160 (14·0)
	Internal/Family medicine	276 (24·2)
	Pediatrics	57 (5·0)
	Emergency medicine	28 (2·5)
	Oncology	69 (6·0)
	Military medicine	15 (1·3)
	Other specialties*	272 (23·8)
Hospital type, n (%)	Research institution	112 (9·8)
	Public urban hospital	607 (53·2)
	Public rural hospital	146 (12·8)
	Private hospital	277 (24·3)
Hospital capacity, beds, n (%)	< 100	403 (35·3)
	100 – 200	157 (13·7)
	200 – 500	296 (25·9)
	> 500	286 (25·0)
Working hours per day, n (%)	≤ 8	381 (33·4)
	9 – 12	492 (43·1)
	> 12	206 (18·0)

*Other specialties: infectious diseases, dentistry, physical therapy, dermatology, radiology, psychiatry, psychology, and neurology.

TABLE 2. Factors associated with high emotional exhaustion

Factor	Category	High EE, n (%)	Unadjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Sex	Male (ref.)	94 (49.2)	1.00		1.00	
	Female	493 (51.8)	1.11 (0.81 – 1.52)	0.508	1.23 (0.86 – 1.76)	0.248
Age, years	≤ 30 (ref.)	299 (49.6)	1.00		1.00	
	31 – 40	171 (58.0)	1.40 (1.06 – 1.86)	0.018	1.42 (1.05 – 1.92)	0.024
	41 – 50	56 (45.5)	0.85 (0.58 – 1.25)	0.412	0.92 (0.61 – 1.39)	0.691
	> 50	29 (54.7)	1.23 (0.70 – 2.16)	0.474	1.39 (0.76 – 2.55)	0.288
Region	North (ref.)	224 (49.9)	1.00		1.00	
	West	176 (50.4)	1.02 (0.77 – 1.35)	0.879	0.87 (0.64 – 1.19)	0.385
	East	84 (56.0)	1.28 (0.88 – 1.85)	0.195	1.14 (0.76 – 1.71)	0.539
	Center	72 (55.0)	1.23 (0.83 – 1.81)	0.307	0.99 (0.65 – 1.51)	0.971
	South	31 (49.2)	0.97 (0.57 – 1.65)	0.919	0.78 (0.44 – 1.39)	0.404
Position	Attending physician (ref.)	448 (53.7)	1.00		1.00	
	Resident physician	80 (46.2)	0.74 (0.54 – 1.03)	0.076	0.70 (0.48 – 1.03)	0.072
	Nurse	59 (44.0)	0.68 (0.47 – 0.98)	0.039	0.58 (0.39 – 0.88)	0.010
Medical specialty	Other specialties* (ref.)	121 (44.5)	1.00		1.00	
	Internal/Family medicine	169 (61.2)	1.97 (1.40 – 2.77)	<0.001	2.01 (1.40 – 2.89)	<0.001
	Pediatrics	31 (54.4)	1.49 (0.84 – 2.64)	0.174	1.64 (0.89 – 3.00)	0.110
	Surgery	115 (43.4)	0.96 (0.68 – 1.35)	0.799	0.98 (0.67 – 1.44)	0.914
	Anesthesiology	91 (56.9)	1.65 (1.11 – 2.44)	0.013	1.30 (0.83 – 2.05)	0.255
	Military medicine	13 (86.7)	8.11 (1.80 – 36.64)	0.007	7.57 (1.60 – 35.81)	0.011
	Oncology	32 (46.4)	1.08 (0.64 – 1.83)	0.778	0.88 (0.50 – 1.56)	0.668
	Emergency medicine	15 (53.6)	1.44 (0.66 – 3.14)	0.360	1.43 (0.60 – 3.44)	0.423
Hospital type	Research institution (ref.)	62 (55.4)	1.00		1.0	
	Public urban hospital	319 (52.6)	0.89 (0.60 – 1.34)	0.585	0.88 (0.56 – 1.39)	0.584
	Public rural hospital	87 (59.6)	1.19 (0.72 – 1.96)	0.495	1.10 (0.63 – 1.94)	0.731
	Private hospital	119 (43.0)	0.61 (0.39 – 0.95)	0.027	0.64 (0.37 – 1.08)	0.093
Hospital capacity, beds	< 100 (ref.)	185 (45.9)	1.00		1.00	
	100 – 200	93 (59.2)	1.71 (1.18 – 2.49)	0.005	1.68 (1.08 – 2.61)	0.021
	200 – 500	151 (51.0)	1.23 (0.91 – 1.66)	0.182	1.11 (0.76 – 1.64)	0.581
	> 500	158 (55.2)	1.45 (1.07 – 1.97)	0.016	1.20 (0.80 – 1.80)	0.387
Working hours per day	≤ 8 hours (ref.)	179 (47.0)	1.00		1.00	
	9 – 12 hours	258 (52.4)	1.24 (0.95 – 1.63)	0.110	1.36 (1.01 – 1.81)	0.041
	> 12 hours	120 (58.3)	1.57 (1.12 – 2.22)	0.009	1.62 (1.08 – 2.44)	0.020

CI, confidence interval; EE, emotional exhaustion; OR, odds ratio; ref., reference category.

Multivariable models adjusted for all predictors shown in the table.

*Other specialties: infectious diseases, dentistry, physical therapy, dermatology, radiology, psychiatry, psychology, and neurology.

TABLE 3. Factors associated with high depersonalization

Factor	Category	High DP, n (%)	Unadjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Sex	Male (ref.)	188 (98.4)	1.00		1.00	
	Female	925 (97.3)	0.57 (0.17 – 1.89)	0.357	0.40 (0.08 – 1.93)	0.256
Age, years	≤ 30 (ref.)	592 (98.2)	1.00		1.00	
	31 – 40	290 (98.3)	1.08 (0.37 – 3.13)	0.891	1.31 (0.43 – 3.98)	0.634
	41 – 50	115 (93.5)	0.27 (0.11 – 0.68)	0.006	0.30 (0.11 – 0.82)	0.019
	> 50	52 (98.1)	0.97 (0.12 – 7.63)	0.974	1.21 (0.14 – 10.33)	0.861
Region	North (ref.)	438 (97.6)	1.00		1.00	
	West	339 (97.1)	0.85 (0.36 – 2.03)	0.716	0.69 (0.24 – 1.94)	0.480
	East	148 (98.7)	1.86 (0.41 – 8.48)	0.424	1.22 (0.25 – 5.96)	0.810
	Center	127 (96.9)	0.80 (0.25 – 2.55)	0.702	0.67 (0.19 – 2.38)	0.532
	South	61 (96.8)	0.77 (0.17 – 3.54)	0.733	0.44 (0.08 – 2.24)	0.319
Position	Attending physician (ref.)	813 (97.4)	1.00		1.00	
	Resident physician	171 (98.8)	2.31 (0.54 – 9.93)	0.259	1.61 (0.33 – 7.97)	0.558
	Nurse	129 (96.3)	0.70 (0.26 – 1.88)	0.476	0.62 (0.21 – 1.83)	0.392
Medical specialty	Other specialties* (ref.)	263 (96.7)	1.00		1.00	
	Internal/Family medicine	269 (97.5)	1.32 (0.48 – 3.58)	0.592	1.35 (0.45 – 4.04)	0.590
	Pediatrics	57 (100.0)	–	–	–	–
	Surgery	259 (97.7)	1.48 (0.52 – 4.21)	0.465	1.62 (0.40 – 6.54)	0.499
	Anesthesiology	155 (96.9)	1.06 (0.35 – 3.22)	0.917	0.41 (0.10 – 1.63)	0.205
	Military medicine	15 (100.0)	–	–	–	–
	Oncology	68 (98.6)	2.33 (0.29 – 18.68)	0.427	1.55 (0.17 – 13.92)	0.695
	Emergency medicine	27 (96.4)	0.92 (0.11 – 7.57)	0.941	0.40 (0.04 – 4.28)	0.446
Hospital type	Research institution (ref.)	107 (95.5)	1.00		1.00	
	Public urban hospital	597 (98.4)	2.79 (0.94 – 8.32)	0.066	3.14 (0.84 – 11.74)	0.088
	Public rural hospital	143 (97.9)	2.23 (0.52 – 9.53)	0.280	4.01 (0.60 – 26.65)	0.151
	Private hospital	266 (96.0)	1.13 (0.38 – 3.33)	0.825	1.38 (0.34 – 5.62)	0.657
Hospital capacity, beds	< 100 (ref.)	388 (96.3)	1.00		1.00	
	100 – 200	153 (97.5)	1.48 (0.48 – 4.53)	0.493	3.74 (0.44 – 31.89)	0.227
	200 – 500	291 (98.3)	2.25 (0.81 – 6.26)	0.120	1.28 (0.35 – 4.62)	0.708
	> 500	281 (98.3)	2.17 (0.78 – 6.05)	0.137	1.24 (0.32 – 4.81)	0.753
Working hours per day	≤ 8 hours (ref.)	369 (96.9)	1.00		1.00	
	9 – 12 hours	483 (98.2)	1.75 (0.73 – 4.19)	0.212	1.82 (0.71 – 4.67)	0.212
	> 12 hours	202 (98.1)	1.64 (0.52 – 5.16)	0.396	1.85 (0.46 – 7.40)	0.387

CI, confidence interval; HD, high depersonalization; OR, odds ratio; ref., reference category.

Multivariable models adjusted for all predictors shown in the table. Dashes indicate ORs that were not estimable because of complete separation.

*Other specialties: infectious diseases, dentistry, physical therapy, dermatology, radiology, psychiatry, psychology, and neurology.

TABLE 4. Factors associated with low personal accomplishment

Factor	Category	Low PA, n (%)	Unadjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Sex	Male (ref.)	78 (40·8)	1·00		1·00	
	Female	386 (40·6)	0·99 (0·72 – 1·36)	0·949	0·88 (0·61 – 1·28)	0·509
Age, years	≤ 30 (ref.)	285 (47·3)	1·00		1·00	
	31 – 40	94 (31·9)	0·52 (0·39 – 0·70)	<0·001	0·55 (0·40 – 0·75)	<0·001
	41 – 50	41 (33·3)	0·56 (0·37 – 0·84)	0·005	0·53 (0·34 – 0·81)	0·004
	> 50	13 (24·5)	0·36 (0·19 – 0·69)	0·002	0·33 (0·17 – 0·66)	0·002
Region	North (ref.)	162 (36·1)	1·00		1·00	
	West	156 (44·7)	1·43 (1·08 – 1·91)	0·014	1·30 (0·94 – 1·78)	0·110
	East	57 (38·0)	1·09 (0·74 – 1·59)	0·673	1·15 (0·76 – 1·75)	0·505
	Center	68 (51·9)	1·91 (1·29 – 2·83)	0·001	1·88 (1·23 – 2·87)	0·004
	South	21 (33·3)	0·89 (0·51 – 1·55)	0·670	0·84 (0·46 – 1·55)	0·575
Position	Attending physician (ref.)	318 (38·1)	1·00		1·00	
	Resident physician	86 (49·7)	1·61 (1·16 – 2·23)	0·005	1·41 (0·95 – 2·08)	0·086
	Nurse	60 (44·8)	1·32 (0·91 – 1·90)	0·141	1·42 (0·94 – 2·13)	0·092
Medical specialty	Other specialties* (ref.)	110 (40·4)	1·00		1·00	
	Internal/Family medicine	120 (43·5)	1·13 (0·81 – 1·59)	0·471	1·09 (0·76 – 1·57)	0·641
	Pediatrics	22 (38·6)	0·93 (0·52 – 1·66)	0·796	0·92 (0·50 – 1·71)	0·793
	Surgery	84 (31·7)	0·68 (0·48 – 0·97)	0·035	0·69 (0·46 – 1·03)	0·066
	Anesthesiology	86 (53·8)	1·71 (1·15 – 2·54)	0·008	1·84 (1·16 – 2·92)	0·010
	Military medicine	6 (40·0)	0·98 (0·34 – 2·84)	0·973	0·93 (0·29 – 2·91)	0·895
	Oncology	18 (26·1)	0·52 (0·29 – 0·94)	0·030	0·65 (0·34 – 1·22)	0·183
	Emergency medicine	18 (64·3)	2·65 (1·18 – 5·96)	0·018	2·29 (0·92 – 5·72)	0·074
Hospital type	Research institution (ref.)	39 (34·8)	1·00		1·00	
	Public urban hospital	256 (42·2)	1·37 (0·90 – 2·08)	0·147	1·36 (0·84 – 2·19)	0·208
	Public rural hospital	63 (43·2)	1·42 (0·85 – 2·36)	0·176	1·22 (0·68 – 2·18)	0·501
	Private hospital	106 (38·3)	1·16 (0·73 – 1·83)	0·525	1·00 (0·57 – 1·74)	0·994
Hospital capacity, beds	< 100 (ref.)	171 (42·4)	1·00		1·00	
	100 – 200	59 (37·6)	0·82 (0·56 – 1·19)	0·295	0·80 (0·51 – 1·25)	0·325
	200 – 500	118 (39·9)	0·90 (0·66 – 1·22)	0·496	0·72 (0·49 – 1·07)	0·104
	> 500	116 (40·6)	0·93 (0·68 – 1·26)	0·623	0·72 (0·47 – 1·09)	0·117
Working hours per day	≤ 8 hours (ref.)	160 (42·0)	1·00		1·00	
	9 – 12 hours	179 (36·4)	0·79 (0·60 – 1·04)	0·092	0·79 (0·58 – 1·06)	0·116
	> 12 hours	96 (46·6)	1·21 (0·86 – 1·70)	0·283	0·83 (0·55 – 1·26)	0·389

CI, confidence interval; OR, odds ratio; PA, personal accomplishment; ref., reference category.

Multivariable models adjusted for all predictors shown in the table.

*Other specialties: infectious diseases, dentistry, physical therapy, dermatology, radiology, psychiatry, psychology, and neurology.

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