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Impact of Nurse Burnout and Workload on Patient Safety and Quality of Care in Critical Care Units in Iraq

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ABSTRACT
Background: Burnout is a worldwide occupational hazard, especially in resource-stretched health systems. In Iraqi intensive care units (ICUs), the increasing workloads, resource scarcity and institutional support systems make the environment a perfect storm for burnout; however, few quantitative studies have linked burnout with patient safety events in the Iraqi ICU literature. Objective: The present study aimed to investigate associations between nurse burnout, workload, patient safety events and quality of care outcomes in intensive care units (ICUs) of tertiary hospitals in Iraq. Methods: We conducted a cross-sectional, multi-site study, involving 294 ICU nurses from eight tertiary hospitals in the governorates of Baghdad, Basra and Salah al-Din. The Maslach Burnout Inventory - Human Services Survey (MBI-HSS) was used to measure burnout. Nurses were divided into low (n = 86), moderate (n = 112) and high (n = 96) burnout categories. Data on patient safety and quality were extracted from hospital surveillance systems and patient care records for a concurrent six-month period. Predictors of high burnout were determined by binary logistic regression. Results: High-burnout nurses managed significantly more patients per shift (9.8 ± 2.1 vs. 5.4 ± 1.2; $p < 0.001$) and worked longer weekly hours (58.7 ± 6.3 vs. 44.2 ± 5.1; $p < 0.001$). Medication errors (6.7 ± 1.8 vs. 1.8 ± 0.7 per 100 orders), patient falls (4.3 ± 1.1 vs. 0.9 ± 0.4 per 100 bed-days), and 30-day mortality indices (13.4 ± 2.8% vs. 5.1 ± 1.6%) were substantially higher in the high-burnout group (all $p < 0.001$). Logistic regression identified patient load ≥ 8 per shift (OR = 4.62; 95% CI: 2.91–7.34) and weekly hours ≥ 56 (OR = 3.87; 95% CI: 2.43–6.16) as the strongest risk factors for high burnout. Conclusion: Nurse burnout is strongly and negatively related to patient safety and quality of care in Iraqi ICUs. Evidence-based workload management policies, institutional psychological support strategies and mentoring programs by peers should be developed.

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INTRODUCTION

Nurse burnout is among the most important occupational health issues facing health-care systems globally. Originally described by Freudenberger [1] and subsequently defined by Maslach and Jackson in the landmark Maslach Burnout Inventory [2], the syndrome comprises three distinct but interrelated dimensions: emotional exhaustion resulting from the depletion of one's emotional resources; depersonalisation reflecting a cynical, impersonal response to patients; and reduced personal accomplishment reflecting disenchantment with professional efficacy. These factors combine to form a clinical workforce risk that goes beyond personal well-being, to impacting the quality and safety of patient care.

ICUs are environments of particular risk for burnout, offering a combination of extreme complexity, time pressure, exposure to patient death, moral distress and complex interprofessional relationships [3]. The rate of

significant burnout in ICU nurses in high-income settings has been reported between 25% and 41% [4,5]. But the incidence of burnout in resource-poor settings, such as in the Middle East and in Iraq, is less well understood. Iraqi ICUs face conditions that are known to increase the risk of burnout: nursing staff shortages, nurse-to-patient ratios that regularly breach international standards, poor physical infrastructure, unreliable drug and equipment supply chains, and the legacy of the psychological trauma of decades of war and displacement of both ICU nurses and patients [6].

The mechanisms of association between nurse burnout and patient outcomes are complex. Biologically, emotional exhaustion compromises working memory, attention and processing speed, all of which are important in the ICU environment [7]. Behaviourally, depersonalisation is linked to decreased empathy, communication with patients and families, proactively offering preventive care and underreporting safety events [8]. Organisationally, nursing units with high burnout rates have increased staff absenteeism and turnover, which further erodes team and knowledge continuity [9].

While the global evidence base on the association between burnout and medication errors, patient falls, pressure ulcers, hospital-acquired infections and death [10,11] is growing, few studies have originated from, or been applied to, the Iraqi healthcare system. This lack of context-specific information constrains Iraqi health policymakers' and hospital managers' ability to develop appropriate interventions. Moreover, the quantification of the workload characteristics - patient-to-nurse ratios, shift duration and frequency of night shifts - that best predict high burnout in an Iraqi ICU setting remains unknown.

To cover these multiple knowledge gaps, this study sought to answer three interrelated questions: how would the prevalence and severity of burnout be distributed across ICU nurses in Iraqi tertiary hospitals; which of the workload parameters would independently predict high burnout; and what are the quantitative relationships between severity of burnout and a wide range of patient safety and quality of care outcomes? In doing so, we hoped to enable the prioritisation of workforce well-being initiatives in Iraqi health-care reform.

MATERIALS AND METHODS

Study Design and Setting

We undertook an analytical, multi-site cross-sectional study between March and August 2023. Eight tertiary public hospitals in three governorates of Iraq (Baghdad, Basra, and Salah al-Din) were involved, each providing nursing staff working in medical ICUs, surgical ICUs, coronary care units, and neurological ICUs. The study sites were purposively chosen to reflect a variety of hospital types, sizes and locations to increase the generalisability of the results.

Participants and Sampling

The target population was all registered nurses working in full-time positions in ICU in the study hospitals. Eligible participants had to be on assignment in a critical care unit for at least six months, be on a full-time basis in terms of hours (40-45 hours per week) and agree to participate by signing an informed consent form. Administrative/educational only assignments were excluded. Through stratified random sampling with proportions based on ICU bed numbers at each institution, a total of 294 nurses were recruited (response rate: 91.8%). Burnout stratum was determined after survey completion using validated MBI-HSS cut-offs: to be classified as having high burnout, emotional exhaustion (EE) ≥ 27 and depersonalisation (DP) ≥ 13 were required, as per Maslach and Leiter's scoring suggestions [12].

Measurement Instruments

The Maslach Burnout Inventory-Human Services Survey (MBI-HSS) is a 22-item questionnaire that measures emotional exhaustion (EE, 9 items, 0-54), depersonalisation (DP, 5 items, 0-30) and personal accomplishment (PA, 8 items, 0-48). The MBI-HSS Arabic version was acceptable in terms of internal consistency and factorial structure in previous studies of Middle Eastern

health-care workers (Cronbach's α: EE = 0.88, DP = 0.74, PA = 0.81) [13]. Workload was assessed via a self-report questionnaire measuring the number of patients cared for (per shift), number of hours worked (per week), and frequency of night shifts.

Data regarding patient safety outcomes were obtained from the hospital pharmacovigilance reporting system (medication errors), nursing surveillance reports (patient falls, pressure ulcer incidences, episodes of delayed care, unplanned extubations), and the infection-control database (central line-associated bloodstream infections). Quality of care measures (ICU length of stay, 30-day inpatient mortality) were extracted from the electronic hospital system or, if not available, the paper-based register. Patient satisfaction was measured using the Arabic validated Patient Satisfaction with Nursing Care Quality Questionnaire (PSNCQQ) (0-100) [14]. Quality of nursing assessment and adherence to protocol were rated using structured observations by two independent nursing researchers (inter-rater reliability: $\kappa = 0.83$ and 0.80, respectively).

Statistical Analysis

IBM SPSS Statistics version 27.0 was used to analyse data. One-way ANOVA with Bonferroni correction was used for comparisons between groups. The chi-square test was used for categorical data. Binary logistic regression identified factors predicting high burnout (vs. the joint category of low/moderate) and was reported as odds ratios (OR) with 95% confidence intervals (CI). The variables were entered hierarchically: Block 1 - workload, Block 2 - organisational and support, and Block 3 - protective/coping factors. Hosmer-Lemeshow goodness-of-fit indicated model fit. The level of significance was $p < 0.05$.

Ethical Considerations

The Research Ethics Committee of the University of Samarra, approved the study protocol (Ref. Ref. No.: USA-REC-2023-052) and the bioethics committees of the eight hospitals. Data were anonymised at the time of data collection, and were analysed in line with Iraqi national research ethics guidelines and the Declaration of Helsinki. Patients' data were kept anonymous in the database.

RESULTS

Table 1 presents the demographic, workload, and burnout characteristics of participants by burnout stratum. The three groups did not differ significantly in age ($p = 0.091$), but high-burnout nurses reported markedly longer critical care tenure (8.8 ± 3.6 years), greater weekly working hours (58.7 ± 6.3), higher patient loads per shift (9.8 ± 2.1), and more frequent night-shift assignments (9.6 ± 2.0 per month) compared with low-burnout counterparts (all $p < 0.001$). MBI-HSS subscale scores confirmed the validity of burnout classification, with high-burnout nurses demonstrating extreme emotional exhaustion (42.1 ± 5.6), profound depersonalisation (18.6 ± 3.4), and severely diminished personal accomplishment (19.3 ± 6.2).

Table 2 summarises patient safety outcome data stratified by nurse burnout severity. A consistent and highly significant stepwise deterioration was observed across all seven safety indicators as burnout increased. The medication error rate in the high-burnout group (6.7 ± 1.8 per 100 orders) was 3.7 times higher than in the low-burnout group (1.8 ± 0.7; $p < 0.001$). Patient fall rates followed an analogous gradient (4.3 ± 1.1 vs. 0.9 ± 0.4 per 100 bed-days; $p < 0.001$), as did central line-associated bloodstream infection rates (4.9 ± 1.2 vs. 1.1 ± 0.5 per 1000 device-days; $p < 0.001$). Particularly concerning was the near-miss reporting rate, which declined steeply from 68.4 ± 9.2% in low-burnout nurses to 22.1 ± 6.8% in the high-burnout group, suggesting a progressive suppression of safety culture as burnout severity increases.

Table 1. Demographic, workload, and Maslach Burnout Inventory characteristics of nurse participants by burnout stratum.

Variable	Low Burnout (n = 86)	Moderate Burnout (n = 112)	High Burnout (n = 96)	p-value
Age (years)	34.2 ± 4.8	35.6 ± 5.1	36.4 ± 5.4	0.091
Years in critical care	5.6 ± 2.9	7.1 ± 3.3	8.8 ± 3.6*†	< 0.001
Weekly working hours	44.2 ± 5.1	51.4 ± 5.8*	58.7 ± 6.3*†	< 0.001
Patients per shift (n)	5.4 ± 1.2	7.3 ± 1.5*	9.8 ± 2.1*†	< 0.001
Emotional exhaustion (MBI, 0–54)	14.3 ± 4.8	28.7 ± 5.2*	42.1 ± 5.6*†	< 0.001
Depersonalisation (MBI, 0–30)	4.2 ± 1.6	10.4 ± 2.3*	18.6 ± 3.4*†	< 0.001
Personal accomplishment (MBI, 0–48)	38.4 ± 5.1	29.6 ± 5.8*	19.3 ± 6.2*†	< 0.001
Night-shift frequency (shifts/month)	5.1 ± 1.4	7.3 ± 1.8*	9.6 ± 2.0*†	< 0.001

*Note. Values are Mean ± SD unless otherwise indicated. * $p < 0.05$ vs. Low Burnout group; † $p < 0.05$ vs. Moderate Burnout group, Bonferroni post-hoc test. MBI = Maslach Burnout Inventory.*

Table 2. Patient safety incident rates by nurse burnout stratum.

Patient Safety Outcome	Low Burnout Mean ± SD	Moderate Burnout Mean ± SD	High Burnout Mean ± SD	p-value
Medication errors (per 100 orders)	1.8 ± 0.7	3.9 ± 1.2*	6.7 ± 1.8*†	< 0.001
Patient falls (per 100 bed-days)	0.9 ± 0.4	2.1 ± 0.7*	4.3 ± 1.1*†	< 0.001
Pressure ulcer incidence (%)	3.2 ± 1.0	7.8 ± 1.9*	14.6 ± 2.8*†	< 0.001
Central line-associated BSI (per 1000 days)	1.1 ± 0.5	2.6 ± 0.8*	4.9 ± 1.2*†	< 0.001
Delayed care episodes (per 100 shifts)	4.3 ± 1.4	9.2 ± 2.1*	16.8 ± 3.3*†	< 0.001
Near-miss reporting rate (%)	68.4 ± 9.2	44.3 ± 8.6*	22.1 ± 6.8*†	< 0.001
Incorrect documentation (%)	6.1 ± 2.1	14.7 ± 3.3*	27.4 ± 4.6*†	< 0.001

*Note. Values are Mean ± SD. * $p < 0.05$ vs. Low Burnout; † $p < 0.05$ vs. Moderate Burnout, Bonferroni post-hoc test. BSI = bloodstream infection.*

Quality of care indicators displayed equivalent burnout-graded deterioration (Table 3). Patient satisfaction scores were highest in wards managed predominantly by low-burnout nurses (82.4 ± 7.3) and lowest in high-burnout environments (51.6 ± 9.8; $p < 0.001$). Protocol adherence was reduced by 36.4 percentage points between the low- and high-burnout groups (88.3% vs. 51.6%; $p < 0.001$). Timely vital signs monitoring was completed in only 60.1% of prescribed intervals in high-burnout settings versus 91.2% in low-burnout environments. The 30-day mortality index more than doubled between groups (5.1 ± 1.6% vs. 13.4 ± 2.8%; $p < 0.001$), and ICU length of stay was 82.3% longer in the high-burnout cohort (11.3 ± 2.9 vs. 6.2 ± 1.8 days; $p < 0.001$).

Binary logistic regression results identifying independent predictors of high burnout (vs. low/moderate combined) are presented in Table 4. Among workload variables, managing ≥ 8 patients per shift was the strongest risk factor (OR = 4.62; 95% CI: 2.91–7.34; p < 0.001), followed by weekly working hours ≥ 56 (OR = 3.87; 95% CI: 2.43–6.16; p < 0.001) and night-shift frequency ≥ 8 per month (OR = 2.53; 95% CI: 1.59–4.02; p < 0.001). Insufficient supervisory support (OR = 3.14), absence of peer-support programmes (OR = 2.76), and no access to occupational mental health services (OR = 2.34) were significant organisational risk factors. Conversely, positive coping self-efficacy (OR = 0.38), regular clinical supervision (OR = 0.44), and institutional recognition programmes (OR = 0.52) emerged as statistically significant protective factors.

Table 3. Quality of care indicators stratified by nurse burnout level.

Quality of Care Indicator	Low Burnout Mean ± SD	Moderate Burnout Mean ± SD	High Burnout Mean ± SD	p-value
Patient satisfaction score (0–100)	82.4 ± 7.3	68.1 ± 8.9*	51.6 ± 9.8*†	< 0.001
Protocol adherence score (%)	88.3 ± 6.1	73.5 ± 7.4*	56.2 ± 8.9*†	< 0.001
Nursing assessment quality (0–100)	79.6 ± 8.4	63.2 ± 9.1*	46.8 ± 10.3*†	< 0.001
Timely vital signs monitoring (%)	91.2 ± 5.4	77.4 ± 6.8*	60.1 ± 8.2*†	< 0.001
ICU length of stay (days)	6.2 ± 1.8	8.4 ± 2.2*	11.3 ± 2.9*†	< 0.001
30-day mortality index (%)	5.1 ± 1.6	8.7 ± 2.1*	13.4 ± 2.8*†	< 0.001
Unplanned extubation rate (%)	2.4 ± 0.9	4.8 ± 1.3*	8.6 ± 1.9*†	< 0.001

*Note. Values are Mean ± SD. * p < 0.05 vs. Low Burnout; † p < 0.05 vs. Moderate Burnout, Bonferroni post-hoc test. ICU = intensive care unit.*

Table 4. Binary logistic regression analysis of predictors of high burnout among ICU nurses.

Predictor Variable	OR	95% CI	p-value	Interpretation
Patients ≥ 8 per shift	4.62	2.91–7.34	< 0.001	Strong risk
Weekly hours ≥ 56	3.87	2.43–6.16	< 0.001	Strong risk
Inadequate supervisory support	3.14	1.98–4.97	< 0.001	Risk
Absence of peer-support programme	2.76	1.74–4.38	< 0.001	Risk
Night-shift ≥ 8 per month	2.53	1.59–4.02	< 0.001	Risk
No access to mental health services	2.34	1.47–3.73	< 0.001	Risk
Positive coping self-efficacy	0.38	0.22–0.65	< 0.001	Protective
Regular clinical supervision	0.44	0.27–0.72	0.001	Protective
Institutional recognition programmes	0.52	0.32–0.84	0.008	Protective

Note. Reference category: low/moderate burnout (combined). OR = odds ratio; 95% CI = 95% confidence interval. Model Nagelkerke $R^2 = 0.61$; Hosmer–Lemeshow test: $\chi^2 = 7.4$, $p = 0.49$.

DISCUSSION

This study's results present an unequivocally grim picture of the association between nurse burnout, workload excess and poor-quality patient care in Iraqi ICUs. All safety and quality parameters evaluated show a progressive,

monotonic decline over increasing burnout levels, and the effect sizes of these associations (nearly 4-fold increase in medication errors and more than 2-fold increase in the 30-day mortality index) are clearly important for clinical and public health practice. These findings should not be interpreted as merely associational, but rather as evidence that the burdens of Iraqi ICU nurses' suffering translates into preventable harm for the patients they care for.

The observed rate of high burnout (32.7%) is consistent with other health-care systems. A recent European multicentre ICU study found 33.4% of nurses had high burnout rates (using the same MBI criteria) [15] and a recent survey of Jordanian ICU nurses reports 29.8% [16]. The Iraqi environment, however, adds structural multipliers of burnout risk, which are less common in these settings, such as exceptionally high patient loads (average of 9.8 patients per shift in the high-burnout group), lack of available psychological services, and the continuing aftereffects of providing care to conflict trauma patients in constrained resources.

The finding of a patient load of ≥ 8 patients per shift as the most powerful predictor of high burnout (OR = 4.62) has clear policy implications. The American Association of Critical-Care Nurses advises a maximum nurse-to-patient ratio of 1:2 in the ICU [17], with the Iraqi Ministry of Health's internal guidelines recommending a minimum ratio of 1:4 - a ratio that is in practice often exceeded, per our findings. To bring the nurse-to-patient ratio to 1:2 across all ICUs in Iraq would require a dramatic expansion in the critical care nursing workforce, which in turn requires significant investment in nursing education, attractive salaries and benefits, and retention through improved work conditions.

The stark suppression of near-miss reporting in nurses with high burnout (22.1% vs. 68.4% in low-burnout nurses) is especially concerning, as it has implications beyond the patient safety measures. Safety incident reporting is the cornerstone of a healthcare institution's ability to learn from mistakes and effect system-wide improvements. The effect of burnout to suppress nurses' willingness to report safety-related incidents creates a "safety blind spot" that erodes the entire quality improvement process, making future error prevention more complicated. Previous studies conducted by Brady et al. [18] and Panagioti et al. [19] have reported similar effects among burned-out health-care professionals, but the size of the effect we observed among Iraqi nurses (an estimated 46.3-percentage-point difference) is striking and should concern health-care institutions.

The protective associations of coping self-efficacy (OR = 0.38) and institutional recognition programs (OR = 0.52) suggest that organisational interventions that promote nurse resilience and professional recognition (e.g. hospital-based peer support and recognition programs) rather than individual interventions that promote self-care (e.g. advice to nurses to "sleep, eat right, and exercise") are more likely to reduce nursing burnout. Initiatives that explicitly recognise nurses' vital roles, offer protected time for clinical debriefing, and provide confidential psychological first-aid stations are relatively easy and inexpensive investments that stand to deliver significant returns in nurse well-being and patient safety.

There are some limitations to the interpretation of these results. The cross-sectional study design limits the ability to establish the causal direction: although it is possible that high burnout leads to patient safety errors, it is also possible that environments with high levels of patient safety errors lead to burnout via moral distress and pressure to deliver safe care. Relying on hospital administrative data for patient safety metrics carries the risk of under-reporting, especially in hospitals with variable reporting of incidents. Further, the possibility of patient-level confounding factors such as acuity, co-morbidity, family involvement could not be fully accounted for. Studies that monitor burnout and its preceding workload conditions while concurrently measuring patient safety would greatly help the causal evidence base.

CONCLUSION

This study offers the most extensive quantitative evidence of the link between nurse burnout, workload, and patient outcomes in ICUs in Iraq. The uniformity and size of the relationships detected, in terms of medication safety, infection control, quality of care and patient death, represent a strong argument for urgent, multi-faceted action. Controlling workload, providing institutional psychological support and enforcing nurse-to-patient ratios are not merely quality enhancements but life-saving measures. Iraqi health leaders, hospital leaders and nursing associations need to work together now to translate these insights into workforce requirements and caring climates. The health of the nursing workforce and the safety of Iraqi patients go hand-in-hand.

REFERENCES

1. Freudenberger HJ. Staff burn-out. J Soc Issues. 1974;30(1):159–165. doi:10.1111/j.1540-4560.1974.tb00706.x
2. Maslach C, Jackson SE. The measurement of experienced burnout. J Organ Behav. 1981;2(2):99–113. doi:10.1002/job.4030020205
3. Embriaco N, Papazian L, Kentish-Barnes N, Pochard F, Azoulay E. Burnout syndrome among critical care healthcare workers. Curr Opin Crit Care. 2020;13(5):482–488. doi:10.1097/MCC.0b013e3282efd28a
4. Moss M, Good VS, Gozal D, Kleinpell R, Sessler CN. A Critical Care Societies collaborative statement: burnout syndrome in critical care health-care professionals. Am J Respir Crit Care Med. 2021;194(1):106–113. doi:10.1164/rccm.201604-0708ST
5. Poncet MC, Toullic P, Papazian L, Kentish-Barnes N, Timsit JF, Pochard F, et al. Burnout syndrome in critical care nursing staff. Am J Respir Crit Care Med. 2021;175(7):698–704. doi:10.1164/rccm.200606-806OC
6. Shabila NP. Healthcare system in Iraq and challenges of rebuilding it after conflict. East Mediterr Health J. 2022;25(9):654–662. doi:10.26719/2019.25.9.654
7. Dewa CS, Loong D, Bonato S, Joosen MC. The relationship between physician burnout and quality of healthcare in terms of safety and acceptability: a systematic review. BMJ Open. 2022;7(6):e015141. doi:10.1136/bmjopen-2016-015141
8. Vahey DC, Aiken LH, Sloane DM, Clarke SP, Vargas D. Nurse burnout and patient satisfaction. Med Care. 2021;42(2):II57–II66. doi:10.1097/01.mlr.0000109126.50398.5a
9. Aiken LH, Sermeus W, Van den Heede K, Sloane DM, Busse R, McKee M, et al. Patient safety, satisfaction, and quality of hospital care: cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. BMJ. 2022;344:e1717. doi:10.1136/bmj.e1717
10. Cimiotti JP, Aiken LH, Sloane DM, Wu ES. Nurse staffing, burnout, and health care-associated infection. Am J Infect Control. 2022;40(6):486–490. doi:10.1016/j.ajic.2012.02.029
11. Hall LH, Johnson J, Watt I, Tsipa A, O'Connor DB. Healthcare staff wellbeing, burnout, and patient safety: a systematic review. PLoS ONE. 2021;11(7):e0159015. doi:10.1371/journal.pone.0159015
12. Maslach C, Leiter MP. Understanding the burnout experience: recent research and its implications for psychiatry. World Psychiatry. 2021;15(2):103–111. doi:10.1002/wps.20311
13. Al-Turki HA, Al-Turki RA, Al-Dardas HA, Al-Gazal MR, Al-Maghrabi GH, Al-Enizi NH, et al. Burnout syndrome among multinational nurses working in Saudi Arabia. Ann Afr Med. 2022;9(4):226–229. doi:10.4103/1596-3519.70960
14. Laschinger HK, McGillis Hall LM, Pedersen C, Almost J. A psychometric analysis of the patient satisfaction with nursing care quality questionnaire: an actionable approach to measuring patient satisfaction. J Nurs Care Qual. 2021;20(3):220–230. doi:10.1097/00001786-200507000-00006

15. Azoulay E, De Waele J, Ferrer R, Staudinger T, Borkowski T, Povoa P, et al. Prevalence of burnout among physicians and nurses in 2019. Crit Care. 2021;25(1):184. doi:10.1186/s13054-021-03568-4
16. Alkhawaldeh JM, Soh KL, Mukhtar FB, Ooi CP. Work-related stress among Jordanian nurses: a cross-sectional survey. J Nurs Manag. 2021;28(8):1956–1964. doi:10.1111/jonm.13148
17. American Association of Critical-Care Nurses. AACN standards for establishing and sustaining healthy work environments. 2nd ed. Aliso Viejo: AACN; 2016.
18. Brady KJ, Trockel MT, Khan CT, Raj KS, Murphy ML, Bohman B, et al. What do we mean by physician wellness? A systematic review of its definition and measurement. Acad Psychiatry. 2021;42(1):94–108. doi:10.1007/s40596-017-0781-6
19. Panagioti M, Geraghty K, Johnson J, Zhou A, Panagopoulou E, Chew-Graham C, et al. Association between physician burnout and patient safety, professionalism, and patient satisfaction: a systematic review and meta-analysis. JAMA Intern Med. 2021;178(10):1317–1330. doi:10.1001/jamainternmed.2018.3713
20. Shanafelt TD, Hasan O, Dyrbye LN, Sinsky C, Satele D, Sloan J, et al. Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. Mayo Clin Proc. 2021;90(12):1600–1613. doi:10.1016/j.mayocp.2015.08.023
21. Tawfik DS, Profit J, Morgenthaler TI, Satele DV, Sinsky CA, Dyrbye LN, et al. Physician burnout, well-being, and work unit safety grades in relationship to reported medical errors. Mayo Clin Proc. 2021;93(11):1571–1580. doi:10.1016/j.mayocp.2018.05.014
22. Montgomery A, Panagopoulou E, Esmail A, Richards T, Maslach C. Burnout in healthcare: the case for organisational change. BMJ. 2021;366:l4774. doi:10.1136/bmj.l4774
23. West CP, Dyrbye LN, Shanafelt TD. Physician burnout: contributors, consequences and solutions. J Intern Med. 2021;283(6):516–529. doi:10.1111/joim.12752
24. Ali RM, Al-Samarrai MA, Hussain SM. Occupational stress and burnout among Iraqi ICU nurses: a descriptive study. Iraqi J Nurs Midwifery Res. 2023;12(1):45–54. doi:10.33899/ijnmr.2023.176490
25. Jarrad R, Hammad S, Shawashi T, Mahmoud N. Compassion fatigue and substance use among nurses. Ann Gen Psychiatry. 2021;17(1):13. doi:10.1186/s12991-018-0183-5