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Psychosocial Work Conditions and Burnout Among Healthcare Workers: An Occupational Health Interpretation of Published Multinational Findings

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ABSTRACT
Background: Psychosocial conditions are relevant to burnout in healthcare workplaces. Objective: To interpret published multinational associations through a Job Demands–Resources and hospital occupational safety (K3RS) lens. Methods: This interpretive evidence analysis extracted reported descriptive and adjusted regression results from Denning et al. (2021); individual-level data and regression models were not independently reanalyzed. Results: Among 3,537 healthcare workers, 2,364 (67%) screened positive for high burnout risk. Relative to non-clinical workers, doctors (adjusted OR 2.10; 95% CI 1.49–2.95), nurses (1.38; 1.04–1.84), and other clinical workers (2.02; 1.45–2.82) had higher odds. Redeployment was associated with higher odds (1.27; 1.02–1.58). The lowest SAQ quartile showed higher odds (2.43; 1.98–2.99), while the highest showed lower odds (0.30; 0.22–0.40), each versus the source model comparator. Conclusion: These observational associations support further evaluation of organizational psychosocial monitoring and prevention, but do not establish causal effects or Indonesian prevalence.

INTRODUCTION

Hospital work combines high patient acuity, time pressure, shift schedules, emotional demands, teamwork requirements, rapid decision-making, and responsibility for patient and worker safety. These characteristics make psychosocial working conditions a central component of occupational safety and health. The World Health Organization identifies excessive workload and work pace, long or unsocial hours, low control, limited organizational support, poor communication, violence and harassment, role ambiguity, and work–life conflict as psychosocial risks relevant to workers' mental health. In the health sector, time pressure, long working hours, shift work, lack of support, and moral injury are recognized as important contributors to occupational stress, burnout, and fatigue (World Health Organization [WHO], n.d., 2022). In Indonesia, hospitals are recognized as workplaces with high risks to the safety and health of hospital personnel, patients, visitors, and the hospital environment, and occupational safety and health in hospitals is regulated through Minister of Health Regulation No. 66 of 2016 (Kementerian Kesehatan Republik Indonesia [Kemenkes RI], 2016).

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The WHO classifies burnout in ICD-11 as an occupational phenomenon rather than a medical condition. It results from chronic workplace stress that has not been successfully managed and is characterized by energy depletion or exhaustion, increased mental distance from work or job-related cynicism, and reduced professional efficacy (WHO, 2019). This occupational framing is important because prevention should not rely only on individual coping; it should also address the organization of work and the conditions that generate or sustain chronic stress. Classic burnout research likewise describes burnout in terms of exhaustion, cynicism, and reduced efficacy, and highlights the importance of situational and organizational factors alongside individual characteristics (Maslach et al., 2001).

Burnout is a common and consequential concern among healthcare workers. Prevalence estimates vary widely with how burnout is defined and measured: a systematic review of practicing physicians reported overall burnout prevalence ranging from 0% to 80.5% across studies (Rotenstein et al., 2018), whereas a meta-analysis covering 49 countries estimated a pooled prevalence of burnout symptoms of 11.23% among nurses (Woo et al., 2020). Pandemic conditions appear to have intensified the problem. In a US national survey, 62.8% of physicians reported at least one manifestation of burnout at the end of 2021, compared with 38.2% in 2020 (Shanafelt et al., 2022), and early pandemic guidance highlighted the mental health challenges faced by healthcare workers and the need for organizations to manage them (Greenberg et al., 2020). Work-related contributors reported in the literature include excessive workloads, long working hours, and frequent call duties (Patel et al., 2018), and a large hospital-level study found that higher patient-to-nurse workloads were associated with higher odds of nurse burnout and job dissatisfaction (Aiken et al., 2002). Burnout and poorer wellbeing among healthcare staff have also been linked to worse patient safety and quality of care (Hall et al., 2016; Salyers et al., 2017), which makes burnout both a worker-health concern and a patient-safety concern.

The Job Demands–Resources (JD-R) theory provides a useful framework for understanding this relationship. Job demands such as workload, emotional demands, time pressure, and role conflict require sustained effort and can contribute to strain. Job resources—including social support, supportive leadership, autonomy, recognition, adequate staffing, teamwork, and opportunities for development—can help workers meet demands and may protect against burnout (Bakker & Demerouti, 2017; Bakker et al., 2023). This framework follows earlier job-strain models, in which mental strain arises when high job demands combine with low decision latitude (Karasek, 1979), and the original JD-R model of burnout linked job demands mainly to exhaustion and lack of job resources mainly to disengagement (Demerouti et al., 2001). A recent scoping review of healthcare-worker burnout similarly identified work-environment factors as a major domain and found that the JD-R model remains one of the frequently used conceptual approaches for explaining burnout determinants (Nagle et al., 2024).

The empirical literature also indicates that psychosocial work conditions are multidimensional. A global systematic review and meta-analysis identified occupational risk factors including job stress, workplace bullying, poor communication, and adverse work environments, while supportive organizational conditions may function as protective resources (Amiri et al., 2024). Organizational justice has also been linked with burnout dimensions, suggesting that fairness in

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resource allocation, decision-making, interpersonal treatment, and information sharing can be relevant psychosocial resources (Howe et al., 2026).

The multinational cross-sectional investigation by Denning et al. (2021) assessed safety attitudes and psychological outcomes in 3,537 healthcare workers during the early COVID-19 pandemic. Although that publication established the statistical associations, it did not principally develop a structured hospital occupational safety and health (K3RS) interpretation using the Job Demands–Resources (JD-R) framework. The gap addressed here is therefore translational and conceptual, not the absence of empirical estimates. Safety attitudes in the source study were measured with the Safety Attitudes Questionnaire (SAQ), which captures healthcare providers' attitudes in six patient-safety-related domains: teamwork climate, safety climate, perceptions of management, job satisfaction, working conditions, and stress recognition (Sexton et al., 2006). This manuscript distinguishes directly measured SAQ domains from hypothesized job demands and proposes practical, testable monitoring and prevention priorities. Application to Indonesian hospitals is prospective and requires contextual validation; no Indonesian participants or current Indonesian prevalence estimates are represented.

1. Study Objective

To critically synthesize and interpret previously published associations between safety attitudes, occupational characteristics, and burnout among healthcare workers, and to develop an explicitly non-causal JD-R-informed framework for hospital K3RS risk management.

Research question: How do the published associations between safety attitudes, professional role, redeployment, and burnout inform a cautious, context-sensitive approach to psychosocial hazard identification and prevention in healthcare workplaces?

2. Conceptual Framework

The JD-R model distinguishes job demands (e.g., workload, emotional strain, abrupt role change) from job resources (e.g., supervisory support, autonomy, teamwork). SAQ teamwork climate, perceptions of management, working conditions, job satisfaction, safety climate, and stress recognition represent overlapping perceptions of organizational context; they are not interchangeable with direct measurements of workload, role ambiguity, autonomy, or all JD-R constructs. Interpretation of SAQ associations through JD-R is therefore conceptual rather than proof of a specific mechanism.

METHODS

1. Study Design and Data Source

This manuscript is a secondary occupational health interpretation of findings reported in the peer-reviewed multinational cross-sectional publication by Denning et al. (2021). The publicly available source article, its tables, and methodological description were consulted to extract sample characteristics, instrument definitions, effect estimates, and uncertainty intervals. Individual-level data were not independently analyzed, and no new regression model, statistical significance test, or effect estimate was generated for the present manuscript. The original study surveyed healthcare workers in the United Kingdom, Poland, Singapore, and other settings between 22 March and 18

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June 2020. Accordingly, this work is a structured interpretation of published evidence, not an independent secondary dataset analysis.

Evidence extraction and interpretation: Findings were organized into (1) sample description and measurement, (2) published adjusted associations, (3) JD-R-informed explanations explicitly labeled as hypotheses, and (4) potential K3RS actions. Counts and adjusted odds ratios were checked against the original article text; original confidence intervals were retained. The source model is not reconstructed, and unreported model coefficients, exact p-values, missing-data treatments, or subgroup analyses are not invented. No new pooled estimate, systematic review search, or formal quality score was undertaken.

2. Participants and Setting

The source study received 3,537 responses. For the main country-level analysis, 765 respondents were from the United Kingdom, 232 from Poland, and 2,503 from Singapore; 37 respondents from other countries were excluded from country-level analysis because of low response counts. Professional groups included doctors, nurses, other clinical workers, and non-clinical staff (Denning et al., 2021).

3. Measures

Burnout was assessed in the source study using the 16-item OLBI (exhaustion and disengagement; four-point response scale). For descriptive screening, high burnout risk required exhaustion ≥2.1 and disengagement ≥2.25; for the original multivariable regression, the investigators separately dichotomized the OLBI score at its 75th percentile. The 67% descriptive prevalence must not be conflated with the regression outcome threshold (Denning et al., 2021).

Psychosocial and safety-related working conditions were represented by the SAQ. The source study used six domains: safety climate, teamwork, stress recognition, perception of management, working conditions, and job satisfaction. Higher SAQ scores indicate more favorable perceptions of operational conditions (Denning et al., 2021).

Anxiety and depression were assessed with HADS. These variables are treated as co-occurring psychological outcomes in the source model and are not interpreted as psychosocial work exposures with established temporal direction.

4. Operationalization of Psychosocial Work Conditions

For the present occupational-health interpretation, psychosocial work conditions include the organizational context captured by the SAQ and related work circumstances: safety climate, teamwork, management perception, working conditions, job satisfaction, stress recognition, patient-facing role, and redeployment. This operationalization is intentionally conservative because the original dataset did not measure every psychosocial domain represented in instruments such as COPSOQ III (Burr et al., 2019).

5. Statistical Approach

The original investigators assessed internal consistency using Cronbach's alpha and fitted survey-weighted logistic models in Stata, with adjusted odds ratios and 95% confidence intervals.

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The present article reproduces selected adjusted estimates as published; it has no independent analytic sample, no newly calculated p-values, and no independent access to individual-level model residuals. Reference groups are indicated where confirmed by the published report, and otherwise marked for verification rather than assumed. Statistical associations do not establish temporal direction or causation.

6. Ethical Considerations

The present work is based exclusively on publicly published aggregate results and involved no recruitment, interaction with human participants, or new personal-data processing. The original investigators reported approvals from the Imperial College Research Ethics Committee (20IC5890) and Singapore National Healthcare Group Domain Specific Research Board (2020–00598), with consent procedures detailed in their publication. Any journal-specific determination on whether separate ethics exemption is required should be obtained from the editorial office.

RESULTS

1. Sample Characteristics

The original study included 3,537 healthcare workers: 2,544 women (72.0%), 923 men (26.1%), and 70 respondents with gender not reported (2.0%). Nurses accounted for 1,590 (45.0%), doctors 684 (19.3%), other clinical workers 517 (14.6%), and non-clinical workers 746 (21.1%). Redeployment was reported by 766 (21.7%), and 777 (22.0%) reported testing for SARS-CoV-2. All numbers in this section derive from Denning et al. (2021), not an independently analyzed dataset.

Table 1. Sociodemographic and Occupational Characteristics of Healthcare Workers in the Source Study (N = 3,537)

Characteristic	n	%
Total sample	3,537	100.0
Female	2,544	72.0
Male	923	26.1
Doctor	684	19.3
Nurse	1,590	45.0
Other clinical worker	517	14.6
Non-clinical staff	746	21.1
United Kingdom	765	21.6
Poland	232	6.6
Singapore	2,503	70.8
Other countries	37	1.0
Redeployed	766	21.7
Tested for SARS-CoV-2	777	22.0
Gender not reported	70	2.0

2. Psychological Outcomes and Instrument Reliability

The source study reported strong internal consistency for all three instruments: HADS α = 0.90, OLBI α = 0.88, and SAQ α = 0.94. Of the 3,537 workers, 2,364 (67%; 95% CI 65–68%) were

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classified as being at high risk of burnout, 701 (20%; 95% CI 18–21%) met the anxiety criterion, and 389 (11%; 95% CI 9–12%) met the depression criterion (Denning et al., 2021).

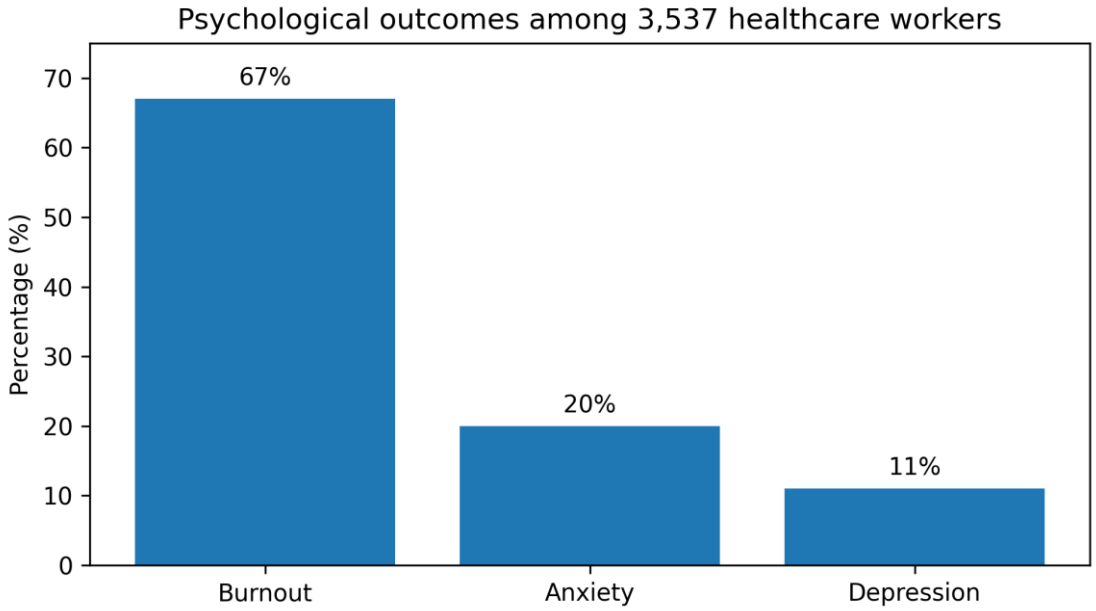


Figure 1. Prevalence of High-Risk Burnout, Anxiety, and Depression Among Healthcare Workers in the Source Study (N = 3,537) (Denning et al., 2021)

3. Multivariable Associations with Burnout

The original adjusted regression model found associations of burnout with clinical professional roles, redeployment, SAQ score quartiles, anxiety, depression, and SARS-CoV-2 testing (Table 2). The professional-role reference was non-clinical workers. The source publication describes bottom and top SAQ quartiles; those adjusted estimates should be read relative to the study model's omitted SAQ reference category, not as a direct comparison of bottom versus top quartiles. The association of testing with lower odds is not evidence that testing prevents burnout. Exact p-values are not reproduced because the present synthesis relies on reported odds ratios and confidence intervals, and no model was rerun.

Table 2. Adjusted Odds Ratios for Factors Associated With Burnout Among Healthcare Workers in the Source Study

Predictor	Adjusted OR	95% CI	Occupational interpretation
Doctor role	2.10	1.49–2.95	Higher odds than non-clinical staff
Nurse role	1.38	1.04–1.84	Higher odds than non-clinical staff
Other clinical role	2.02	1.45–2.82	Higher odds than non-clinical staff
Redeployed	1.27	1.02–1.58	Higher odds associated with redeployment
SAQ <25th percentile	2.43	1.98–2.99	Higher odds with unfavorable safety attitudes (versus omitted SAQ

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Predictor	Adjusted OR	95% CI	Occupational interpretation
			reference category; not directly compared with opposite quartile)
SAQ >75th percentile	0.30	0.22–0.40	Lower odds with favorable safety attitudes (versus omitted SAQ reference category; not directly compared with opposite quartile)
Tested for SARS-CoV-2	0.64	0.51–0.82	Inverse association in source model
Anxiety	4.87	3.92–6.06	Strong positive association
Depression	4.06	3.04–5.42	Strong positive association

4. Interpretation of the Main Occupational Findings

Published finding: lower SAQ scores were associated with higher adjusted odds of burnout. Interpretation: perceptions of an unfavorable organizational environment may flag psychosocial risk; the study did not demonstrate that changing SAQ scores would reduce burnout.

Published finding: doctors, nurses, and other clinical workers had higher adjusted odds than non-clinical workers. Hypothesis: clinical responsibility, workload, and emotional demands could contribute; these specific mechanisms were not established by the reproduced model.

Published finding: redeployment was associated with higher adjusted odds. Hypothesis: changing tasks, teams, and role clarity may contribute, but were not independently tested as mediators.

Published finding: higher SAQ scores were inversely associated with the regression-defined burnout outcome. This does not isolate the effectiveness of any single safety-culture or leadership intervention.

Anxiety and depression clustered with burnout in the source model. The cross-sectional design prevents determination of whether psychological distress preceded burnout, resulted from it, or shared common work-related determinants.

DISCUSSION

1. Psychosocial Work Environment and Burnout

The strongest practice-relevant pattern in the source estimates concerns safety attitudes: the lowest SAQ quartile had an adjusted OR of 2.43 (95% CI 1.98–2.99) and the highest quartile an adjusted OR of 0.30 (95% CI 0.22–0.40), each relative to the source model's comparator. These are associations, not experimentally established effects. SAQ combines safety climate, teamwork, recognition of stress, perceptions of management, working conditions, and job satisfaction. Within JD-R theory, these may overlap with perceived resources and demands but cannot substitute for direct exposure measurement (Bakker & Demerouti, 2017; Denning et al., 2021).

The result is also consistent with contemporary evidence showing that burnout among healthcare workers is multidetermined. The scoping review by Nagle et al. (2024) identified work-environment, individual, and sociodemographic factors, with work organization and psychosocial conditions repeatedly appearing in conceptual models of burnout. The global systematic review and

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meta-analysis by Amiri et al. (2024) similarly identified job stress, workplace bullying, communication problems, and adverse work environments as occupational risk factors. Thus, the present findings should be interpreted as part of a broader occupational-health evidence base rather than as evidence that one organizational variable independently causes burnout.

2. Patient-Facing Work and Job Demands

The source model reported elevated odds for doctors (OR 2.10), nurses (OR 1.38), and other clinical workers (OR 2.02) relative to non-clinical staff. One plausible JD-R interpretation is that demanding patient-facing tasks place pressure on resources; however, emotional demands, interruptions, and resource adequacy were not tested here as pathways. These explanations should be evaluated in future primary studies, rather than reported as empirically demonstrated mediators.

Importantly, professional role should not be interpreted as an intrinsic personal risk characteristic. The finding may partly reflect differences in job demands, organizational position, exposure to patients, staffing arrangements, autonomy, and work intensity. Consequently, occupational interventions should focus on modifiable work conditions rather than simply targeting particular professions.

3. Redeployment as a Psychosocial Work Stressor

The source study reported an adjusted OR of 1.27 (95% CI 1.02–1.58) for redeployed compared with non-redeployed respondents. Role transitions could plausibly reduce predictability, task familiarity, or perceived control. The current manuscript did not test these mechanisms or evaluate structured redeployment procedures; their possible benefit remains a practical hypothesis for K3RS implementation and evaluation.

4. Safety Attitudes, Leadership, and Organizational Support

The published SAQ association identifies a possible signal for monitoring perceived organizational safety conditions, not a direct evaluation of leadership or psychological safety interventions. SAQ does not comprehensively measure bullying, work–life conflict, violence, quantitative workload, role ambiguity, or organizational justice. These additional hazards require independent instruments and locally relevant assessment. WHO guidance on organizational action supports the direction of the proposed risk-management framework, but those actions were not tested in the multinational model (WHO, 2022).

Organizational justice provides an additional interpretive lens. Perceived fairness in allocation of resources, procedures, interpersonal treatment, and information may function as a psychosocial resource. Recent evidence has linked dimensions of organizational justice with burnout, supporting the broader proposition that the quality of organizational relationships matters for occupational well-being (Howe et al., 2026).

5. Implications for Hospital K3RS

For hospital managers, the findings justify considering a proactive psychosocial risk-management process: (1) confidentially assess work demands and available resources by role and unit; (2) review staffing, schedules, rest opportunities, and redeployment preparation; (3)

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incorporate worker consultation and supportive supervisory practices; (4) prioritize organizational hazard controls over resilience training alone; and (5) evaluate outcomes before concluding that any intervention is effective. These are evidence-informed recommendations, not intervention effects established by this study.

Individual interventions may complement organizational controls. Recent systematic reviews indicate that individual approaches such as mindfulness, coping skills, and relaxation can reduce some burnout dimensions, particularly emotional exhaustion, but the evidence is heterogeneous and long-term effects are not always established (Cohen et al., 2023; Engel et al., 2023; Haslam et al., 2024; Lee & Cha, 2023; Salcedo Sampedro et al., 2026). Organizational interventions have also shown potential, especially when they address workload, work organization, working time, or involve workers in designing solutions, although evidence quality and effect sizes vary (Bes et al., 2023; Corthésy-Blondin et al., 2025). The implication for K3RS is therefore not to choose between organizational and individual interventions but to combine them, while placing primary attention on modifiable work conditions.

6. Measurement and Surveillance Strategy

Psychosocial surveillance should separately assess exposures (for example, validated COPSOQ III domains) and outcomes (for example, OLBI dimensions), supplemented by staffing and work-schedule indicators where feasible. Establish confidential baseline measurements, communicate aggregate results without identifying workers, implement targeted organizational changes, and reassess trends. The instruments require Indonesian-language validation and organizational contextualization before use in Indonesian hospitals; thresholds must not be imported without assessment. Such monitoring is a recommendation for prospective implementation, not part of the source data collection.

7. Strengths and Limitations

This manuscript has several strengths. First, it is grounded in a large, publicly available anonymized dataset involving 3,537 healthcare workers. Second, the source study used validated instruments with strong internal consistency. Third, the multinational sample provides a broad occupational context, and the present manuscript explicitly interprets the findings through a K3RS psychosocial-risk framework. Fourth, the revision avoids presenting the multinational pandemic sample as if it were a contemporary Indonesian prevalence study.

Important limitations are: (1) cross-sectional associations cannot establish causality; (2) early-pandemic conditions may not generalize to routine hospital work; (3) self-reporting, selection effects, and common-method bias are possible; (4) approximately 71% of respondents were from Singapore, limiting geographic representativeness; (5) SAQ is not a comprehensive psychosocial-hazard assessment; (6) the current authors did not reanalyze individual data, so cannot validate regression specification, missing-data handling, residual confounding, exact p-values, or subgroup robustness; and (7) reliance on one published empirical source limits originality to interpretation and applied K3RS synthesis. Consequently, the proposed interventions remain untested here, and no Indonesian prevalence or effectiveness claim can be made.

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CONCLUSIONS

Published cross-sectional findings from 3,537 healthcare workers in the early COVID-19 period indicate associations between burnout and safety-attitude scores, clinical professional roles, and redeployment. These estimates were reported by Denning et al. (2021) and were not independently recalculated in this manuscript. A JD-R-informed interpretation suggests that hospital K3RS programs may benefit from measuring organizational psychosocial hazards, reviewing staffing and work organization, monitoring worker well-being, and evaluating preventive interventions. None of these interventions was directly tested here. Contemporary, context-specific primary research—especially in Indonesian hospitals—is needed to test mechanisms, establish temporal relationships, and assess effectiveness.

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