Emotional Exhaustion in Healthcare Workers

Moving Beyond Coping Skills to Improve Organizational Conditions

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Objective: Emotional exhaustion (EE)—the first stage of burnout—is related to preventable work environment exposures. We examined the understudied impact of organizational support for safety (OSS) and safety hazards (SH) on EE in a mixed licensed and unlicensed population of healthcare workers (HCWs). **Methods:** A work environment exposures survey was conducted in five US public healthcare facilities in 2018–2019. A total of 1059 questionnaires were collected from a predominantly female population of mixed HCWs. **Results:** Mean EE scores were higher among women, direct care workers, and younger subjects. In linear regression models, EE was positively associated with SH, emotional labor, psychological demands, physical demands, job strain, assault, and negative acts, while OSS was negatively associated. Safety hazard s both mediated and moderated the relationship between OSS and EE. **Conclusions:** When perception of SH is high, OSS has less impact on reducing EE, suggesting a need to effectively put safety policies to practice for improving EE in HCWS.

Keywords: unlicensed assistive personnel and allied healthcare workers, organizational policy, workplace hazards, burnout, moderation, mediation, causal mediation

LEARNING OUTCOMES

At the end of reading this article, the reader will be able to understand the impact of both organizational support for safety and safety hazards in reducing emotional exhaustion in healthcare workers. Healthcare policy makers and occupational health specialists will be able to identify potential ways to strengthen safety policies by reducing job level safety hazards in a tangible manner to improve the mental health of healthcare workers.

Burnout is a self-reported psychological syndrome resulting from unmanaged job stress[1] characterized by the following three sequential dimensions: (1) emotional exhaustion (EE), disengagement, and a sense of reduced personal accomplishment.[2,3] Emotional exhaustion, the first stage, is defined as depleted emotional reserves due to the constant demands of work, especially where there are few resources to balance out those demands.[2]

Healthcare work is inherently both emotionally and psychologically rewarding and draining.[4] Even before the global COVID-19 pandemic, EE was a highly prevalent and widely acknowledged professional hazard for health care workers[5–7]; one review study reported that one half of physicians and one third of nurses in the United States were experiencing EE symptoms (in 2018).[5] During the pandemic, this phenomenon became even more widespread. A 3-year study of 107,122 US healthcare workers found that EE increased from 32% (2019) to 40% (2021).[8] There were increases not only for physicians and nurses but also unlicensed assistive personal (UAP). However, in general, few studies have included UAPs or auxiliary staff like housekeeping and maintenance. The WHO has reported that pooled estimates of burnout among healthcare workers (HCWs)—a population constituting over 16% of the global working population—currently range between 41% and 52%.[9,10] Addressing emotional exhaustion effectively in healthcare workers has become a global priority.[11]

High levels of EE in HCWs lead to numerous adverse consequences, including depression, anxiety, suicide, substance abuse, low job satisfaction, and decreased general well-being.[12,13] Consequences for patients include higher rates of medical errors and decreased quality of care.[14] Well-studied risk factors for EE in HCWs include job characteristics like high psychological demands, low decision autonomy,[15] masking one's emotions in the face of difficult interactions (surface-acting emotional labor),[16] responsibility for patients' health, lack of control over work hours, inadequate staffing, and lack of coworker and supervisor support.[17–19] The less that these factors are addressed (resourced) by the employer, the higher the risk that they will lead to developing emotional exhaustion.[2,3]

Employee perception of overall general safety hazards (SH) and perceived organizational commitment to employee safety are job characteristics that remain understudied in association with EE. To address that gap in the literature, we examined the relevance of perceived organizational support for safety and of general SH for EE. We also hypothesized that perception of day-to-day safety would be the result of organizational commitment to safety and therefore could mediate the effect of this institutional-level variable. We utilized a mixed population of clinical (licensed and UAPs) and nonclinical (laundry, food delivery services, housekeeping and maintenance, etc.) healthcare workers to represent the full population potentially impacted.

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Conflicts of interest: None declared.

Important contribution to policy: We demonstrated that the impact of organizational support for safety in reducing emotional exhaustion (EE) in healthcare workers was mediated through safety hazards. Organizational support for safety had more benefit on reducing EE when perception of safety hazards was low; suggesting that to reduce EE, two simultaneous organizational changes were needed—better general safety policies and visible reduction in safety hazards.

Availability of data and materials: Data collection forms are available from the research team at: cphnew@uml.edu. Data files are not publicly available due to privacy guarantees to study participants, many of whom could be identified from their roles and demographic characteristics even in de-identified data sets.

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METHODS

This study was part of a larger research study, the Safety and Health through Integrated, Facilitated Teams (SHIFT), which was carried out in five public sector facilities offering a mix of residential and outpatient services. The study sites had a high number of low paid UAP and medical assistants like mental health workers. Most employees of these organizations were unionized and the organizations themselves had preexisting employee safety and health infrastructure. Participants completed the questionnaire on personal time and were modestly compensated (US $10). Further details about the study site selection criteria, questionnaire development, and participant recruitment have been reported.[20]

The questionnaire included a combination of adapted versions of published validated instruments and new instruments developed for this study (Supplementary Table 1, http://links.lww.com/JOM/B516). For burnout, an adapted version of the Oldenburg Inventory, a well-reviewed international tool, was used to assess emotional exhaustion.[21] The SH score comprised two questions covering adequacy of staffing, supplies, and equipment and two about perceived likelihood of being hurt at work. Organizational support for safety (OSS) was measured with eight items from the Nordic Occupational Safety Climate Questionnaire.[22] Job strain[23] was measured as a ratio of psychological demands[23] and decision latitude.[23] Other exposures were surface acting emotional labor,[24] physical demands,[25] civility norms,[26] supervisor support[23] and coworker support,[23] negative behaviors at work, and assault. The details of instrument calculation are in Supplementary Table 1 (http://links.lww.com/JOM/B516). Age was dichotomized into younger (18–40 years) and older (40–80 years) groups. Fourteen job titles were provided by the respondents; these were divided into direct patient/resident care and nondirect care jobs.

STATISTICAL ANALYSIS

The independent variables were job demands (SH, emotional labor, psychological demands, physical demands, job strain, assault, and negative acts) and job resources (OSS, civility norms, supervisor support, coworker support, and past experience with organizational change). Emotional exhaustion showed variability by job and demographic factors, so it was chosen as the outcome for these analyses. All analysis was done using SAS 9.4 (SAS 9.4 TS1M8 January 2023, Cary, NC).[27]

Internal consistency of scales was measured using Cronbach α. Independent variables were compared by gender, direct care/nondirect care job groups, site, and outcome (EE). Parametric independent samples *t* test and one-way ANOVA or nonparametric analysis was used where appropriate.

Spearman correlation coefficients were computed among the pairs of independent and dependent variables because most of the variables had skewed distribution. Variables that were correlated with EE at the level of $P = 0.05$ were retained for regression modeling. Correlations between independent variables were examined for potential collinearity. No absolute correlations greater than 0.7 were observed.

For linear regression analysis, EE was regressed on individual job demands and resources, adjusting for age, gender, and site. Next, all occupational demands only, then resources only, then both sets were introduced in backwards stepwise regression models. Variables were retained if they had a *P* value of ≤0.05 or if they changed the size of another coefficient by 15%.

Interaction was examined between organizational support for safety and job demands (SH, emotional labor, psychological demands, negative acts, assault), one at a time. Three models were created to study each interaction: one model with the two independent predictors and their interaction term, one model adjusted for age, site, direct care versus nondirect care and gender, and one model adjusted for all other work environment predictors, age, site, and gender.

We had an a priori hypothesis for organizational support for safety as an upstream predictor of SH, making it inappropriate to adjust for OSS in analysis of SH on EE. To examine whether SH simultaneously mediated and moderated the association between organizational support for safety and emotional exhaustion, we used the Vanderweele mediation model with four-way decomposition.[28–30]

The mediation model was constructed with organizational support for safety as the treatment variable, SH as the potential mediator and moderator, and emotional exhaustion as the outcome. Models were adjusted for potential confounders between the treatment variable and mediator, as well as the mediator and outcome, by adjusting for demographic variables and work environment demands and resources. We tested the effect of the mediator using a calculation of 1000 bootstrapped samples which yielded 95% CIs.

Four-way decomposition of the total effect provides (1) controlled direct effect of OSS (due neither to mediation or interaction); (2) reference interaction effect (due to interaction only); (3) mediated interaction effect (due to mediation plus interaction); and (4) pure indirect effect (due to mediation of SH alone). The "portion eliminated" (PE) is a composite of mediation and interaction effects that represents how much of the impact of the treatment variable on the outcome can be prevented by intervening on the mediator, indicating a potential policy of interest.[29,31] We evaluated counterfactual models by fixing various levels of OSS and SH.

RESULTS

Of the 1059 survey participants, just more than one half were direct care staff (Table 1). Their mean ages were 48 years for men and 47 years for women (Table 1). For details of direct care and nondirect care staff and their job titles, please see Supplemental Table 2 (http://links.lww.com/JOM/B516).

Mean EE scores were uniform among the sites and their distributions were not normal (Table 1). Participants with direct patient care jobs, female participants, and younger participants were more likely to report suffering emotional exhaustion.

Respondents in direct care jobs were less likely to report that they received OSS and coworker support, and more likely to report high SH, more negative acts, increased supervisor support, high emotional labor, and physical demands. Females reported more psychological and

TABLE 1. Characteristics of SHIFT Study Survey Respondents Employed in 5 Public Sector Healthcare Facilities, *N* = 1,059 (2018–2019)

	n (%)	Mean (SD)	Median (IQR)
Emotional exhaustion scores		2.98 (0.97)	3.00 (1.33)
Age			
18–<40 yr	279 (29%)	3.12 (0.98)*	3.33 (1.33)
40–80 yr	682 (71%)	2.89 (0.95)	3.00 (1.66)
Missing	98		
Gender			
Male	366 (35%)	2.85 (0.93)*	3 (1.66)
Female	689 (65%)	3.05 (0.98)	3 (1.33)
Transgender	4 (0.3%)	3 (0.61)	3 (1.00)
Site			
Veterans' hospital	311 (29%)	3.10 (0.94)	3 (1.33)
Soldiers' home #1	194 (18%)	2.99 (1.03)	3 (1.33)
Soldiers' home #2	138 (13%)	2.85 (0.96)	3 (1.66)
Mental health facility #1	300 (28%)	2.95 (0.99)	3 (1.33)
Mental health facility #2	116 (11%)	2.85 (0.83)	2.83 (1.00)
Job type			
Nondirect care	478 (45%)	2.86 (0.96)*	3 (1.66)
Direct care	581 (55%)	3.10 (0.96)	3 (1.33)

Demographic and employment status and two components of burnout.

*$P < 0.05$. *P* values from Wilcox scores, except for site where Kruskal-Wallis *T*est was done. "Transgender" taken out from Wilcox test on gender.

physical demands as well as more job strain. Women and older employees were more likely to report assault incidents. Younger participants were more likely to report more physical demands and higher SH. More than half of all the participants (59%) had experienced negative acts in the past 6 months, and approximately one fourth (27%) experienced assault.

All independent variables were correlated with each other ranging from 0.22 to 0.49, except for the following pairs: assault and coworker support, physical demands and supervisor support, physical demands, and emotional labor (Supplementary Table 3, http://links.lww.com/JOM/B516).

REGRESSION ANALYSES

Adjusting for demographic variables, individual job demands (SH, job strain, emotional labor, physical hazards, negative acts, and assault) were positively associated with EE; job resources (OSS, civility norms, supervisor support, and coworker support) were negatively associated (Table 2). In the models of demands only, resources only and both sets together, the coefficients were similar to those in the models for individual job characteristics (Table 2). R^2 values for all models were approximately 0.3. In the crude and demographically adjusted models, each job resource was protective against EE. However, in the multivariable models of resources, and the combined job demands, and resources models, OSS was the only resource that had a significant association with EE. With low values for SH, the impact of OSS on emotional exhaustion was increased (Fig. 1).

MEDIATION MODELS

This mediation model satisfied the standard assumptions about consistency according to the counterfactual framework suggested by Robins and Greenland (1992)[32] and Pearl 2001,[33] and refined upon Valeri and VanderWeele.[30,31]

In the "moderated mediation" model, SH was both a moderator and a partial mediator of the association between OSS and EE. The total effect of OSS on EE is the sum of controlled direct effect, pure indirect effect, and portion due to interaction (CDE + PIE + PAI). The effect of OSS on EE (natural direct effect [NDE]) differed depending on the levels of SH (Fig. 1). Simultaneously approximately 30% of the effect of OSS on EE was mediated through SH after adjusting for demographics and job exposures (Table 3).

The total effect of OSS was decomposed into an effect independent of mediation, that is, NDE, and effect due to mediation, that is, natural indirect effect (NIE) (Fig. 2). The directions of NDE and NIE were each consistent with the direction of the total effect in reducing EE. The four-way decomposition further broke down NIE and NDE. Natural indirect effect was a mixture of pure mediated effect (PIE) and mediated moderation (IMD). Again, the directions of PI and IMD were each consistent with NIE, clearly reinforced that OSS reduced EE. These also indicate that the effect of OSS on EE would be greater where SH were lower. Natural direct effect was a mixture of the pure effect of OSS on EE (controlled direct effect: CDE) and the effect due to moderation (reference interaction: IRF).

Approximately 10% of the effect of OSS was moderated by S.H. (PAI). The moderated relationship showed how impact of OSS on reducing EE at different levels of SH. (Remove the percentage to remove confusion) the effect of OSS was moderated by SH such that when SH was high OSS was a weaker predictor.

Furthermore, we computed the CDE and the PE using both very low (−2SD) and very high (+2SD) values of the mediator variable, SH, and the treatment variable, OSS (Supplementary Tables 4, 5 http://links.lww.com/JOM/B516, Fig 2). When SH was fixed to the mean value, under the assumptions of the model, 20% of the effect of OSS on reducing EE was eliminated (PE implying a potential effect of future policy change). With the combination of very high (+2SD) levels of both SH and OSS, the actual effect (CDE) was −0.21 (arbitrary units), and the PE was 75%. This means that for people with very high SH values, 75% of the total possible benefit (TE = −0.85) has been lost, so they had little benefit from OSS, even when they perceived it to be very high. Conversely, where perceived SH were very low (−2SD), the impact of very high OSS on emotional exhaustion was −0.72, which is very close to the total possible modeled effect of −0.85. In other words, only 15% of the possible treatment effect was eliminated by SH.

DISCUSSION

This moderately large study of healthcare workers, in primarily unionized long-term care health facilities, showed that higher organizational support for safety and lower SH were each associated with lower levels of emotional exhaustion. We began with a prior hypothesis that OSS was potentially an underlying cause of job-level SH, on the causal pathway toward EE. Confirming that prediction, EE was lower among those reporting more OSS and higher among those reporting more SH. We also showed that job demands like surface acting emotional labor, physical demands, job strain, and negative acts

TABLE 2. Coefficients for Linear Regression Models of Emotional Exhaustion in Relation to Work Environment Characteristics: Employees of 5 Public Sector Healthcare Facilities (2018–2019)

Coefficients for Regression Models

Variable	Models for Individual Job Characteristics	Multivariable Model for Job Demands (n = 876)	Multivariable Model for Job Demands and Resources (n = 851)	Model for Interaction Between Job Hazards and Organizational Safety (n = 851)
Organization support for safety	0.65***		−0.22*	−0.69***
Safety hazards	0.61***	0.23***	0.18*	−0.35
Emotional labor	0.40***	0.28***	0.26***	0.26***
Physical demands	0.05***	0.02*	0.02*	0.02*
Interaction term				0.19 **
Job strain	2.90***	1.52***	1.41***	1.46***
Negative behaviors at work index	0.51***	0.13*	0.12*	0.13*
Assault	0.48***	0.20**	0.21**	0.22**
Civility norms	−0.33***		0.08	0.08
Supervisor support	−0.11***			
Coworker support	−0.17***			
df		12	14	15
R^2 (adj)		0.29	0.31	0.31

All models are adjusted for age, gender and site, ***$P = 0.001$, **$P < 0.01$, * $P < 0.05$.

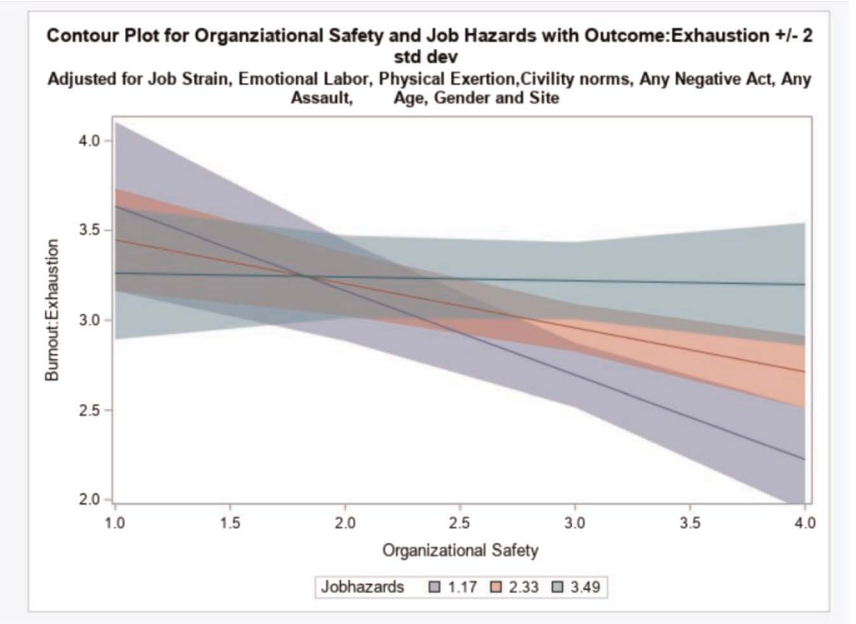

FIGURE 1. Plot for impact of OSS on EE at different levels of SH (mean ± 2SD).

and assault were associated with increased EE, whereas having job resources like better civility norms, supervisor and coworker support, and OSS were associated with less EE. Some of these exposures, most prominently job strain, was a well-studied risk factor of emotional exhaustion.[26] Despite controlling for all of these exposures in the multivariable regression and mediation models, SH and OSS were statistically significant.

The more complex models showed that SH both mediated and moderated the causal association of OSS with EE. The mediated relationship allowed us to quantify the extent to which the association of OSS with EE depends on the presence of SH. The simultaneous moderation demonstrated the extent to which OSS had less benefit in reducing EE when SH were high. The importance of these results is their demonstration that EE is influenced by both organizational and individual-level experiences. Our models suggested two interdependent changes that, when simultaneously implemented, might reduce EE, that is, reduction of SH and improvement of OSS.

Therefore, implementing policies that seek to ensure adequate staffing, equipment, and materials for performing tasks and eliminate identifiable working conditions that staff experience as hazardous would potentially reduce EE. If SH were perceived as prevalent at the average value or higher, improving OSS only would lead to less reduction of EE. On the other hand, the lower the perceived job hazards, the greater the benefit of increasing OSS on reducing EE. Certainly, such an intervention is highly desirable.

In summary, if commitment to organizational support for safety is demonstrated by management, employees would potentially feel supported and experience less emotional exhaustion. This benefit would be stronger when they see this support manifested as reduced SH, which would be consistent with the positive message from management. A combination of a structural commitment to employee safety and its manifestation in reducing SH by ensuring adequate staffing, safe environment, and adequate support in performance of tasks would reduce emotional exhaustion more than doing only one of these but not the other.

Individual-based interventions for improving coping mechanisms like psychosocial training and communication tools, cognitive behavioral therapy, and mindfulness training are typical solutions proposed for emotional exhaustion among healthcare workers aimed at reducing job strain and improving coworker and supervisor support.[34–36] Occasional interventions for increased temporal control over work schedule have been observed; however, the broader theme

TABLE 3. Model of Emotional Exhaustion, Combining Causal Mediation and Moderation: Summary of Effects and Decomposed Effects for Organizational Safety and Safety Hazards, Adjusted for Demographics and Work Environment Predictors

	Estimate	Bootstrap Standard Error	Bootstrap Bias Corrected 95% Confidence Limits	
Total effect (TE = CDE + PIE + PAI)	−0.31	0.07	−0.44	−0.18
Natural direct effect (NDE = CDE + IRF)	−0.21	0.07	−0.36	−0.07
Controlled direct effect (CDE)	−0.25	0.08	−0.40	−0.10
Reference interaction (IRF)	0.03	0.01	0.01	0.07
Natural indirect effect (NIE = PIE + IMD)	−0.10	0.03	−0.16	−0.04
Pure indirect (PIE)	−0.03	0.03	−0.08	0.02
Mediated interaction (IMD)	−0.07	0.03	−0.13	−0.02
Portion due to interaction (PAI = IMD + IRF)	−0.03	0.01	−0.07	−0.01
Percentage mediated	31.61	15.64	13.16	63.29
Percentage due to interaction	10.85	5.39	3.40	23.35
Percentage eliminated	20.76	12.28	4.90	47.06

SAS causal med procedure, survey respondents in 5 public sector healthcare facilities, $n = 851$ (2018–2019)

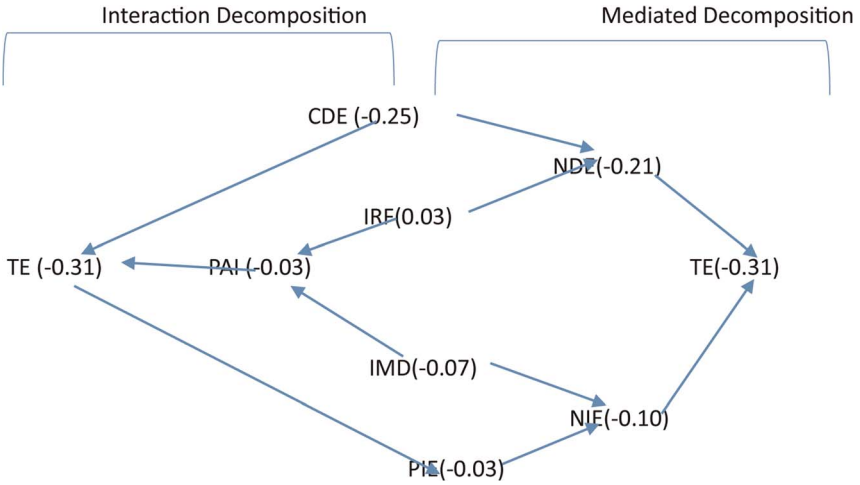

FIGURE 2. Four-way decomposition for mediated interaction:

of having input in organizational decisions and impacting policies is lacking and the EE literature has few studies addressing institutional-level structural determinants of the salient exposures. Panagioti et al (2017)[36] reviewed interventions for burnout among physicians and found that in comparison with physician-directed interventions, organization-directed interventions like greater control over workload had higher treatment effects. Improving social capital and temporal control over work environment are meaningful when these changes are accompanied and supported by organizational safety policies.

LIMITATIONS AND STRENGTHS

This was a cross-sectional study with a self-reported survey; hence, common method biases may exist. Burned out individuals could possibly be more likely to report high levels of job demands, leading to differential misclassification of exposure, information bias, and reverse causality. Because of the cross-sectional nature of the data, standard limitations are applicable regardless of type of analysis. These sophisticated counterfactual simulation modeling methods cannot be a replacement for the temporality of causality in observational studies; the findings cannot be conclusively interpreted as causal, and the sequence of the exposure and outcome could be different than what we have examined. Lastly, the results might not be generalizable throughout the healthcare workforce because the study population consisted of largely unionized employees from public sector agencies providing chronic and residential care services.

This study was different from the existing burnout and emotional exhaustion studies in that it had a larger sample size, involved multiple sites, and included both clinical and nonclinical employees. Furthermore, the project studied the contributions of factors not often studied in relationship to burnout/emotional exhaustion, specifically, SH experienced at the facility level as well as organizational-level support of worker safety. The Oldenburg Inventory used for emotional exhaustion has both negatively and positively worded questions, decreasing the chances for acquiescence bias.[21] Measured constructs and scales were adapted from well-reviewed tools, studied for factor loadings, and were considered stable.

Another unique aspect of our study was to analyze mediation and moderation simultaneously. This type of model is rather new and complex both to fit and to interpret. The SAS procedure allowed us to apply a unified mediation and moderation model with an interaction term for the mediator.[30] The bootstrapping option allowed us to generate more accurate confidence intervals than other more commonly used mediation methods, such as Baron and Kenny.[37] This model was also useful for our study as emotional exhaustion had a skewed rather than a Gaussian distribution. The Vanderweele method does not require mean centering like older mediation methods. The control variables are set to mean/reference group. The Vanderweele method is a useful exercise for preintervention/pilot study data.

Exposure-mediator interaction is a valid effect[38,39] that is seldom quantified in mediation analysis[40] but should not be overlooked.[41] The Vanderweele method allows us to add this "strengthening feature" to mediation analyses [42] and incorporate a counterfactual framework to reduce bias and improve interpretation.[41,43] The advantage of this approach for healthcare policy is that it allows for more than one point of intervention, especially when reductions in exposure alone are unable to reduce undesirable health outcomes.[40] Our model suggests that improving organizational commitment to safety alone is not enough to reduce EE; reducing SH simultaneously would have a much larger effect on the outcome.

CONCLUSIONS AND FUTURE RECOMMENDATIONS

Designing interventions to reduce workplace stress and emotional exhaustion is essential because chronic exposure to such stress has a high cost in the healthcare sector in terms of employee safety and health, as well as quality of care and patient/client outcomes.[12–14,44,45] This study indicates that high levels of emotional exhaustion in the workforce is a symptom of a broader organizational malfunction. Attempting to reduce emotional exhaustion simply by improving workers' coping skills is a myopic approach that treats the symptom without looking at the cause of the problem.[46]

Improving organizational frameworks and reducing SH are ways to re-engineer the job according to fundamental ergonomic principles. It also has the potential to apply the principle of distributive justice, by providing resources and reducing demands for both higher-status and lower-status employees. Lower-status employees, who perform the brunt of the physical and potentially hazardous work in healthcare (and elsewhere), should be recognized as valuable investments, just as much as their physician counterparts, who have high demands and also high resources.[36] Organizational support of worker participation in and influence over decision making regarding their own jobs would increase their job resources and likely reduce job strain and emotional exhaustion.

Infrastructure cannot change unless all stakeholders have representation at the bargaining table.

To improve working conditions for healthcare workers, the International Labor Organization recommends the participation of stakeholders in communicating their demands with management to improve practices, policies, and guidelines.[46] This suggestion is reinforced by our results. The results of this study effectively demonstrated the impact of organizational safety and support in potentially protecting workers from developing emotional exhaustion. At the

same time, messaging from the top of the organization will not likely be effective if workers feel unsafe on the job. This indicates a new paradigm for future interventions that shifts beyond the individual level to an organizational front.

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