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# Organizational and Psychosocial Working Conditions and Their Relationship With Mental Health Outcomes in Patient-Care Workers

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## Abstract

**Objective:** The aim of this study was to investigate the relationship between both psychosocial and organizational working conditions with self-reported mental health and mental health expenditures.

**Methods:** This study used worker survey and medical claims data from a sample of 1594 patient-care workers from the Boston Hospital Workers Health Study (BHWHS) to assess the relationship of psychosocial (job demands, decision latitude, supervisor support, coworker support) and organizational (job flexibility, people-oriented culture) working conditions with mental health outcomes using validated tools

**Results:** People-oriented culture and coworker support were negatively correlated with psychological distress and were predictive of lower expenditures in mental health services. Job demands were positively correlated with psychological distress.

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**Conclusions:** Working conditions that promote trustful relationships and a cooperative work environment may render sustainable solutions to prevent ill mental health.

### Keywords

hospital workers; mental health; organizational working conditions; psychosocial working conditions

## BACKGROUND

Nurses and patient-care assistants in acute care settings hold as a central goal uninterrupted patient care. This exposes them to dynamic work environments that require reacting to unexpected situations quickly, performing tasks in short periods of time,[1] dealing frequently with emotional demands,[2] and providing around the clock care by working long shifts.[3] These occupational challenges have an impact on the psychological health of the nursing population, whose prevalence of mental disorders has been found to be higher than that of the general population.[4] Depression and anxiety are the most common mental health disorders in the general population and are often comorbid with other physical illness[5,6] and associated with unhealthy behaviors.[7,8] Anxiety and depression have been found to be comorbid with obesity,[6] diabetes,[9,10] and multiple pain sites.[5,11] Depression is also related to behaviors that may diminish health such as smoking, physical inactivity,[8] and poor adherence to treatment recommendations for other conditions.[7] Identifying which work factors are tightly related to mental health in the nursing population may hold the potential to improve both the mental and the physical health of patient-care workers and in that sense preserve the health of the patients they care for. Working conditions of health care workers shape the safety of the patients they care for as evidenced in studies focusing on long working hours and patient outcomes[12,13]. In the United States, sustaining the mental health of workers may also be beneficial to employer's interests. In 2017, 56% of the US population was covered by employer-sponsored health programs.[14]

Given their proximity, the relationship between psychosocial working conditions and mental health has been widely investigated. The demand–control–support model from Karasek and Theorell's[15,16] work has been used to study this relationship in and outside the nursing population. Evidence based on the model stipulates that a combination of high psychological demands and low job control (job strain) is detrimental to both physical and mental health, and this relationship is buffered by social support.[15] Nevertheless, results are still conflicting. In European cohort studies with general population samples, a relationship between decision latitude[17–19] and mental health has not been established. In addition, studies focused on nurses were not able to establish the hypothesized mediating role of social support between job strain and mental health.[18,20,21]

Fewer studies have focused on organizational working conditions and their relationship with psychological distress.[22,23] It is important to assess which other factors at work might influence mental health as health outcomes may be affected by multiple pathways.[24] Inadequate staffing,[21] long hours of work,[25] and policies on flexible time[26] are organizational aspects of work potentially related to mental health. The culture of the

workplace and how dedicated it is to provide social support through leadership training may also be influential on psychosocial outcomes such as emotional exhaustion.[27] Two systematic reviews focusing on interventions to improve and promote the mental health of primary care nurses found that most interventions (>50%) were focused on targeting the individual by promoting training in communication skills, techniques on relaxation and meditation, cognitive-behavioral therapy, and access to psychotherapy and counseling.[28,29] Both reviews found scarce evidence that worker-focused interventions decreased stress and/or burnout.[28,29] Individual-focused interventions may work in the short term, but may be difficult to sustain, whereas organizational interventions have the potential to integrate positive practices at a systems level and in that way influence trustful and cooperative relationships by providing a solid ground for positive interactions to occur.[24]

The conceptual framework of the Harvard Center for Work, Health and Well-being is based on the evidence that multiple pathways impact workers' health and well-being[24] and emphasizes the need for integrated approaches at a systems level when designing workplace interventions that aim to improve workers' health and well-being. Most studies focusing on mental health outcomes study the relationship of individual working conditions with mental health, with a focus on psychosocial working conditions.[22,30] In addition, many workplace interventions aiming to reduce stress and improve mental health have used worker-centered interventions such as courses on mental health hygiene or leadership styles.[28,31] Few studies have expanded their research to take into account organizational factors and their relation to mental health, even though there is some evidence that changes at the organizational level may render better results than worker-centered interventions.[31,32] They may also be strongly related to mental health and other working conditions.[33]
The aim of this study was to investigate the relationship between both psychosocial and organizational working conditions and both self-reported mental health and mental health expenditures. We hypothesized that organizational working conditions would influence mental health outcomes and reduce the strength of the relationship between psychosocial working conditions with mental health. This hypothesis is based on the premise that organizational culture trickles down to influence proximal working conditions, thereby affecting the mental health of workers.

## METHODS

### Study Sample

The present study used data from the Boston Hospital Workers Health Study (BHWHS), a longitudinal cohort of patient-care workers in two major academic hospitals in the Boston metropolitan area that are part of Partners HealthCare System Inc.[34] BHWHS is a project of the Center for Work, Health and Wellbeing at the Harvard T.H. Chan School of Public Health, a Total Worker Health Center of Excellence. This study was approved by the Partners Human Research Committee, protocol number 2009P000134. The overall aim of the study is to assess the impact of workplace policies, programs, and practices on workers' health and well-being outcomes and their relation to patient and enterprise outcomes.[34] In September 2012, 2000 patient-care workers from the BHWHS were randomly selected to complete a survey which measures working conditions and worker health and well-being

outcomes. Eligible workers included registered nurses, patient-care associates, and clinical nurse specialists who worked at least 20 hours per week and who had worked at the hospital without leave during the 11 weeks before sampling. Of the 2000 patient-care workers who were sent the survey, there was a response rate of 79.7% with a total of 1594 surveys which were at least 50% completed and were eligible for inclusion.

The BHWHS allows the linkage of survey data with employee administrative records with the use of secure study ID codes. Participant consent forms explained with detail that all survey information would be deidentified, replaced with password-protected ID codes, and linked to employee records. One of the administrative databases available for linkage for both participating hospitals includes the health care utilization data under the Partners HealthCare-sponsored health plan, managed by a third party, Truven Health Analytics. From all survey respondents, 902 (57%) workers were enrolled in the health plan and had health care utilization data available for analysis. Plan members did not differ from nonplan members on race ($P = 0.734$), occupation ($P = 0.788$), or sex ($P = 0.741$), but plan members were older on average than nonplan members (42 vs 40 years of age, $P<0.05$). Scores on psychological distress were not different between members and nonmembers ($P = 0.13$).

## MEASURES

### Dependent Variables

**Psychological Distress—**Psychological distress was measured using the K6 questionnaire developed to detect community DSM-IV/SCID cases based on severity of symptoms common to many mental disorders.[35] The K6 contains six items ($\alpha = 0.83$) that ask the frequency of symptoms of sadness, nervousness, hopelessness, worthlessness, restlessness, and depression during the past 30 days. The response options range from “All of the time” (scored as 4) to “None of the time” (scored as 0) making a score that ranges from 0 to 24; higher scores indicate more psychological distress.

**Mental Health Care Expenditures—**We used mental health expenditures as a second outcome variable to extend beyond the self-rated psychological distress measure. Mental health expenditures via employee health plans represent a major personnel-related cost for employers, especially those who are self-insured. Use of mental health care services was calculated using medical claims data from the employer self-sponsored health insurance plan managed by a third party, Truven Health Analytics, Inc (Ann Arbor, MI). We defined mental health care services to be those under the Current Procedural Terminology (CPT) codes for diagnostic interview, outpatient interactive psychotherapy, inpatient interactive psychotherapy, and other psychiatric services. Expenditure on mental health services, including prescription costs, was measured from October 4, 2012 to October 3, 2013 (the year after survey administration). The expenditure data reflected the employer’s cost and not the employee’s out-of-pocket expenditure.

To test how perceived mental health relates to the use of mental health services, we conducted a secondary analysis that assessed the odds of having either a mental health claim or a physical (nonmental) health claim during the 30 days before completing the K6 scale according to three different levels of psychological distress (no/low, moderate, and high). We

performed these analyses to assess the likelihood that someone with higher psychological distress would visit the doctor for a mental health issue than for a physical health issue, and then assessed related costs. This secondary analysis serves to validate the use of mental health care claims as a proxy for mental health status when a self-report measure is not available.

**Independent Variables: Working Conditions—***People-oriented culture* was measured using a subscale from the organizational policies and practices questionnaire by Amick et al.[36] The four-item scale assesses the extent towhich the company involves employees in meaningful decision-making through cooperative relationships, trust in the employee/employer relationship, and open communication to share concerns and suggestions. Responses are given in a five-point Likert scale from "strongly agree" to "strongly disagree," scores range from 1 to 5.

*Job flexibility* was measured using seven items from the Control Scale by Thomas et al.[37] The scale items measure the extent or perceptions on control over work scheduling and time off work (eg, "How much choice do you have over the total number of hours you work each week"). Response options are in a five-point Likert scale that ranges from 1 "very little" to 5 "very much." Scores range from 1 to 5, higher scores indicating higher flexibility.

We used four scales modified from the *Job Content Questionnaire*[16] to measure job demands, supervisor support, coworker support, and decision latitude. The *psychological demands* subscale consists of five questions that measure perceptions of job demands such as "having to work very fast" and "having enough time to get the job done." Scores were calculated as the weighted sum of the responses ranging from 12 to 48. The *decision latitude* scale uses nine items to measure perceived levels of decision-making. The score consisted of the weighted sum of the domains of decision authority and skill discretion. Scores ranged from 36 to 95. The *supervisor and coworker support* subscales measure the extent to which workers perceive support from supervisors and coworkers in getting their job done, including perceptions of any conflict. Both scales have five-point Likert response options from "never" to "always" and scores are the sum from each item score. The coworker support scale consisted of two items, hence scores ranged from 2 to 10, whereas the supervisor support scale contained three items and scores ranged from 3 to 15.

## Statistical Analyses

**Working Conditions and Psychological Distress—**We analyzed predictors of psychological distress using generalized linear models (GLM). First, we looked at the individual associations of each working condition with psychological distress, and then we used a forward stepwise approach to assess which conditions of work were more tightly related to psychological distress. We set up a $P$ value of 0.2 for removal and a $P$ value of 0.10 for addition of variables in forward stepwise approach. The stepwise model included sociodemographic variables (age, sex, job title, and ethnicity), organizational (job flexibility and people-oriented culture), and psychosocial (job demands, decision latitude, supervisor support, and coworker support) working conditions.

**Two-Part Models: Assessing the Relationship of Working Conditions and Mental Health Expenditures—**We performed preliminary analyses to determine if workers with more psychological distress symptoms are more likely to seek mental health care by estimating the odds of having either a physical (nonmental) health claim or a mental health claim during the 30 days before survey completion. The choice of 30 days stemmed from the K6 scale which measures psychological distress in the last 30 days. Both models were adjusted for age, race, and level of education (all self-reported). These separate models allow a more specific assessment of mental health, especially in a population that works in the health care sector and may be more open to seeking specialty care.

We were then able to assess the relationship between working conditions and mental health expenditures in a subsample of 902 workers who completed the survey and were enrolled in the employer-sponsored health plan. Given that expenditure data on mental health services was highly skewed as many individuals had zero expenditure on mental health, we used two-part GLM models. The first part of the model assesses the probability of having any expenditure on mental health services and the second part of the model predicts the mean amount spent conditional on having any expenditure on mental health.

## RESULTS

Among the 1594 workers who completed at least 50% of the survey, 1462 (92%) were women, 1341 (84.1%) were white, and the mean age of respondents was 41.5 years (Table 1). For the subsample, distributions were similar: 841 workers (93.2%) were women and 757 (83.9%) were white. Mean scores of psychological distress were 2.56 (SD = 3.0) for the whole sample and 2.46 (SD = 2.9) for the subsample with health expenditure data. Mean scores are similar to scores in the general population (from 2.1 to 2.6).[38]

### Outcome: Psychological Distress

Results from the bivariate GLM models show significant associations ($P<0.001$) of each individual working condition with psychological distress controlled for age, sex, ethnicity, and job title. Higher job flexibility, people-oriented culture, decision latitude, supervisor support, and coworker support were associated with less psychological distress, whereas higher job demands were associated with higher psychological distress (Table 2).

Table 3 shows the results of forward stepwise GLM of independent variables as predictors of psychological distress controlled for age, sex, job title, and ethnicity. After the forward stepwise procedure, only three variables were retained in the model: people-oriented culture, job demands, and coworker support.

### Outcome: Mental Health Claims

Secondary analyses comparing psychological distress and mental health expenditures versus physical health care expenditures showed that workers with higher scores of psychological distress presented higher odds of having any mental health expenditure the month before survey completion (see results in appendix, Table 1, http://links.lww.com/JOM/A662). Workers with moderate levels of psychological distress had higher odds of having any mental health expenditure (odds ratio [OR]: 2.60, 95% confidence interval [CI], 1.71 to

3.96) and higher expenditures conditional on having had any visit ($288.00, 95% CI, $97.30 to $478.70) compared with workers with low or no psychological distress (Appendix Table 1, http://links.lww.com/JOM/A662). When assessing working conditions and mental health claims during the year following survey completion, two-part models showed that workers who perceived higher levels of coworker support had lower odds of having any mental health expenditure (OR: 0.82, 95% CI, 0.68 to 1.00) and conditional on having any expenditure they would spend $62.62 (95% CI, −$128.05 to $2.81) less than workers who perceived lower levels of coworker support (Table 4). Higher scores in people-oriented culture were related to spending $63.58 (95% CI, −$124.77 to −$2.38) less conditional on having had any mental health claim. ORs and expenditures were not significant with other working conditions.

## DISCUSSION

This study aimed to assess the relationship of organizational and psychosocial work factors with perceived mental health and mental health expenditures. Bivariate analyses of work factors and perceived mental health showed expected results: lower scores in people-oriented culture, job flexibility, social support and decision latitude, and higher scores in job demands were associated with psychological distress. Analyses inclusive of all working conditions conducted in a forward stepwise approach, however, showed that people-oriented culture and coworker support were negatively associated with psychological distress, whereas job demands were positively associated. When looking at mental health expenditures, results reflected findings from the relationships of work factors and psychological distress: higher scores in people-oriented culture and coworker support were predictive of lower expenditures on mental health services during the year following survey completion. These results confirm our hypothesis that multiple pathways are related to mental health beyond the traditional perspective of psychosocial conditions of work and mental health.

The results of this study confirm previous associations found between organizational and psychosocial working conditions with psychological distress,[22,30,39] but it adds to the literature by studying the relationships of both of these groups of work factors in relation to perceived mental health and related mental health expenditures. Results showed that commonly studied pathways of work conditions and mental health, such as decision latitude and supervisor support, were not directly related to psychological distress when controlled for organizational culture. This finding may explain previous conflicting results of the demands–control–support model with mental health.[18,20,21,30] Findings from the present study suggest that organizational aspects of work may be upstream factors that trigger downstream work conditions that are often studied with respect to mental health. A people-oriented culture consists of a work environment supportive of cooperative relationships, open communication, and involvement of employees in decision-making which may set the stage for how work relations are carried out throughout the organization and in that sense have an impact on mental health. In line with our findings, previous evidence on organizational culture types and psychological distress showed that a group culture characterized by trust and cohesiveness was negatively associated with psychological distress, whereas a rational culture characterized by performance indicators, accountability, and competitiveness was positively associated with psychological distress.[33,39] Building this

supportive work culture may rely as well on leadership support and commitment. Other studies have found that leadership training focused on interactional justice in the nursing population is related to attenuation of insomniac reactions due to changes in working conditions.[40]

In this study, some results were unexpected, such as the strong relationship of coworker support, not supervisor support, on psychological distress regardless of organizational culture. Previous studies have established a relationship of both coworker and supervisor support with mental health[41] with another longitudinal study, showing that conflict at work increased the likelihood of onset of psychological distress without observing any buffering effects from either supervisor or coworker support.[19] A study with nursing staff found that only coworker support and not supervisor support was associated with emotional exhaustion.[21] Coworker and supervisor support may differ in their relation to mental health given that coworkers are more proximal in everyday tasks than supervisors, and as a result may help in various fronts. Coworkers may collaborate more frequently in getting the work done than supervisors and may provide emotional relief on a more frequent basis in an occupation that requires emotional interactions with patients and family members.

Several issues need to be acknowledged with respect to this study. First, this is a cross-sectional study assessing working conditions and perceived mental health outcomes at the same point in time making it unfeasible to establish any causality. Nevertheless, findings of mental health expenditures within the year after survey completion parallel cross-sectional findings based on self-perceived mental health: higher scores in people-oriented culture and coworker support were associated with having either lower likelihood of a mental health visit or lower expenditures, and these two working conditions were also associated with higher self-perceived distress. One of the limitations to the longitudinal analysis of working conditions and mental health expenditures is that analyses were limited to a subsample of 902 workers who were enrolled in the employer-sponsored health plan. Within this subsample, survey data (K6 scores) were able to capture a higher prevalence of psychological distress than administrative medical claims. Nevertheless, we consider that mental health expenditures are a valuable source of information that reflects the financial burden for the workers and the organization, making promotion of mental health a valid case for the well-being of employers and employees alike. The generalizability of the study findings, especially with respect to mental health expenditures, may be limited as our study population consisted of patient-care workers, a population possibly open to the use of mental health services given the nature of their work in health care. Patient-care workers may have a higher health literacy rate and may also be more open to receiving mental health care. In addition, the population we studied is relatively homogeneous and has many structural advantages around access to mental health care; however, there is a possibility that physical medical claims may be related to mental health issues, but such information is not available in medical claims data.

The use of survey data and administrative data is a great strength in this study. Self-perceived mental health was correlated with having had a mental health visit during the 30 days before survey completion. This finding motivated us to assess mental health expenditures the year following measurement of self-perceived working conditions

reducing any common method biases on self-reports of mental health and also on related expenditures. The observed lower relationship between working conditions and mental health claims and their cost, compared with self-reported psychological distress, is not surprising as there are many barriers to seeking mental health care such as stigma, time,[42] and cost of care.[43] There is an increasing attention on improving work-related mental health problems through workplace interventions.[44] However, interventions at the workplace that target prevention and improvement of ill-mental health have been mostly focused on promoting activities and changes for the individual and not for the organization.[28,45] Such interventions include trainings and workshops on mindfulness, cognitive behavioral therapy, and leadership styles.[28,45] These approaches have been found to be effective with improving emotional exhaustion and coping strategies,[28,45] but they have not been effective on reducing rates of sick leave and consumption of antidepressants.[46] Furthermore, multidomain interventions that target also organizational aspects of work have been more effective than any one individual intervention.[28,45] The present study supports these findings in that organizational aspects of work are important in breeding a culture that prevents ill mental health, but also stresses the role of job demands and coworker support as key factors influencing mental health.

## CONCLUSIONS

Findings from this study have implications for the design and implementation of workplace interventions that target mental health and for the economic costs that ill mental health represent to organizations. Interventions with a focus on the organization may render more sustainable in relation to prevention of ill mental health and may also provide groundwork for trustful and cooperative relationships, especially in an occupation where cooperativeness may make work more effective as it may also provide relief to workers when sharing more among themselves. Future studies may include what aspects of the organizational culture influence working conditions tightly related to mental health such as job demands.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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## REFERENCES

1. Hall DS. Work-related stress of registered nurses in a hospital setting. J Nurses Staff Dev. 2004;20:6–14. [PubMed: 15076122]
2. Bakker AB, Heuven E. Emotional dissonance, burnout, and in-role performance among nurses and police officers. Int J Stress Manag. 2006;13:423–440.
3. Hopcia K, Dennerlein JT, Hashimoto D, Orechia T, Sorenson G. A case-control study of occupational injuries for consecutive and cumulative shifts among hospital registered nurses and patient care associates. Workplace Health Saf. 2012;60:437–444. [PubMed: 22998692]
4. Perry L, Lamont S, Brunero S, Gallagher R, Duffield C. The mental health of nurses in acute teaching hospital settings: a cross-sectional survey. BMC Nurs. 2015;14:1–8. [PubMed: 25598706]

5. Bair MJ, Robinson RL, Katon W, Kroenke K. Depression and pain comorbidity: a literature review. Arch Intern Med. 2003;163:2433–2445. [PubMed: 14609780]
6. Gariepy G, Nitka D, Schmitz N. The association between obesity and anxiety disorders in the population: a systematic review and meta-analysis. Int J Obes. 2010;34:407–419.
7. DiMatteo MR, Lepper HS, Croghan TW. Depression is a risk factor for noncompliance with medical treatment. Arch Intern Med. 2000;160:2101. [PubMed: 10904452]
8. Strine TW, Mokdad AH, Dube SR, et al. The association of depression and anxiety with obesity and unhealthy behaviors among community-dwelling US adults. Gen Hosp Psychiatry. 2008;30:127–137. [PubMed: 18291294]
9. Engum A, Mykletun A, Midthjell K, Holen A, Dahl AA. Depression and diabetes. Diabetes Care. 2005;28:1904–1909. [PubMed: 16043730]
10. Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes. Diabetes Care. 2001;24:1069–1078. [PubMed: 11375373]
11. Reme SE, Dennerlein JT, Hashimoto D, Sorensen G. Musculoskeletal pain and psychological distress in hospital patient care workers. J Occup Rehabil. 2012;22:503–510. [PubMed: 22466375]
12. Rogers AE, Hwang W, Scott LD, Aiken LH, Dinges DF. The working hours of hospital staff nurses and patient safety. Health Aff. 2004;23:202–212.
13. Stone PW, Mooney-kane C, Larson EL, et al. Nurse working conditions and patient safety outcomes. Med Care. 2007;45:571–578. [PubMed: 17515785]
14. Berchick ER, Hood E, Barnett JC. Health Insurance Coverage in the United States: 2017. Washington, DC: Government Publishing Office; 2018.
15. Johnson JV, Hall EM. Job strain, work place social support, and cardiovascular disease: a cross-sectional study of a random sample of the Swedish Working Population. Am J Public Health. 1988;78:1336–1342. [PubMed: 3421392]
16. Karasek R, Brisson C, Kawakami N, Houtman I, Bongers P, Amick B. The Job Content Questionnaire (JCQ): an instrument for internationally comparative assessments of psychosocial job characteristics. J Occup Health Psychol. 1998;3:322–355. [PubMed: 9805280]
17. Utzet M, Navarro A, Lorens C, Muntaner C, Moncada S. Is the worsening of psychosocial exposures associated with mental health? Comparing two population-based cross-sectional studies in Spain. Am J Ind Med. 2016;59:399–407. [PubMed: 26909744]
18. Plaisier I, de Bruijn JG, de Graaf R, Beekman AT, Penninx BW. The contribution of working conditions and social support to the onset of depressive and anxiety disorders among male and female employees. Soc Sci Med. 2007;64:401–410. [PubMed: 17055138]
19. Bultmann U, Kant I, van den Brandt PA, Kasl S. Psychosocial work characteristics as risk factors for the onset of fatigue and psychological distress: prospective results from the Maastricht Cohort Study. Psychol Med. 2002;32:333–345. [PubMed: 11871373]
20. Bourbonnais R, Comeau M, Vezina M, Dion G. Job strain, psychological distress, and burnout in nurses. Am J Ind Med. 1998;34:20–28. [PubMed: 9617384]
21. Jenkins R, Elliott P. Stressors, burnout and social support: nurses in acute mental health settings. J Adv Nurs. 2004;48:622–631. [PubMed: 15548253]
22. Stansfeld S, Candy B. Psychosocial work environment and mental health—a meta-analytic review. Scand J Work Environ Health. 2006;32:443–462. [PubMed: 17173201]
23. Theorell T, Hammarström A, Aronsson G, et al. A systematic review including meta-analysis of work environment and depressive symptoms. BMC Public Health. 2015;15:1–14. [PubMed: 25563658]
24. Sorensen G, McLellan DL, Sabbath EL, et al. Integrating worksite health protection and health promotion: a conceptual model for intervention and research. Prev Med (Baltim). 2016;91:188–196.
25. Michie S, Williams S. Reducing work related psychological ill health and sickness absence: a systematic literature review. Occup Env Med. 2003;60:3–9. [PubMed: 12499449]
26. Halpern DF. How time-flexible work policies can reduce stress, improve health, and save money. Stress Health. 2005;168:157–168.

27. Eastburg MC, Williamson M, Gorsuch R, Ridley C. Social support, personality, and burnout in nurses. J Appl Soc Psychol. 1994;24:1233–1250.
28. Duhoux A, Menear M, Charron M, Lavoie-Tremblay M, Alderson M. Interventions to promote or improve the mental health of primary care nurses: a systematic review. J Nurse Manag. 2017;25:597–607.
29. Ruotsalainen J, Verbeek J, Marine A, Serra C. Preventing occupational stress in healthcare workers. Cochrane database Syst Rev. 2015;4. CD002892.
30. Harvey SB, Modini M, Joyce S, et al. Can work make you mentally ill? A systematic meta-review of work-related risk factors for common mental health problems. Occup Environ Med. 2017;74:301–310. [PubMed: 28108676]
31. Taris TW, Kompier MAJ, Geurts S. Stress management interventions in the Dutch domiciliary care sector: findings from 81 organizations. Int J Stress Manage. 2003;10:297–325.
32. Bourbonnais R, Brisson C, Vinet A, Vézina M, Lower A. Development and implementation of a participative intervention to improve the psychosocial work environment and mental health in an acute care hospital. Occup Environ Med. 2006;63:326–334. [PubMed: 16621853]
33. Dextras-gauthier J, Marchand A. Does organizational culture play a role in the development of psychological distress? Int J Hum Resour Manag. 2016;5192:1–30.
34. Sabbath EL, Hashimoto D, Boden LI, et al. Cohort profile: The Boston Hospital Workers Health Study (BHWHS). Int J Epidemiol. 2018;47:1739–1740g. [PubMed: 30107500]
35. Kessler R, Andrews G, Colpe LJ, et al. Short screening scale to monitor population prevalences and trends in non-specifics psychological distress. Psyicgological Med. 2002;32:959–976.
36. Amick BC, Habeck RV, Hunt A, et al. Measuring the impact of organizational behaviors on work disability prevention and management. J Occup Rehabil. 2000;10:21–38.
37. Thomas LT, Ganster DC. Impact of family supportive work variables on work family conflict and strain: A control perspective. Appl Psychol. 1995;80: 6–15.
38. Pirraglia PA, Hampton JM, Rosen AB, Witt WP. Psychological distress and trends in healthcare expenditures and outpatient healthcare. Am J Manag Care. 2011;17:319–328. [PubMed: 21718079]
39. Marchand A, Haines VY 3rd, Dextras-Gauthier J. Quantitative analysis of organizational culture in occupational health research: a theory-based validation in 30 workplaces of the organizational culture profile instrument. BMC Public Health. 2013;13:443. [PubMed: 23642223]
40. Greenberg J. Losing sleep over organizational injustice: attenuating insomniac reactions to underpayment inequity with supervisory training in interactional justice. J Appl Psychol. 2006;91:58–69. [PubMed: 16435938]
41. Stansfeld SA, Fuhrer R, Shipley MJ, Marmot MG. Work characteristics predict psychiatric disorder: prospective results from the Whitehall II study. Occup Environ Med. 1999;3:302–307.
42. Hodgkinson S, Godoy L, Beers S, Lewin A. Improving mental health access for low-income children and families in the primary care setting. Pediatrics. 2017;139:1–9.
43. Dedania R, Gonzales G. Disparities in access to health care among US-born and foreign-born US adults by mental health. AJPH Res. 2019;109:S221–S227.
44. Nexo MA, Kristensen JV, Gronvad MT, Kristiansen J, Poulsen OM. Content and quality of workplace guidelines developed to prevent mental health problems: results from a systematic review. Scand J Work Environ Heal. 2018;44:443–457.
45. Cullen KL, Irvin E, Collie A, et al. Effectiveness of workplace interventions in return-to-work for musculoskeletal, pain-related and mental health conditions: an update of the evidence and messages for practitioners. J Occup Rehabil. 2018;28:1–15. [PubMed: 28224415]
46. Isaksson KE, Gude T, Tyssen R, Aasland OG. A self-referral preventive intervention for burnout among Norwegian nurses: one-year follow-up study. Patient Educ Couns. 2010;78:191–197. [PubMed: 19656650]

**Clinical significance:**

Workplace interventions that focus on working conditions that promote positive interpersonal relationships and a balance on job demands may enable better mental health outcomes. These working conditions may lower both workers' and employer's expenditure on mental health services in a context where health plans are employer-subsidized.

**TABLE 1.**

Sociodemographic Characteristics of Surveyed Workers in 2012 and Mean Scores on Working Conditions ($N$ = 1594)

| | Whole Sample ($n$ = 1594) | | | | Subsample With Employer Health Plan ($n$ = 902) | | | |
|---|---|---|---|---|---|---|---|---|
| | ***n*** | **%** | ***M*** | **SD** | ***n*** | **%** | ***M*** | **SD** |
| Age (mean/SD) | 1,594 | 100 | 41.5 | 12.0 | 902 | 100 | 42.3 | 12.0 |
| Sex | | | | | | | | |
| Woman | 1,462 | 92.9 | | | 841 | 93.2 | | |
| Man | 111 | 7.1 | | | 61 | 6.8 | | |
| Job | | | | | | | | |
| Nurse | 1,449 | 91.1 | | | 796 | 88.3 | | |
| PCA | 141 | 8.9 | | | 106 | 11.8 | | |
| Ethnicity | | | | | | | | |
| White | 1,341 | 84.1 | | | 757 | 83.9 | | |
| Black | 142 | 8.9 | | | 84 | 9.3 | | |
| Hispanic | 57 | 3.6 | | | 30 | 3.3 | | |
| Other | 54 | 3.4 | | | 31 | 3.4 | | |
| Psychological distress | 1,594 | 100 | 2.56 | 3.0 | 902 | 100 | 2.46 | 2.9 |
| Working conditions | | | | | | | | |
| Job Flexibility | 1,536 | 96.4 | 2.60 | 0.8 | 902 | 100 | 2.59 | 0.8 |
| People-oriented culture | 1,594 | 100 | 3.71 | 0.8 | 902 | 100 | 3.71 | 0.8 |
| Supervisor support | 1,496 | 93.9 | 11.05 | 2.9 | 902 | 100 | 11.16 | 2.9 |
| Coworker support | 1,564 | 98.1 | 8.42 | 1.3 | 902 | 100 | 8.46 | 1.3 |
| Decision latitude | 1,490 | 93.5 | 72.91 | 9.4 | 902 | 100 | 73.16 | 9.4 |
| Job demands | 1,509 | 94.7 | 35.46 | 5.2 | 902 | 100 | 35.6 | 5.0 |

**TABLE 2.**

General Linear Models for Predictors of Psychological Distress

| | β | SE | 95% CI | | *P* |
|---|---|---|---|---|---|
| Working conditions | | | | | |
| Job flexibility | −0.10 | 0.02 | −0.15 | −0.05 | <0.001 |
| People-oriented culture | −0.16 | 0.03 | −0.21 | −0.12 | <0.001 |
| Job demands | 0.18 | 0.03 | 0.13 | 0.23 | <0.001 |
| Decision latitude | −0.10 | 0.03 | −0.15 | −0.04 | <0.001 |
| Supervisor support | −0.16 | 0.03 | −0.21 | −0.11 | <0.001 |
| Coworker support | −0.18 | 0.03 | −0.23 | −0.13 | <0.001 |

Bivariate models controlled for age, sex, job title, and ethnicity (*N* = 1594).

**TABLE 3.**

Final Stepwise General Linear Model for Predictors of Psychological Distress Controlled for Age, Sex, Job Title, and Ethnicity ($n = 1323$)

| | β | SE | 95% CI | | *P* |
|---|---|---|---|---|---|
| Working conditions | | | | | |
| People-oriented culture | −0.09 | 0.03 | −0.15 | −0.04 | 0.001 |
| Job demands | −0.05 | 0.03 | −0.11 | 0.00 | 0.061 |
| Coworker support | −0.11 | 0.03 | −0.17 | −0.06 | <0.001 |

**TABLE 4.**

Two-Part Models of Mental Health Expenditures During the Year After Survey Completion

| | Odds Ratio for Any Expenditure | 95% CI | | Change in Expenditures Given any Expenditure | 95% CI | |
|---|---|---|---|---|---|---|
| Working conditions | | | | | | |
| Job flexibility | 0.91 | 0.76 | 1.10 | $29.66 | −$25.52 | $84.84 |
| People-oriented culture | 0.89 | 0.74 | 1.06 | −$63.58 | −$124.77 | −$2.38 |
| Job demands | 1.02 | 0.84 | 1.25 | −$0.65 | −$60.94 | $59.65 |
| Decision latitude | 0.93 | 0.77 | 1.13 | −$9.44 | −$66.05 | $47.17 |
| Supervisor support | 0.92 | 0.77 | 1.10 | −$32.09 | −$84.61 | $20.44 |
| Coworker support | 0.82 | 0.68 | 1.00 | −$62.62 | −$128.05 | $2.81 |

Models are controlled for age, sex, job title, and ethnicity ($n = 902$).

*$P<0.05$.