

Availability of and Participation in Workplace Health Promotion Programs by Sociodemographic, Occupation, and Work Organization Characteristics in US Workers

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Abstract

Purpose: To examine how the availability of and participation in workplace health promotion programs (WHPPs) vary as a function of sociodemographic, occupation, and work organization characteristics.

Design: Cross-sectional study.

Setting: 2015 National Health Interview Survey and Occupational Health Supplement.

Participants: The study sample included 17 469 employed adults who completed the WHPP questions.

Measures: The 2 dependent outcome measures were availability of WHPPs and participation in these programs when available. Independent variables included occupation and 8 work organization and employment characteristics: company size, hours worked, supervisory responsibility, hourly pay, paid sick leave, health insurance offered by employer, work schedule, and work arrangement.

Analysis: Poisson regression analyses were conducted with SUDAAN 11.0.1.

Results: Overall, 57.8% of 46.6% employees who have WHPPs available reported participating in these programs. This study found that adults who worked ≤ 20 h/wk, worked regular night shifts, were paid by the hour, or worked for temporary agencies were less likely to participate in WHPPs. Workers who supervised others were 13% more likely to participate than non-supervisors. Borderline associations were seen for having access to employer-sponsored health insurance and working at a site with < 10 employees.

Conclusion: Despite the potential for improving physical and mental health, only 58% of US workers participated in WHPPs. Since barriers to WHPP participation (eg, time constraints, lack of awareness, and no perceived need) may vary across occupations and work organization characteristics, employers should tailor WHPPs based on their specific work organization characteristics to maximize participation.

Keywords

workplace health promotion, occupation, work organization, National Health Interview Survey, surveillance

Purpose

Currently, in the United States, more than 60% of the civilian noninstitutionalized population are in the labor force,¹ making the workplace an ideal setting for health promotion programs.²⁻⁵ Research on workplace health promotion programs (WHPPs) has dramatically increased since 2000. However, a recent PubMed search (ie, combinations of the following search terms: workplace, health promotion, program, participation, availability, job, occupation, and industry) found that fewer than 10% of articles examined factors that influence

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participation in health promotion programs across multiple workplaces and even fewer examined availability of health promotion programs across multiple industries and occupations. In addition, few national surveys collected WHPP data from the employee's perspective.⁶ To address these research gaps, the purpose of this study is to examine variability in the availability of and participation in WHPPs by sociodemographic characteristics, occupation, and work organization characteristics in a national sample of US workers. Although this study cannot look at the offering of different types of WHPPs, the overall picture of availability and participation in WHPPs can still be valuable in furthering WHPP research.

The main objective of a WHPP is to improve participants' health through multiple mechanisms, such as provision of workplace safety knowledge (eg, use of personal protective equipment), early identification and management of diseases (eg, screening and educational programs), and promotion of healthy behaviors. In identifying factors that would contribute to achieving this objective, researchers should not only look at factors that would maximize participation in WHPPs but also factors that would affect the availability of WHPPs. This study aims to gain a deeper understanding of where sociodemographic and work characteristic disparities are occurring for both availability of and participation in WHPPs. To be most effective, WHPPs should be widely available and tailored to the individual, workplace, and occupation. This will require a greater understanding of worker demographics, health status, occupation, and work organization characteristics (eg, size of workforce, work schedules, benefits offered).^{2,7-10}

Sorensen et al¹¹ have proposed a conceptual model that describes policies, programs, and practices that may operate concurrently through many pathways affecting the conditions of work, including the physical work environment, the organization of work, and important workplace psychosocial factors. These factors interact with worker and workforce characteristics to affect worker health and safety behaviors, beliefs, knowledge, and skills and subsequently outcomes such as injury, illness, and well-being. Each of these factors is important to the understanding of who is likely to participate in health promotion programs.

In 2011, the National Institute for Occupational Safety and Health (NIOSH) launched the Total Worker Health (TWH) program that uses a hybrid approach to promote policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts to advance worker well-being.¹² These include workplace safety, workload analysis, employer practices, and access to health promotion programs.¹²

The changing nature of the workforce, both in the growth of select occupations such as home health aides and financial managers, and decrease in others (eg, mail carriers and tellers),¹³ signals a need to continuously assess and identify factors that impact the availability of and participation in WHPPs.⁷⁻⁹

Methods

Design

The National Center for Health Statistics National Health Interview Survey (NHIS) is an in-person household survey of a national cross-sectional probability sample of the US civilian population. The 2015 NHIS included an Occupational Health Supplement with questions on the availability of and participation in WHPPs. Data used in this study can be found online.¹⁴

Sample

Overall, 33 672 adults were sampled in 2015, and the final response rate for the sample adult component was 55.2%.¹⁵ Detailed information about this survey is available at the NHIS website.¹⁶ The study sample was restricted to adults (≥ 18 years) employed in the week prior to interview who answered the question on availability of WHPPs ($N = 17\,469$). Self-employed adults were excluded.

Measures

The 2 main outcomes of interest were availability of and participation in WHPPs. Respondents were asked to think of their main job when answering these questions. For availability, respondents were asked: "In the past year, were health promotion programs made available to you by your employer? Examples of health promotion programs include education about weight management, smoking cessation, screening for high blood pressure, high cholesterol, or other health risks, and onsite fitness facilities or discounted gym memberships." Responses were yes/no. For participation, those whose employers offered WHPPs were asked: "How often did you participate in any of these activities in the past year? Would you say . . . never, once, a few times, monthly, weekly, daily?" For this analysis, participation was recoded to yes/no.

Sociodemographic characteristics. Sociodemographic characteristics included gender, age-group, race/ethnicity, marital status, education, family income, personal earnings, poverty index, and region of the country.

Occupation categories. During NHIS interviews, respondents' occupations were recorded verbatim. These responses were subsequently coded by US Census Bureau coding specialists and collapsed into 23 occupation categories that roughly match the 2010 Standard Occupational Classification system. This study examined 22 occupation categories; military-related occupations were not studied.

Work organization characteristics. Eight work organization and employment characteristics were examined: number of employees at work location, hours worked per week, supervising others (yes/no), hourly pay (yes/no), paid sick leave (yes/no), health insurance offered at work (yes/no), work schedule, and work arrangements.

Analysis

SAS 9.4 and SUDAAN 11.0.1 were used to account for the complex sample design of NHIS. First, we examined weighted prevalence rates for both outcomes stratified by categorical sociodemographic characteristics. Prevalence ratios (PRs) and 95% confidence intervals were estimated using Poisson regression. Next, we examined weighted prevalence rates for both outcomes stratified by occupation and adjusted for age, gender, and race/ethnicity distribution of the US population.¹⁷ In order to assess correspondence between availability and participation by occupational category, we calculated Z-scores for each occupation for both outcomes. The Z-score (standard score) is the signed number of standard deviations (σ) by which the value of an observation (x , prevalence of an outcome within an individual occupation category) differs from the mean value of the entire sample (μ , average prevalence based on 22 occupation categories).¹⁸ The formula for Z-score is $Z = (x - \mu) / \sigma$. Z-scores were plotted on a scatterplot, with the availability Z-score on the x-axis and participation on the y-axis. Finally, we examined weighted prevalence rates for both outcomes by work organization and employment characteristics and adjusted for age, gender, and race/ethnicity. Sociodemographic characteristics were examined for confounding and interactions with work organization and employment characteristics. Inclusion of sociodemographic characteristics in the final models was based on prior literature and $\sim 10\%$ change in PR in any of the models. Although both education level and personal earnings showed evidence of confounding, to avoid collinearity, only personal earnings was included because it was a stronger confounder. Other sociodemographic characteristics had little to no impact on PRs. Interactions between work organization and employment characteristics were also examined. However, inclusion of statistically significant interaction terms in most models generally had little effect. The final models were adjusted for age, gender, race/ethnicity, and personal earnings.

Sensitivity analyses were also conducted to assess the impact of dichotomizing the participation outcome at alternative cut points (ie, “never/once” compared to “more than once” or “never/once/a few times” compared to “monthly/weekly/daily”).

Results

There were 17 469 workers who fit the study criteria, of which 8139 (46.6%) workers responded that at least one WHPP was available at their workplaces. Among the 8139 workers who indicated that WHPPs were available, 8131 responded to the participation question, with 4744 (57.8%) workers indicating that they had participated in WHPPs.

Results by Sociodemographic Characteristics

Availability of WHPPs. Sociodemographic differences in availability of WHPPs are presented in Table 1. Workers aged 30 to 64 were approximately 50% more likely than younger or older workers to have access to WHPPs. Hispanic workers

were 35% less likely than non-Hispanic white workers to have access to WHPPs. Married adults and those who lived in the Midwest were also more likely to respond “yes” to availability of WHPPs. No significant difference in availability was seen for gender. Availability increased as each of the 4 socioeconomic status characteristics (education, family income, personal earnings, and poverty index) increased (Table 1).

Participation in WHPPs. The participation outcome only included workers ($n = 8131$) who reported that WHPPs were available. Given that WHPPs were available in their workplaces, workers between 30 and 64 years were 11% to 12% more likely to participate in WHPPs than workers younger than 30 years. Non-Hispanic black workers were 10% more likely to participate than non-Hispanic white workers, and workers who never married were 9% less likely to participate than married workers. Workers who lived in the Midwest or the South were 11% more likely to participate than workers who lived in the Northeastern part of the US. Workers with a college degree were 16% more likely to participate than workers with a high school diploma. Workers with personal earnings of $\geq \$30\,000$ /year were 18% to 23% more likely to participate than those earning $\$15\,000$ to $< \$30\,000$. No significant differences were seen for gender, family income, nor poverty index (Table 1).

Results by Occupation

Availability of WHPPs. Occupations with the highest availability were computer and mathematical (76.1%); life, physical, and social science (71%); and health-care practitioners and technical (70.3%) occupations. Workers in farming, fishing, and forestry (3.1%); food preparation and serving related (17.2%); and construction and extraction (23.7%) occupations reported the lowest availability (Table 2).

Participation in WHPPs. Occupations with the highest participation (given availability of WHPPs) were arts, design, entertainment, sports, and media (68.4%); management (68%); and community and social services (66.7%) occupations. Occupations with the lowest participation were farming, fishing, and forestry (26%); food preparation and serving related (42.4%); and construction and extraction (45.3%) occupations (Table 2).

Relationship between availability and participation. Figure 1 shows a scatterplot depicting Z-scores for availability and participation with occupation categories plotted into 4 quadrants: (1) high availability and high participation, (2) high availability and low participation, (3) low availability and high participation, and (4) low availability and low participation. A moderate positive correlation was found between availability and participation ($r = 0.6$). Occupations with high availability and high participation included management; life, physical, and social science; business and financial operations; and architecture and engineering jobs. Occupations with low availability and low participation included farming, fishing, and forestry; food preparation and serving related; construction and extraction; and health-care support jobs (Table 2/Figure 1).

Table 1. Weighted Prevalence of Availability and Participation^a in Workplace Health Promotion Programs by Sociodemographic Characteristics (National Health Interview Survey, 2015).

| Characteristics | Available (n = 17 469) | | Participated (n = 8131) | |
|---------------------------|------------------------|--------------------------------------|---------------------------|---|
| | Percent (SE) | Univariate Prevalence Ratio (95% CI) | Percent ^a (SE) | Univariate Prevalence Ratio ^a (95% CI) |
| Total | 46.6 | | 57.8 | |
| Gender | | | | |
| Women | 47.4 (0.8) | Reference | 58.1 (1.1) | Reference |
| Men | 45.9 (0.8) | 0.97 (0.92-1.01) | 57.4 (1.1) | 0.99 (0.94-1.04) |
| Age group (years) | | | | |
| 18-29 | 33.9 (1.1) | Reference | 52.8 (1.8) | Reference |
| 30-44 | 50.4 (0.9) | 1.49 (1.38-1.60) | 58.8 (1.2) | 1.11 (1.04-1.20) |
| 45-64 | 52.5 (0.8) | 1.55 (1.44-1.66) | 58.9 (1.2) | 1.12 (1.03-1.21) |
| ≥65 | 36.8 (2.0) | 1.08 (0.96-1.23) | 57.9 (3.5) | 1.10 (0.96-1.25) |
| Race/ethnicity | | | | |
| Hispanic | 32.4 (1.4) | 0.65 (0.60-0.71) | 60.4 (1.9) | 1.07 (1.00-1.15) |
| Non-Hispanic white | 49.7 (0.7) | Reference | 56.4 (1.0) | Reference |
| Non-Hispanic black | 46.9 (1.4) | 0.94 (0.89-1.01) | 62.2 (2.1) | 1.10 (1.03-1.19) |
| Non-Hispanic Asian | 50.5 (2.0) | 1.02 (0.94-1.10) | 60.2 (2.8) | 1.07 (0.97-1.17) |
| Non-Hispanic, Other | 51.1 (4.8) | 1.03 (0.85-1.24) | 54.7 (6.9) | 0.97 (0.75-1.25) |
| Marital status | | | | |
| Married | 51.1 (0.8) | Reference | 58.9 (1.1) | Reference |
| Widowed | 42.6 (3.3) | 0.82 (0.70-0.96) | 55.5 (5.0) | 0.94 (0.79-1.13) |
| Divorced or separated | 48.7 (1.4) | 0.93 (0.88-0.99) | 59.4 (1.8) | 1.01 (0.94-1.08) |
| Never married | 35.8 (1.0) | 0.69 (0.65-0.73) | 53.7 (1.6) | 0.91 (0.85-0.97) |
| Living with partner | 39.4 (1.6) | 0.76 (0.70-0.82) | 55.8 (2.9) | 0.95 (0.85-1.05) |
| Education | | | | |
| <High school diploma | 20.9 (1.5) | 0.58 (0.50-0.67) | 52.5 (3.5) | 0.99 (0.85-1.15) |
| High school diploma/GED | 36.2 (1.1) | Reference | 53.1 (1.9) | Reference |
| Some college | 42.9 (0.9) | 1.19 (1.11-1.27) | 54.3 (1.4) | 1.02 (0.94-1.11) |
| College degree and higher | 61.7 (0.9) | 1.70 (1.59-1.82) | 61.8 (1.2) | 1.16 (1.08-1.26) |
| Region | | | | |
| Northeast | 45.2 (1.4) | Reference | 53.1 (2.0) | Reference |
| Midwest | 50.2 (1.0) | 1.11 (1.03-1.19) | 58.7 (1.7) | 1.11 (1.01-1.21) |
| South | 47.1 (1.0) | 1.04 (0.97-1.12) | 59.2 (1.4) | 1.11 (1.02-1.21) |
| West | 43.3 (1.0) | 0.96 (0.89-1.03) | 57.9 (1.7) | 1.09 (0.99-1.20) |
| Family income | | | | |
| <35 000 | 26.4 (0.9) | 0.65 (0.59-0.72) | 50.7 (1.9) | 0.88 (0.80-0.97) |
| 35 000-54 999 | 40.5 (1.3) | Reference | 57.7 (1.8) | Reference |
| 55 000-74 999 | 44.7 (1.4) | 1.10 (1.01-1.20) | 52.9 (2.0) | 0.92 (0.83-1.02) |
| 75 000-99 999 | 54.1 (1.5) | 1.34 (1.23-1.46) | 60.1 (1.9) | 1.04 (0.96-1.13) |
| 100 000+ | 59.4 (1.1) | 1.47 (1.37-1.57) | 60.4 (1.3) | 1.05 (0.98-1.13) |
| Personal earnings | | | | |
| <15 000 | 22.4 (1.1) | 0.67 (0.59-0.76) | 53.3 (3.2) | 1.06 (0.91-1.25) |
| 15 000-29 999 | 33.3 (1.1) | Reference | 50.1 (2.1) | Reference |
| 30 000-49 999 | 49.8 (1.1) | 1.50 (1.38-1.62) | 59.2 (1.7) | 1.18 (1.07-1.31) |
| 50 000-79 999 | 62.4 (1.2) | 1.88 (1.73-2.03) | 59.2 (1.5) | 1.18 (1.07-1.30) |
| 80 000+ | 70.6 (1.4) | 2.12 (1.96-2.29) | 61.7 (1.5) | 1.23 (1.12-1.36) |
| Poverty index | | | | |
| <1.0 | 18.6 (1.3) | Reference | 53.8 (3.8) | Reference |
| 1.0-2.9 | 34.2 (0.9) | 1.84 (1.58-2.13) | 51.3 (1.5) | 0.95 (0.82-1.11) |
| 3.0+ | 56.4 (0.7) | 3.03 (2.62-3.50) | 59.9 (1.0) | 1.11 (0.97-1.28) |

Abbreviations: CI, confidence interval; SE, standard error.

^aParticipation was only asked of those who said that workplace health promotion programs were available.

Results by Employment and Work Organization Characteristics

Availability of WHPPs. Work locations with more employees were more likely to offer WHPPs; a dose-response effect was evident (Table 3). Workers who worked ≤30 h/wk were less

likely to report availability of WHPPs than workers who worked 31 to 60 h/wk. Similarly, workers with nonstandard work arrangements (ie, independent, temporary or contract, and other), workers who were paid by the hour (yes vs no), and workers on evening and rotating shifts (compared to

Table 2. Weighted Adjusted Prevalence and Z-scores for Availability and Participation^a in Workplace Health Promotion Programs by Occupation (National Health Interview Survey, 2015).

| Occupation | Available | Participated | Available | Participated |
|--|---------------------------|-----------------------------|----------------------|----------------------|
| | Percent ^b (SE) | Percent ^{a,b} (SE) | Z-Score ^c | Z-Score ^d |
| Management | 54.2 (1.6) | 68.0 (2.2) | 0.50 | 1.44 |
| Business and financial operations | 58.4 (2.3) | 59.4 (3.3) | 0.74 | 0.51 |
| Computer and mathematical | 76.1 (2.5) | 57.3 (3.0) | 1.72 | 0.28 |
| Architecture and engineering | 68.8 (3.1) | 59.4 (4.2) | 1.31 | 0.51 |
| Life, physical, and social science | 71.0 (3.3) | 62.6 (3.6) | 1.43 | 0.85 |
| Community and social services | 43.9 (3.4) | 66.7 (3.8) | −0.07 | 1.30 |
| Legal | 41.3 (4.4) | 51.7 (4.9) | −0.21 | −0.32 |
| Education, training, and library | 55.1 (1.9) | 55.0 (2.6) | 0.55 | 0.03 |
| Arts, design, entertainment, sports, and media | 36.1 (2.9) | 68.4 (4.2) | −0.50 | 1.48 |
| Health-care practitioners and technical | 70.3 (2.0) | 57.9 (3.0) | 1.40 | 0.35 |
| Health-care support | 43.8 (3.1) | 50.0 (5.1) | −0.07 | −0.50 |
| Protective service | 50.5 (2.7) | 58.1 (3.8) | 0.30 | 0.37 |
| Food preparation and serving related | 17.2 (2.3) | 42.4 (4.5) | −1.55 | −1.32 |
| Building and grounds cleaning and maintenance | 29.5 (2.9) | 54.9 (3.9) | −0.87 | 0.02 |
| Personal care and service | 26.7 (2.5) | 58.5 (4.6) | −1.02 | 0.41 |
| Sales and related | 35.9 (1.7) | 56.9 (3.2) | −0.51 | 0.24 |
| Office and administrative support | 50.3 (1.7) | 52.6 (2.4) | 0.29 | −0.22 |
| Farming, fishing, and forestry | 3.1 (0.9) | 26.6 (0.0) | −2.33 | −3.03 |
| Construction and extraction | 23.7 (2.9) | 45.3 (4.2) | −1.19 | −1.01 |
| Installation, maintenance, and repair | 51.6 (2.8) | 52.6 (3.3) | 0.36 | −0.22 |
| Production | 48.5 (2.7) | 46.5 (3.2) | 0.19 | −0.88 |
| Transportation and material moving | 36.3 (2.8) | 52.1 (4.9) | −0.49 | −0.28 |

Abbreviation: SE, standard error.

^aParticipation was only asked of those who said that workplace health promotion programs were available.

^bAdjusted for age, sex, race/ethnicity using the projected 2000 US population as the standard population.

^cBased on a weighted mean of 0.4515 and weighted SD of 0.1802.

^dBased on a weighted mean of 0.5468 and weighted SD of 0.0927.

workers on daytime shifts) were less likely to have WHPPs available to them. Conversely, workers who supervised others were 22% more likely to have WHPPs. Workers with paid sick leave (yes vs no) and workers who were offered health insurance at work (yes vs no) were 2 to 3 times more likely to have WHPPs.

Participation in WHPPs. Workers who worked ≤ 20 h/wk were 17% less likely to participate in WHPPs than workers who worked 31 to 40 h/wk (Table 3). Similarly, workers who worked regular night shifts were 19% less likely to participate than workers who worked regular daytime shifts; temporary or contract workers were 37% less likely to participate than workers with standard work arrangement; and workers who were paid by the hour were 15% less likely to participate. Conversely, workers who supervised others were 13% more likely to participate than nonsupervisory workers. Workers working at a location with <10 workers were 11% less likely to participate than those working at a site with 10 to 49 workers, and workers who were offered health insurance at work were 13% more likely to participate. The difference in participation among workers who had paid sick leave compared with those who did not was not significant.

Sensitivity analysis. When participation was categorized as never/once versus more than once, workers who supervised others remained more likely to participate and workers who were paid by the hour remained less likely to participate. Participation no longer differed significantly by number of workers at the location, work schedule, work arrangement, hours worked, nor health insurance benefits. When participation was examined to look at more frequent participation (ie, never/once/a few times vs more than a few times), only working as a supervisor remained significant.

Discussion

This study found evidence that a number of factors were associated with both availability and participation in WHPPs, including sociodemographic characteristics, occupation, employment, and work organization characteristics.

Differences by Sociodemographic Characteristics

Unlike pooled results from a recent systematic review,¹⁹ this study found that non-Hispanic black workers were more likely to participate in WHPPs. Although we do not have information on the types of WHPP activity, this could be due to greater participation in health screenings, for example, higher rates of

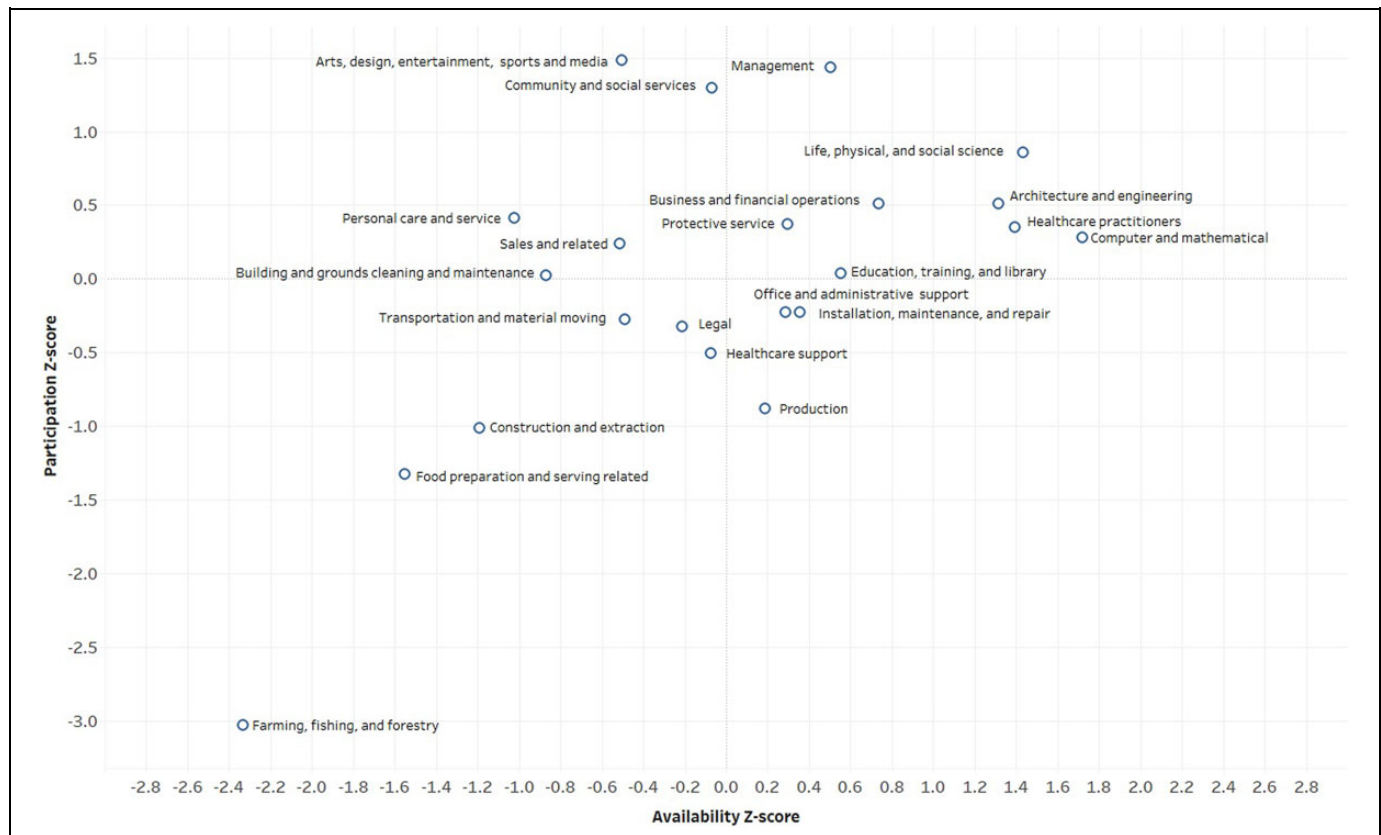


Figure 1. Availability of and participation in workplace health promotion programs Z-scores by occupations, National Health Interview Survey (NHIS) 2015.

blood pressure screening among black workers. Thorpe et al found higher participation in screenings among blacks in urban communities and suggested that this may be due to more aggressive efforts by physicians to encourage screenings in this population.²⁰ Racial diversity in the worker's organization may play a role in WHPP participation. However, company-specific research studies may not observe participation differences by race/ethnicity if the companies surveyed lacked racial diversity.²¹

Differences by Occupation

This study found that occupations with high availability of WHPPs were more likely to be white-collar jobs, generally indoor or office jobs where employees worked from one main location. Conversely, occupations with low availability were more likely to be blue-collar jobs, involving more labor-intensive tasks, requiring longer hours, working out of multiple locations (eg, nursing home visits, short-term construction projects), and having higher turnover. Similar to this study's findings, Sorensen et al found that blue-collar workers were less likely to participate in WHPPs.²² In addition, when comparing work context characteristics based on the Occupational Information Network,²³ for 3 occupations with the highest and lowest participation, differences were seen. Occupations with the highest participation were primarily indoors, in

environmentally controlled workplaces, required extensive use of phone and e-mail, or frequent face-to-face discussions. Whereas, occupations with the lowest participation often required workers to stand, walk, or run, wear protective equipment, or work from a vehicle.²³

Similar to this study,²⁴ Stein et al found that managerial workers were more likely to participate than nonmanagerial workers.²¹ Kilpatrick et al,²⁵ unlike this study, found that workers in administrative occupations were less likely to participate. Study design and study population differences may have contributed to conflicting findings.^{26,27}

Differences by Work Organization Characteristics

Workplace size. Since small companies generally have fewer resources,²⁸⁻³⁰ they are less likely than large companies to offer health promotion programs.^{31,32} Even when small companies have WHPPs, the variety of available programs is limited.³³ Findings with regard to participation have been inconsistent. Although some studies found higher participation among smaller companies,³³⁻³⁵ this study and the study by Hall et al²⁸ found little to no difference between company size and participation. It may be that in smaller companies there is increased peer pressure to participate, but this may be countered by the lack of variety or choices in types of WHPPs.

Table 3. Weighted Prevalence of Availability and Participation^a in Workplace Health Promotion Programs by Employment Characteristics and Work Organization Characteristics (National Health Interview Survey, 2015).

| Employment Characteristics | Availability | | Participation | |
|--|---------------------------|--------------------------|---------------------------|--------------------------|
| | Percent ^b (SE) | PR ^c (95% CI) | Percent ^b (SE) | PR ^c (95% CI) |
| Number of employees at work location | | | | |
| <10 | 21.1 (1.0) | 0.65 (0.58-0.72) | 51.9 (2.6) | 0.89 (0.80-0.99) |
| 10-49 | 33.1 (1.1) | Reference | 56.7 (2.0) | Reference |
| 50-249 | 51.9 (1.2) | 1.63 (1.53-1.75) | 56.4 (1.7) | 0.98 (0.91-1.05) |
| 250-999 | 71.9 (1.5) | 2.28 (2.15-2.43) | 57.0 (1.9) | 1.04 (0.96-1.12) |
| ≥1000 | 80.6 (1.4) | 2.51 (2.36-2.68) | 59.8 (1.8) | 1.00 (0.92-1.08) |
| Hours worked | | | | |
| ≤20 | 24.8 (1.4) | 0.47 (0.42-0.52) | 48.3 (3.1) | 0.83 (0.73-0.95) |
| 21-30 | 30.0 (1.7) | 0.53 (0.47-0.60) | 49.2 (3.2) | 0.89 (0.78-1.03) |
| 31-40 | 50.1 (1.0) | Reference | 57.2 (1.3) | Reference |
| 41-50 | 56.6 (1.3) | 1.16 (1.10-1.22) | 61.0 (2.1) | 1.06 (0.99-1.13) |
| 51-60 | 52.0 (2.4) | 1.10 (1.03-1.18) | 57.2 (2.9) | 1.05 (0.97-1.15) |
| 60+ | 42.6 (2.7) | 0.99 (0.88-1.12) | 55.2 (3.1) | 1.00 (0.88-1.15) |
| Supervise others | | | | |
| Yes | 50.3 (1.1) | 1.22 (1.17-1.27) | 63.0 (1.7) | 1.13 (1.07-1.19) |
| No | 43.8 (0.7) | Reference | 53.1 (1.1) | Reference |
| Paid by hour | | | | |
| Yes | 41.7 (0.8) | 0.70 (0.67-0.73) | 51.7 (1.2) | 0.85 (0.81-0.90) |
| No | 53.9 (1.0) | Reference | 62.1 (1.5) | Reference |
| Paid sick leave | | | | |
| Yes | 60.8 (0.8) | 2.87 (2.69-3.06) | 57.7 (1.2) | 1.07 (1.00-1.15) |
| No | 23.4 (0.7) | Reference | 52.0 (1.8) | Reference |
| Health insurance offered at work place | | | | |
| Yes | 59.4 (0.8) | 3.96 (3.61-4.35) | 58.3 (1.1) | 1.13 (1.01-1.27) |
| No | 16.0 (0.8) | Reference | 47.0 (2.3) | Reference |
| Work organization characteristics | | | | |
| Work schedules | | | | |
| Regular daytime schedule | 47.6 (0.7) | Reference | 58.1 (1.1) | Reference |
| Regular evening shift | 38.5 (2.8) | 0.69 (0.61-0.79) | 52.3 (4.3) | 0.92 (0.80-1.05) |
| Regular night shift | 56.9 (2.8) | 1.06 (0.95-1.18) | 41.7 (3.9) | 0.81 (0.70-0.93) |
| Rotating shift | 38.9 (1.3) | 0.79 (0.74-0.84) | 57.1 (2.3) | 0.99 (0.91-1.08) |
| Work arrangement | | | | |
| Work as independent contractor, consultant, or freelance worker | 22.2 (2.0) | 0.43 (0.35-0.51) | 49.4 (4.5) | 0.90 (0.74-1.10) |
| Paid by a temporary agency or work for a contractor who provides workers and services to others under contract | 26.9 (3.0) | 0.51 (0.42-0.62) | 38.7 (4.2) | 0.63 (0.46-0.86) |
| Regular, permanent employee | 49.2 (0.7) | Reference | 57.4 (1.0) | Reference |
| Some other work arrangement | 21.5 (2.3) | 0.44 (0.36-0.55) | 47.9 (4.3) | 0.97 (0.78-1.20) |

Abbreviations: CI, confidence interval; PR, prevalence ratio; SE, standard error.

^aParticipation was only asked of those who said that workplace health promotion programs were available.^bAdjusted for age, sex, race/ethnicity using the projected 2000 US population as the standard population.^cAdjusted for age, sex, race/ethnicity, and personal income.

Hours worked per week. This study confirmed findings from previous studies that part-time workers, compared to full-time workers, were less likely to participate in WHPPs.^{21,26} Part-time workers who worked <20 hours per week may encounter additional barriers for participating in WHPPs, such as when programs are scheduled outside of their working hours or the perception that they need to be performing work the whole time that they are in the workplace.³⁶⁻³⁸ In addition, those who worked <20 hours are less likely to report having WHPPs. Part-time workers may not be aware that WHPPs are available, indirectly affecting participation. Employers should consider increasing awareness of WHPPs and provide WHPPs at times that

would maximize attendance. However, unlike Tabak et al,²⁶ participation did not increase with number of hours worked in the current study. Persson et al³⁹ found that those who worked triple shifts were less likely to participate than those who worked double or single shifts. Those who worked many hours may have less time to participate due to shiftwork, scheduling conflicts, or working more than one job.⁴⁰

Supervisory responsibility. Similar to Tabak et al,²⁶ this study found that those who supervised others were more likely to participate in WHPPs. Companies may encourage senior management to lead by example. If the company head makes

workplace health promotion a priority, those in management would be encouraged to set an example through participating in WHPPs.^{8,21,41}

Employer-offered health insurance and paid sick leave. Employers that offer health insurance are making a financial investment in their employees' health. They are more likely to offer other employee benefits, such as WHPPs, and paid sick leave as cost-saving measures. Also, employers that offer health insurance tend to be larger⁴² and are more likely to have a greater selection of programs, thereby increasing overall participation.^{43,44}

Work schedule. Previous research has shown conflicting findings for shiftwork and participation in WHPPs. Although some studies agreed with this study that workers working night shifts were less likely to participate,^{26,45} others found that shift workers were more likely to participate,^{46,47} and yet others found no difference between shiftwork and participation.^{25,48} The nature of the night shift may explain why night shift workers are less likely to participate. Those working at night may have less contact with family and friends who can provide support, accountability, and encouragement for healthful activities.⁴⁹

Nonstandard work arrangements. Workers in nonstandard work arrangements made up 12.7% of this study's population, including 2.8% who were temporary or contract workers. Temporary and contract workers are less likely to work for companies that offer WHPPs and may not be eligible to participate in WHPPs on company time. This lack of flexibility can serve as a deterrent. Work arrangements were found to interact with company size, hours worked per week, and work schedule (data not shown).

Implications of Sensitivity Analysis Results

When the participation outcome was classified as ever or never, 7 of the 8 work organization and employment characteristics showed significant or borderline significance. However, only 2 work organization characteristics (ie, supervising others and paid by the hour) continued to be significant when the outcome was categorized as participating one time or fewer versus more than one time. This indicates that work organization characteristics may have a more important role in initiating rather than sustaining participation. Further research on work organization or workplace psychosocial factors that might sustain participation in WHPPs should be conducted.

Comparison to 1994 NHIS Study

The 1994 NHIS⁵⁰ collected data on availability of and participation in 33 different types of WHPPs. There appears to be a decrease in overall availability of WHPPs in 2015 when compared to the 1994 NHIS. This apparent decrease may be due to differences between cross-sectional samples or differences in how the availability question was asked. For example, in the 2015 NHIS, overall availability was determined by asking one question, while in the 1994 NHIS, the overall availability was determined when participants indicated availability of any of

the 33 individual workplace health programs. In addition, the National Worksite Health Promotion Survey found that respondents (ie, managers of WHPPs) reported significantly more perceived barriers to offering WHPPs in their 2014 survey than their 1999 survey.⁵¹ Despite lower availability in 2015, there was an apparent increase in overall participation (given the availability of programs) from 1994 to 2015. Although the current study did not have information on types of WHPPs, it is possible that workplaces in 2015 are offering more program choices, increasing the chance that at least one program would fit a worker's needs. This increase in participation may be due to increased emphasis and support by health-care professionals and social media for fitness, health, and wellness activities.

Strengths and Limitations

This study has a number of limitations. First, NHIS is a cross-sectional survey, limiting any interpretation of causality. Second, small sample sizes were present when analyzing 22 occupation categories. Third, both study outcomes were self-reported. This is particularly an issue for the availability of WHPPs because reported availability and actual availability may differ.²⁵ Availability was most likely underestimated as some employees might have been unaware of programs offered.⁵² Participation may have been overreported and subject to social desirability bias, given that participation in WHPPs may be viewed as a more socially desirable response. Lastly, this study did not have information on the types of WHPPs. This is a major limitation as previous studies have shown that participation can vary greatly depending on the types of programs.⁵⁰

This study also has several strengths. First, NHIS is a nationally representative survey and findings can be generalized to the US population. Second, the NHIS collected information on a wide range of topics, which allowed analytic models to adjust for multiple demographic and workplace characteristics. Lastly, this study provides the most recent national data (2015) on the availability of and participation in WHPPs among US workers across a variety of work settings using a brief 3-item measure.

Conclusion and Recommendation

Workers can benefit by participating in WHPPs.⁵³ For example, Ott-Holland found that workers with greater participation in WHPPs had higher performance ratings, higher job satisfaction, higher intention to stay, and lower turnover.⁵⁴ There are many different types of health promotion programs, including health education programs (eg, weight control, stress management, smoking cessation), exercise programs, exercise facilities, and health screenings. Workplaces that allow workers to choose from a variety of programs are likely to have higher overall participation.⁴⁴ Workers may not participate for many reasons, including lack of awareness, little to no supervisory support, time constraints, and no perceived need.^{24,26,39,40,52,54,55} Results from Centers for Disease Control and Prevention (CDC's) more recent Workplace Health in America Survey (2016-2017) may provide insight into integrated safety and health interventions.⁵⁶

To increase participation, employers should gauge workers' needs before designing and implementing WHPPs.²⁶ Workplaces should also target workers who would benefit the most from participating.^{25,26,55} Lastly, creating a supportive physical and social environment is important for increasing participation.^{24,52} These recommendations echo the main objective of NIOSH's TWH program, which is to establish policies, programs, and practices within the workplace that advance the safety, health, and well-being of the workforce.¹² It should also be noted that a TWH approach means employers and employer-worker partnerships must first ensure that they are providing a workplace free from hazardous working conditions before implementing additional measures to move their workforce toward a state of TWH.¹²

Future efforts to increase the availability and participation in WHPPs are needed. Although this study found differences by occupation and work organization and employment characteristics when evaluating a broad definition of WHPP, it is also important to investigate how these characteristics may affect participation in specific types of WHPPs so that employers can take these characteristics into consideration when designing health promotion programs.

SO WHAT? Implications for Health Promotion Practitioners and Researchers

What is already known on this topic?

National population-based data on the availability and participation in workplace health promotion programs (WHPPs) are rarely collected from the worker perspective. Data from the 1994 NHIS found high availability of WHPPs (82.3%), with approximately half (49.6%) of workers participating in these programs.

What does this article add?

This study provides national data from 2015 on availability and participation in WHPPs. Results showed that occupation, work organization, and employment characteristics were associated with both availability and participation in WHPPs.

What are the implications for health promotion practice or research?

Employers need to do more than just offer programs, they need to consider factors that encourage participation. Demographic factors that predict availability of WHPPs are not necessarily the same factors that predict participation in WHPPs. In addition, employers should take occupation and work organization characteristics into account when designing and implementing WHPPs to maximize worker participation.

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