



HHS Public Access

Author manuscript

Am J Health Promot. Author manuscript; available in PMC 2021 February 09.

Published in final edited form as:

Am J Health Promot. 2021 February ; 35(2): 179–185. doi:10.1177/0890117120949807.

The Workplace Support for Health Scale: Reliability and Validity of a Brief Scale to Measure Employee Perceptions of Wellness

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Abstract

Purpose: To examine the reliability and validity of a brief measure (the Workplace Support for Health [WSH] scale) to assess employees' perceived support for a healthy lifestyle.

Design: Repeated cross-sectional surveys.

Setting: We collected employer- and employee-level survey data from small, low-wage workplaces in King County, WA enrolled in a randomized controlled trial.

Sample: We analyzed data from 68 workplaces that had 2,820 and 2,640 employees complete surveys at baseline and 15 months, respectively.

Measures: The WSH scale consisted of five items. To assess validity, we examined associations between the WSH scale and employer implementation of evidence-based interventions for health promotion, employee self-rated health, and job satisfaction.

Analysis: We performed an exploratory factor analysis to assess the unidimensionality of the WSH scale items, and produced Cronbach's alpha coefficients to examine scale reliability. We ran regression models using generalized estimating equations to examine validity.

Results: The factor analysis indicated one factor, which accounted for 59% of the total variance in the workplace support for health items. The scale had good reliability at baseline ($\alpha=0.82$) and 15 months ($\alpha=0.83$). Employer evidence-based intervention implementation was positively associated with WSH. WSH was also associated with higher self-rated health and job satisfaction. These associations indicate good concurrent validity.

Conclusion: The WSH scale is a reliable and valid measure of perceived workplace support for health. Employers can use the scale to identify gaps in support and create a plan for improvement.

In Brief

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Declaration of Conflicting Interests: The authors declare that there are no conflicts of interest.

Clinical Trial Registration: The data used for this paper was collected in a randomized controlled trial ([ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT02005497) ID: NCT02005497).

The purpose of this study was to examine the reliability and validity of a brief measure (the Workplace Support for Health [WSH] scale) to assess employees' perceived support for a healthy lifestyle. We collected cross-sectional survey data at two time points from small, low-wage workplaces enrolled in a randomized controlled trial. The WSH scale consisted of five items. To assess validity, we also measured employer implementation of evidence-based interventions for health promotion, employee self-rated health, and job satisfaction. We used exploratory factor analysis, Cronbach's alpha, and regression using generalized estimating equations to assess scale validity and reliability. The factor analysis indicated one factor, which accounted for 59% of the total variance in the workplace support for health items. The scale had good reliability at baseline ($\alpha=0.82$) and 15 months ($\alpha=0.83$). Employer evidence-based intervention implementation was positively associated with WSH. WSH was also associated with higher self-rated health and job satisfaction. These associations indicate good concurrent validity.

Keywords

workplace support for health; employee health; workplace; validity; reliability; scale

Purpose

The workplace is an important channel for implementing evidence-based interventions (EBIs) to prevent chronic disease. Most adults in the United States are employed, amounting to nearly 154 million individuals.¹ Employees spend about a third of their day at work² and have long been considered a "captive audience" for behavioral change intervention efforts.³ The Guide to Community Preventive Services recommends several EBIs for health promotion, including increased access to healthy foods, physical activity programs, reduced out-of-pocket costs for cancer screening, and smoke-free policies.⁴ Employers can align organizational structures and processes with these EBIs to better support employees' health.^{5,6}

Workplace support for health can be defined as a visible or perceived commitment to employee health.⁷ Similar terms that have been used to describe this concept include health climate^{8,9} and culture of health.^{10,11} Workplaces that support health place value on employees' well-being^{9,12} and have cultural norms, policies, and procedures that align with and encourage a healthy work environment.^{11,13} Higher perceived workplace support for health has been associated with employee outcomes such as better self-rated health and job satisfaction.¹⁴⁻¹⁹

There are several limitations to current instruments measuring workplace support for health. First, not all have been subjected to reliability and validity testing.¹³ Second, some of these instruments are fairly long and therefore less practical to administer in organizational settings. Lastly, studies have shown that support from leadership (e.g. CEOs or managers), supervisors, and coworkers can impact employee health and well-being.²⁰⁻²⁴ This makes it important to capture information beyond overall support for health in the workplace. With noted exceptions,^{9,11} most instruments do not measure support from each of these sources.

Leadership and supervisors play a critical role in workplace wellness; both groups can create excitement for health promotion and shape a supportive culture that facilitates employees' wellness efforts.^{25,26} Perceived social norms about others' health habits are also important to consider, as these norms can impact individual behavior^{27,28} and decisions to participate in workplace EBIs for health promotion.¹⁴ Additionally, few instruments capture information about wellness champions – individuals in the workplace that can promote health and wellness activities.²⁹ By incorporating items on perceived support from these multiple sources, employers can identify areas of greatest need and create targeted action plans to improve support.

In this study, we present the Workplace Support for Health (WSH) scale, a brief five-item measure to assess employees' perceived support for a healthy lifestyle from leadership, supervisors, and coworkers, including wellness champions. Our objective was to examine the reliability and validity of the WSH scale among a sample of employees coming from small (<250 employees), low-wage workplaces enrolled in a randomized controlled trial (RCT). The trial focused on small, low-wage workplaces because they are less likely to offer EBIs for health promotion³⁰; face several contextual challenges to offering and implementing these EBIs, including limited internal capacity³¹; and employ a larger concentration of low-socioeconomic status workers, who report more chronic diseases.³²

Based on previous research,^{14-19,33} we hypothesized that higher employer implementation of EBIs to increase health behaviors would be associated with higher workplace support for health (H1), and that higher workplace support for health would be associated with higher odds of being in very good/excellent (vs. good/fair/poor) health (H2a) and higher job satisfaction (H2b).

Methods

The University of Washington Institutional Review Board approved all study procedures. Participants provided verbal consent to participate in data collection procedures (described in detail below).

Design

We collected employer- and employee-level data from workplaces in King County, WA enrolled in a three-arm RCT. The trial design and main findings are described in detail elsewhere.^{34,35} Briefly, the RCT tested a program to increase implementation of EBIs for health promotion at small, low-wage workplaces. The program (HealthLinks) provides employers with a recommendations report and intervention toolkits to help them increase EBI implementation in four health domains: cancer screening, healthy eating, physical activity, and tobacco cessation. These health domains were chosen because the risk behaviors within the domains (i.e. lack of screening, poor nutrition, inactivity, and tobacco use) are responsible for most of the chronic disease burden and key to prevention.^{36,37} There is also robust evidence on interventions that work to reduce these risk behaviors.

We randomized workplaces to HealthLinks, HealthLinks plus a wellness committee (HealthLinks+), or a delayed-control arm. We administered an Implementation Survey and

Employee Survey at three time points: baseline, 15 months, and 24 months. The Implementation Survey measures employer implementation of EBIs in the four health domains listed above. The Employee Survey measures health-related behaviors and perceptions, including workplace support for health, self-rated health, and job satisfaction.

Sample

Research staff administered this survey to all eligible employees (i.e. able to read one of four survey languages and age > 20 years) at each workplace. We administered the survey to a human resource manager or an equivalent manager at the workplace. For the purpose of this paper, we used baseline and 15-month data only and restricted our sample to workplaces that provided data from both the Implementation Survey and the Employee Survey at the two time points. In total, we analyzed data from 68 workplaces that had 2,820 and 2,640 employees complete the Employee Survey at baseline and 15 months, respectively.

Measures

Workplace Support for Health—We used an item developed in a previous study to measure employees' perceived support for living a healthier life overall.³³ We developed other items based on the research team's experience in workplace health promotion, as well as a review of the literature on workplace support for health. Notably, several items were informed by Della et al.'s^{38,39} leading by example instrument.

The WSH scale contains five statements answered on a 5-point Likert-type scale (1=strongly disagree to 5=strongly agree). The items are: (1) Overall, my workplace supports me living a healthier life; (2) My supervisor supports me in living a healthier life; (3) Most employees here have healthy habits; (4) At my workplace we have one or more leaders (e.g. CEOs or managers) who are wellness champions; and (5) At my workplace we have one or more employees who are wellness champions. We averaged these items together to create a scale score (range: 1 to 5); higher scores indicate greater workplace support for health.

Employer EBI Implementation—The Implementation Survey includes five to 10 items in each health domain (cancer screening, healthy eating, physical activity, and tobacco cessation) to assess level of implementation. For example, items for healthy eating include "My workplace offers healthy foods at meetings or other company events" and "My workplace supports me in trying to eat healthy foods and drink healthy beverages". We combined items using a weighted algorithm to calculate a total implementation score from 0 to 1, with 0 indicating no implementation and 1 indicating full EBI implementation.

Self-Rated Health—We measured self-rated health using the first item on the 36-Item Short Form Health Survey,⁴⁰ asking employees to indicate whether they were generally in excellent, very good, good, fair, or poor health. We dichotomized this variable into very good/excellent health (=1) vs. poor/fair/good health (=0) for analysis.

Job Satisfaction—We measured job satisfaction using a previously validated measure⁴¹ asking employees to indicate overall satisfaction with their job. Response options range from completely dissatisfied (=1) to completely satisfied (=5).

Sociodemographic Characteristics—We included data on the following employee sociodemographic characteristics: annual household income (less than \$25,000; \$25,000 to \$49,999; \$50,000 to \$74,999; \$75,000 or more), education (some high school or less; high school graduate; some college; college graduate), ethnicity (Hispanic vs. non-Hispanic), gender (male vs. female), and race (White; Black; Asian; other; multiracial). Sociodemographic questions were taken from the Behavioral Risk Factor Surveillance System survey questionnaire (<http://www.cdc.gov/brfss/questionnaires/index.htm>).

Analysis

We conducted data analysis in Stata 15.0 (College Station, TX). First, we performed an exploratory factor analysis to assess the unidimensionality of the WSH scale items. A set of items are considered unidimensional if a single underlying dimension or latent variable can “explain” the correlations between the items.⁴² The unidimensionality of a scale is important for interpretability; for example, scores can be described in terms of lower and higher perceived support.

To ensure that the data were suitable for factor analysis, we used Barlett’s test of sphericity and the Kaiser-Meyer-Olkin (KMO) test for sampling adequacy. We performed a factor analysis on the five WSH items using the principal-components method and promax rotation. To determine the number of underlying factors, we examined three criteria: 1) Kaiser’s⁴³ rule (i.e. eigenvalue >1); 2) Cattell’s⁴⁴ scree plot; and 3) Horn’s⁴⁵ parallel analysis.

We assessed internal consistency reliability, which is the extent to which items on an instrument measure the same construct. We computed Cronbach’s alpha coefficients, using a minimum threshold of 0.70. We also examined item-rest correlations to identify items that did not correlate well with others (<0.20) in the WSH scale. We assessed validity using concurrent validation, which measures the degree to which the scores from one measure relate to another valid criterion administered at the same time. Specifically, we used regression to test our hypotheses and model the associations among EBI implementation, workplace support for health, self-rated health, and job satisfaction.

To account for correlations within workplaces, we used generalized estimating equations (GEE) with an exchangeable correlation structure for estimation and produced robust standard errors to ensure proper inference. We adjusted our analyses for trial arm (HealthLinks; HealthLinks+; delayed control), data collection time point (baseline vs. 15 months); company size at randomization (<50 employees vs. 50+ employees), and company industry at randomization (group 1: arts, entertainment, and recreation; education; and health care and social assistance vs. group 2: accommodation and food services; other services excluding public administration; and retail trade).

Results

Sample and Item Characteristics

Table 1 presents descriptive statistics for the sample at baseline and 15 months. At baseline, the mean employee age was 40.65 (SD=12.70). Most employees were female (67.57%),

white (62.56%), non-Hispanic (89.98%), and college graduates (63.13%). The largest percentage of employees had an annual household income of \$75,000 or more (34.25%). The mean WSH scale score was 3.18 out of five (SD=0.77). The WSH item means ranged from 2.83 to 3.43 out of five (Table 2). The correlations between items were moderate to high, ranging from 0.36 to 0.74 (Table 3). Sample and item characteristics were similar at baseline and 15 months.

Factor Analysis

Bartlett's test of sphericity ($P < 0.001$) and KMO test for sampling adequacy ($= 0.75$) confirmed that the data were suitable for factor analysis. In the exploratory factor analysis using baseline data, only one factor had an eigenvalue greater than one ($= 2.95$). The results from the scree plot and parallel analysis also suggested one factor, which accounted for 59% of the total variance in the workplace support for health items. All items had rotated factor loadings of at least 0.50, ranging from 0.69 to 0.82 (Table 2). The results of the factor analysis are consistent at baseline and 15 months, indicating relative stability of the WSH scale.

Reliability and Validity

The items in the WSH scale had very good reliability at baseline ($\alpha = 0.82$) and 15 months ($\alpha = 0.83$), suggesting that the scale items are measuring the same construct (workplace support for health). Item-rest correlations were moderate to high at both time points (range: 0.52 to 0.69). Our GEE analyses showed that an increase in employer EBI implementation was associated with a significant increase in workplace support for health ($\beta = 0.74$, 95% CI: 0.49—0.99), therefore H1 was supported. Providing support for H2a and H2b, workplace support for health was significantly associated with higher odds of reporting very good/excellent health (OR=1.31, 95% CI: 1.20—1.43) and higher job satisfaction ($\beta = 0.45$, 95% CI: 0.41—0.49). Our findings remained the same when adjusting for sociodemographic characteristics. (Note: GEE results not shown in table).

Discussion

The purpose of this study was to examine the reliability and validity of the WSH scale, a five-item measure that assesses employees' perceived support for a healthy lifestyle. We address limitations to previous measures by including questions on support from multiple sources, including wellness champions. Our results indicate that the WSH scale is a reliable and valid measurement of employees' perception of workplace support for health. The scale demonstrated very good reliability at baseline and 15 months, and the one-factor scale structure was consistent at both time points.

The scale also demonstrated good concurrent validity. The significant relationship found between employer EBI implementation and WSH suggests that perceptions of support can positively change if the workplace implements EBIs for health promotion. As mentioned earlier, these EBIs can include increased access to healthy foods, physical activity programs, reduced out-of-pocket costs for cancer screening, and smoke-free policies.⁴ While

implementation is key, employers should also promote these interventions to ensure that employees are aware of changes made to the environment.

The significant relationships found between WSH, self-rated health, and job satisfaction are in line with previous studies¹⁴⁻¹⁹ and further suggest that workplace support for health can have a positive impact on employees. For future research, the WSH scale should be tested among employees at large workplaces. Our study included employees coming from small workplaces; as mentioned earlier, these worksites are less likely to adopt EBIs for health promotion³⁰ and frequently operate under challenging contextual circumstances.^{31,32}

Given its short length, employers can easily use the WSH scale to assess levels of perceived support for health among employees, identify gaps in support, and create an action plan for improvement. The scale can also be used as an evaluation measure to assess whether new workplace wellness efforts are reaching employees. Used in conjunction with other evaluation measures (e.g. assessments of intervention fidelity), the scale can help employers better understand implementation effectiveness.

Since the scale includes items on support from multiple sources, it can help to determine areas of greatest need. If employees perceive low support for health from their supervisor, this group can be targeted by management for intervention. Interventions such as supervisor training to increase supportive behaviors can have a positive impact on employee perceptions of the work environment.⁴⁶ If perceptions of healthy habits among employees is low, these perceived norms can be addressed through increased workplace communication to promote healthy behaviors. Lastly, a perceived lack of wellness champions may indicate a need to identify managers or other employees within the organization who can help the workplace adopt, implement, and promote EBIs for health.

A limitation of this study is the use of self-report data, which is subject to recall and selection bias. Employees experiencing health problems may have been absent at the time we administered our surveys and could perceive support for health very differently than other employee groups. The employee-level data was not individual linked across time points. Given this, we were not able to assess change in perceived workplace support for health within a single individual. However, our findings are still valid because (1) we use marginal models (GEE) that have the same interpretation regardless of whether individual data are linked, and (2) we used robust standard errors with clustering on the employer level, since individuals (whether linked or not) are nested within worksites. A strength, our sample size of employees is large (>5,000) and diverse. We were also able to test the scale items in multiple languages and within workplaces coming from several industries.

In conclusion, the WSH scale is a reliable and valid measurement of employees' perceptions of workplace support for health. Employers can use the scale to help design an action plan for improvement to increase support. In doing so, employers can create an environment that positively contributes to employees' well-being.

Funding Acknowledgements:

The National Cancer Institute (grant 5R01CA160217) supported this manuscript. Additional support was provided by the Centers for Disease Control and Prevention (CDC; Health Promotion and Disease Prevention Research Center cooperative agreement U48DP005013).

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“SO WHAT?”**What is already known on this topic?**

Perceived workplace support for health is positively associated with employee well-being. Measuring support for health can help employers improve support, but limitations to current instruments exist.

What does this article add?

The Workplace Support for Health (WSH) scale is brief, five-item scale that measures support from multiple sources, including leadership, supervisors, and coworkers. Our findings demonstrate that the scale is a reliable and valid measure of perceived workplace support for health.

What are the implications for health promotion practice or research?

Employers use the WSH scale to assess levels of perceived support for health among employees, identify gaps in support, and create action plans for improvement. The scale can also be used in conjunction with other evaluation measures to better understand implementation effectiveness, and to assess whether new workplace wellness efforts are reaching employees.

Table 1.

Sample descriptive statistics

Variable	Baseline n=2,820				15 Months n=2,640			
	Mean	SD	n	%	Mean	SD	n	%
Age	40.65	12.70	--	--	40.76	12.92	--	--
Gender								
Male	--	--	900	32.43	--	--	823	31.62
Female	--	--	1,875	67.57	--	--	1,780	68.38
Race								
White	--	--	1,605	62.52	--	--	1,507	63.24
Black	--	--	227	8.84	--	--	169	7.09
Asian	--	--	445	17.34	--	--	431	18.09
Other	--	--	160	6.23	--	--	134	5.62
Multiracial	--	--	130	5.06	--	--	142	5.96
Ethnicity								
Non-Hispanic	--	--	2,390	89.98	--	--	2,238	89.63
Hispanic	--	--	266	10.02	--	--	259	10.37
Education								
Some high school or less	--	--	103	3.73	--	--	86	3.32
High school graduate	--	--	269	9.73	--	--	225	8.69
Some college	--	--	647	23.41	--	--	607	23.45
College graduate	--	--	1,745	63.13	--	--	1,671	64.54
Annual household income								
Less than \$25,000	--	--	454	16.90	--	--	353	14.17
\$25,000 to \$49,999	--	--	821	30.57	--	--	747	29.98
\$50,000 to \$74,999	--	--	491	18.28	--	--	531	21.31
\$75,000 or more	--	--	920	34.25	--	--	861	34.55
WSH scale score	3.18	0.77	--	--	3.38	0.75	--	--
Employer EBI implementation	0.18	0.09	--	--	0.42	0.21	--	--
Self-rated health								
Poor/fair/good	--	--	1,429	51.09	--	--	1,342	51.26
Very good/excellent	--	--	1,368	48.91	--	--	1,276	48.74
Job satisfaction	3.86	0.92	--	--	3.94	0.88	--	--

Other race category includes employees who identified as one of the following: Native Hawaiian/Pacific Islander, American Indian/Alaska Native, or other race.

The range for WSH scale score and job satisfaction is 1-5.

Table 2.

WSH scale item characteristics at baseline

Item	N	Mean	SD	Factor Loading
1. Overall, my workplace supports me in living a healthier life.	2,789	3.32	0.97	0.82
2. My supervisor supports me in living a healthier life.	2,789	3.43	0.98	0.79
3. Most employees here have healthy habits.	2,782	3.24	0.94	0.69
4. At my workplace we have one or more leaders (e.g. CEOs or managers) who are wellness champions.	2,766	2.83	1.07	0.80
5. At my workplace we have one or more employees who are wellness champions.	2,764	3.07	1.08	0.73

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Table 3.

WSH scale item correlations at baseline

Item	1	2	3	4	5
1	1.00				
2	0.74	1.00			
3	0.48	0.43	1.00		
4	0.50	0.45	0.43	1.00	
5	0.40	0.39	0.36	0.68	1.00

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