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Local-health-jurisdiction staff deliver health promotion to small worksites, Washington

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Abstract

Context—Worksites can serve as community sites for local health jurisdictions (LHJs) to assist with implementation of evidence-based interventions (EBIs) to prevent and control chronic diseases.

Objective—To assess the feasibility and effectiveness of using LHJ staff to disseminate Connect to Wellness (CtW), an effective dissemination package for increasing implementation of EBIs for chronic-disease control by small worksites.

Design—Single-arm, multi-site intervention trial, with measurement at baseline, after 6 months of intervention, and after a maintenance period of 6 months.

Setting—Six geographically dispersed counties in Washington State. Target worksites had 20–250 employees.

Participants—Nine staff members from six LHJs delivered CtW to 35 worksites.

Intervention—CtW seeks to increase worksites' implementation of 14 EBIs classified as communication, policy, or program approaches to increasing four behaviors: cancer screening, healthy eating, physical activity, and tobacco cessation.

Main Outcome Measure—EBI implementation measured on a scale from 0% to 100%.

Results—Participating worksites showed a significant increase ($p < 0.001$, t-test) in total mean implementation scores from baseline (33%) to 6-month follow-up (47%). Increases in implementation for communications, policy, healthy eating, and tobacco EBIs were statistically significant at 6 months and maintained at 12 months. Increased implementation at 6 months of a

group physical-activity program was not sustained after the program became unavailable, and total implementation scores at 12 months (38%) showed little change from baseline.

Conclusions—LHJ-delivered CtW increased worksites' implementation of EBIs at 6 months, and increased implementation in communication, policy, healthy eating, and tobacco was maintained at 12 months. This package, delivered by LHJ staff working part-time on CtW, was nearly as successful as prior delivery by staff working full-time on CtW.

Keywords

workplace; neoplasms; tobacco; eating behavior; exercise; health promotion; implementation science; health behavior; public health; heart diseases

Introduction

Cancer and other chronic diseases are leading causes of death in the United States.(1, 2) Health-promoting behaviors decreasing chronic diseases include: cancer screenings, healthy eating, physical activity, and tobacco cessation.(3, 4) Evidence-based interventions (EBIs) can significantly increase each of these behaviors.(5–10) The challenge is to implement EBIs successfully in community settings, especially settings that reach people with the greatest need due to low income and other social determinants of health.

Small worksites, defined as those with less than 250 employees, are one such setting. Worksites are important community settings for implementing EBIs to support employees' cancer screening, healthy eating, physical activity, and tobacco cessation.(11, 12) Most adults in the U.S. are employed,(13) and approximately half of U.S. employees work in small worksites.(14) Small worksites' employees are disproportionately low-income and at increased risk for chronic diseases.(15, 16) These small worksites infrequently implement health-related EBIs and face budget, capacity, and partnership challenges to doing so.(15–19)

To assist these small worksites, we partnered with the American Cancer Society (ACS) to create and test the Connect to Wellness (CtW) dissemination package of EBIs (Table 1). CtW uses a trained disseminator to provide small employers EBI recommendations and toolkits, as well as technical assistance for EBI implementation.(20, 21) In a randomized trial, CtW increased EBI implementation 30% absolute from baseline to follow-up at 15 months.(22) In that trial, we trained ACS and research staff to deliver CtW.

For CtW to achieve broad geographic reach, we need to identify, train, and support CtW disseminators affiliated with organizations with broad reach and a relevant mission.(23) Staff from local health jurisdictions (LHJs) meet these criteria. LHJs serve most communities in the U.S., most LHJs' goals include preventing chronic diseases,(24) and worksites offer a widely available organizational community setting for reaching these goals. In the project we report here, we trained staff from LHJs in Washington State to deliver CtW to worksites in their communities.

Methods

Study Design

Using a single-arm, pre-post design with multiple sites and measurements, we evaluated the effectiveness of LHJ staff at delivering CtW and increasing EBI implementation by worksites. The study began in April 2015 and ended in March 2018. Because the University of Washington (UW) Institutional Review Board determined that this study did not meet the Common Rule definition of research, study procedures did not undergo review.

Study Setting

CtW was delivered to worksites served by LHJs receiving federal funding via the Washington State Department of Health (DOH) from the State and Local Public Health Actions to Prevent Obesity, Diabetes, and Heart Disease and Stroke program of the Centers for Disease Control and Prevention (CDC). DOH initially proposed the project, was fully supportive, and promoted it to LHJs. Target worksites had 20–250 employees, but LHJ staff were free to enroll larger worksites.

Intervention Description

We have described CtW in detail previously,(20) so we describe it only briefly here. CtW (formerly known as HealthLinks) is an evidence-based dissemination package tailored to the needs of small, under-resourced worksites. It aims to increase worksites' adoption and implementation of 14 EBIs selected from CDC's Guide to Community Preventive Services(25) (Table 1) and shown to increase cancer screening, healthy eating, physical activity, and tobacco cessation. CtW provides small worksites with free tools and on-site technical assistance to implement the EBIs. To build capacity for implementation, CtW also offers assistance and materials to encourage worksites to create worksite wellness committees. These committees include both employees and managers and are intended to provide worksites internal support to maintain implementation of EBIs. As part of the study, the UW research team partnered with the Preventive Health Partnership to review, update, and rebrand all relevant CtW recommendations and materials. The Partnership, a previous collaboration of the ACS, the American Diabetes Association, and the American Heart Association, sought to prevent the nation's most prevalent chronic diseases through programmatic initiatives to set and monitor national goals and objectives for improving long-term adherence to each agency's guidelines.

Each LHJ assigned one to three staff members to deliver CtW. Staff members included health educators and public health nurses. They first participated in a 6-hour training provided by UW research staff in 2-hour blocks via telephone and web across 3 days. After training, LHJ staff, hereafter "disseminators," aimed to recruit 10–15 worksites to participate in CtW. Disseminators worked with a main contact person at each worksite, via email, in-person meetings, and phone.

The study had 2 phases for each worksite: Active (Months 1–6) and Maintenance (Months 7–12). During the Active Phase, disseminators worked with the main contact person at each participating worksite to complete a baseline survey that captured current implementation of

EBIs. Results from this survey were used to create a Recommendations Report, which summarized the worksite's current implementation levels and suggested areas for improvement. Disseminators also provided each worksite with a set of implementation toolkits that included checklists and supporting materials to facilitate adoption of recommended EBIs. At the close of the Active Phase, research staff worked with the contact person at each worksite to repeat the survey on implementation of EBIs.

During the Maintenance Phase, disseminators did not proactively reach out to worksites with offers of assistance but responded with help when asked. At the end of this phase, research staff worked with each worksite's contact person to repeat for a third time the survey of implementation of EBIs. Throughout both phases, disseminators tracked their interactions with worksites on a form provided by the research staff.

During the Maintenance Phase, 14 months after the study began, ACS Active For Life, a web-based group physical-activity program that disseminators offered to all enrolled worksites, was discontinued by ACS because of the perceived need to move to a smartphone-app-based approach, with attendant development and maintenance costs. Worksites were no longer able to participate in the program.

Measurement of process and outcomes

To help us assess whether the disseminators delivered CtW as intended, each of them completed monthly worksheets to track interactions with worksites and sent them to the research staff. Each worksheet mapped to a specific worksite; disseminators used as many worksheets per month as they needed. For each interaction with worksites, the worksheets included the type (phone, email, or in-person), as well as the disseminator's impression of the worksite contact person's engagement level (enthusiastic, engaged, mixed/uneven, or unengaged), and who initiated the interaction (worksite, disseminator, or standing meeting). In addition, one research staff member (KH) communicated frequently with the disseminators via scheduled monthly technical-assistance telephone calls and in response to between-call requests (via email or telephone). She systematically took notes during these calls.

We measured the adoption and implementation of EBIs via surveys administered as described above. Except for a set of "experience with CtW" questions appended to the 6-month version, the 6- and 12-month surveys were identical. For each of the four health-promoting behaviors, the survey included 5–10 items assessing level of EBI implementation. For example, one question gauged current adoption of a formal healthy-eating program, while another captured the range of healthy items offered in the workplace cafeteria. As described in detail in a previous publication,(20) we calculated an implementation score from 0 to 100 for each EBI (0 = no implementation, 100 = full implementation), as well as a total score that was the average implementation level across the four behaviors.

As part of the survey of implementation of EBIs at baseline, 6 months, and 12 months, we asked the worksite contact persons to estimate each worksite's expenditures on workplace health promotion. The six mutually exclusive expenditure areas were: communications, healthy food provision or subsidies, physical-activity programs or subsidies, weight-loss

programs, labor costs of employees working on workplace health promotion, and any additional budget dollars dedicated to health promotion or wellness. To estimate labor costs, we asked for the average number of hours worked per week, annualized this estimate, and multiplied it this by the average reported salary.

At the end of the 6-month assessment, using a survey with 14 questions, research staff (KH) interviewed worksite contact persons about their experience with CtW. Using 10 questions with 5-point Likert scales, contact persons rated their satisfaction with various aspects of the program (process, tools, and materials), as well as their overall satisfaction. They then answered four open-ended questions about what they liked most and least about CtW, and whether and how they believed their experience could have been improved. The interviewer collected hand-written notes on responses to each of the open-ended questions.

Data Analysis

We analyzed quantitative data for the worksites that had complete baseline, 6-month, and 12-month assessment data. To describe the characteristics of the worksites and their employees, we calculated descriptive statistics. We analyzed EBI implementation scores using two-sided, paired *t* tests to determine whether average changes in scores from baseline to 6 months and baseline to 12 months were significantly different from 0. Due to the skewness of change-score data, we used the Wilcoxon signed-rank test to confirm all scores. To avoid problems with multiple comparisons, we analyzed the EBI implementation scores as groups: by approach (communication, policy, and program), by behavior (cancer screening, healthy eating, physical activity, and tobacco), and total. Each approach score made use of mutually exclusive groups of questions, as did each behavior score, but the approach scores as a group and the behavior scores as a group are two different ways of analyzing data from the same questions. Most analyses used SPSS Version 19;(26) the cost analyses used Stata 14. To facilitate comparisons, we restricted the cost analyses to small companies, defined as those with 20–250 employees.

We analyzed the qualitative data from: a) the technical-assistance calls with disseminators, and b) the open-ended questions on the survey administered to worksite contact persons. Two researchers (KH and JH) used thematic analysis to code and analyze the data and then summarized themes that emerged consistently.

Results

At baseline, the number of employees per worksite for the 35 participating worksites ranged from 6 to 1,969, with a mean of 195 and a median of 75 (Table 2); 28 worksites were in the target range of 20–250 employees. All but one worksite offered health insurance to at least some of its employees; 84% of employees were eligible for health insurance, and 83% of those eligible participated. The three most common industries in which the worksites operated were government (29% of worksites; examples include area agencies on aging and tribal organizations), social services (17% of worksites; examples include emergency-support shelters and job-placement-assistance agencies), health care (14% of worksites; examples include surgical centers and behavioral-health services).

Of the employees of these worksites, 89% were white, 5% Latino, and 4% Asian or Pacific Islander. Half were aged 18–44 years, and 46% were aged 45–64 years; 60% were women. Their average annual salary was \$44,865, or \$21.57 per hour, less than the 2017 median hourly wage (\$22.00) for Washington State excluding King County.(27)

We trained as disseminators nine staff from six geographically dispersed LHJs (Figure 1). Cowlitz, Grant, Jefferson, Kitsap, and Spokane are county LHJs, and Tacoma-Pierce is a county-city LHJ. One LHJ had three trained disseminators, another had two trained disseminators, and the others had one each. The LHJ with three trained disseminators recruited 15 participating worksites that completed all three assessments and was the only LHJ that met the target of recruiting 10–15 worksites. Numbers of worksites recruited by the other five LHJs ranged from one to eight. Six of the 9 disseminators reported on their interactions with the contact persons at the worksites across the 12 months. The average number of interactions was 8 for the 26 worksites with information. Most interactions (59%) were in-person; an additional 39% were via email. Of the interactions, 55 (26%) were related to core elements of the intervention process. The others were for other support; interaction related to worksite wellness committees was the largest category (20%). Disseminators initiated 56% of the interactions, and worksite representatives initiated the rest.

Notes from 16 technical-assistance calls over 27 months with LHJ disseminators revealed that they were surprised by the difficulty of recruiting worksites. Known and anticipated referral sources did not ultimately yield the expected numbers. Cold-calling from lists that were purchased based on our eligibility criteria often resulted in worksites that were either deemed ineligible or unwilling to engage in a full eligibility screening. Disseminators from the LHJ with three trained disseminators had more time to devote to this project than those from other LHJs. Disseminators who struggled most with recruiting also found it hard to make time for CtW among their other chronic-disease-prevention duties.

The 35 participating worksites showed a significant increase ($p < 0.001$, t-test) in total mean EBI implementation scores from baseline (33% implementation) to 6-month follow-up (47%) (Table 3). There were significant changes at 6 months in implementation for EBIs using the communication (13% change absolute), policy (5%), and program (24%) approaches as well as for EBIs targeting healthy eating (15%), physical activity (17%), and tobacco (5%) behaviors. At 12 months, after a maintenance period, worksites' EBI implementation overall (38%) showed little change from baseline. The changes in the communication and policy approaches, as well as healthy eating and tobacco, were sustained at 12 months, while the changes in program approaches and physical activity were not. Implementation of EBIs targeting cancer screening did not change from baseline to 6 months or 12 months. Changes in EBI implementation at 6 and 12 months were similar for the 28 worksites with the target number of 20–250 employees, and the 7 worksites with more employees.

Two counties enrolled 24 of the 35 worksites that completed the trial. In both counties, there were large improvements (14% and 18% absolute) in total scores at 6 months. In one county, these changes were sustained at 12 months, and in the other not. We found weak and

inconsistent correlations between the number of disseminator-worksites interactions and the change in total scores at 6 months or 12 months (data not shown).

Worksites' implementation of individual EBIs varied greatly at baseline, as did their changes in implementation (Table 3). At baseline, implementation of most of the EBIs was low, 4% to 35%. Implementation of policies related to tobacco use and consumption of beverages, however, started high at 73% and 68%, respectively, and changed little at follow-up. The biggest change in implementation was for physical-activity programs, which increased 24% absolute, from 29% at baseline to 53% at 6 months, but fell back to 23% at 12 months, after the withdrawal of ACS Active for Life. EBIs that showed sustained positive change of more than 10% absolute included food-related policy, and communication related to beverages, healthy eating, physical activity, and tobacco quitlines.

Reported mean expenditures on workplace health promotion increased from \$55 per employee per year at baseline to \$82 at 6-month follow-up and regressed to \$64 at 12 months. Mean expenditures by category at baseline, 6 months, and 12 months were, in decreasing order at baseline, \$18, \$27, and \$21 for salary; \$17, \$32, and \$34 for general budget; \$13, \$13, and \$8 for physical-activity programs; \$7, \$7, and \$0 for weight-loss programs; \$1, \$4, and \$1 for healthy foods; and \$1, \$1, and \$0 for communication. The largest increases from baseline to 6 months were for general budget and salary; general-budget expenditures remained elevated at 12 months.

Worksite contact persons' satisfaction with the program was uniformly high and averaged 4.3 out of 5 points (32 contact persons completed the survey). Half cited the LHI disseminators and the support and accountability they provided as their favorite feature of CtW. Also commonly cited were CtW's toolkits and materials, as well as the Active for Life program. Negative comments and areas for improvement were uncommon. More commonly, the worksite contact persons said they needed more time and money to implement the program.

Discussion

CtW delivered by trained LHI disseminators successfully increased implementation of health-promoting EBIs at 6 months. Increases in the communication, policy, healthy eating, and tobacco scores were sustained during the 6-month maintenance phase that ended at 12 months, but increases in the program-approach and physical-activity scores were not. The total implementation score at 12 months was not significantly different from baseline. LHI disseminators reported that recruiting worksites was surprisingly difficult, and only one of six LHJs met its recruiting target. This dissemination package, delivered by LHI staff working part-time on CtW, was only marginally less successful than prior interventions delivered by staff dedicated full-time to CtW.(21, 28) Two contextual factors likely explain differences across implementation and maintenance of EBIs. First, LHI disseminators were supported by a grant from the CDC, and their grant-related focus was limited to healthy eating and physical activity, the two areas that showed the largest short-term change. Second, for cost reasons, our dissemination partner, the American Cancer Society, de-implemented their Active for Life group-physical-activity program midway through the

study period, and this likely contributed to the difficulty in sustaining changes in both the program and physical-activity areas. The support from the CDC grant, with its emphasis on reaching as many people as possible, may also explain why LHJ disseminators enrolled worksites larger than the target range of 20–250 employees.

This study also provides hard-to-find information on what small worksites spend on workplace health promotion. This information on spending can serve three purposes: 1) help with planning for those wishing to implement similar interventions, 2) provide a comparison to the intensity of intervention of others, and 3) serve as an additional process measure of the degree to which worksites implemented the interventions. The baseline estimate of \$55 per employee per year is more than the \$10 per employee per year we found in our previous study of small and mid-sized employers,(29) but substantially less than the \$164, in 2017 dollars, per employee per year spent by large companies with effective programs.(30) Spending increased by about half during the first 6 months but fell back somewhat during the maintenance period, consistent with the decreases in EBI implementation between 6 and 12 months.

The study has several strengths and limitations. One strength is the focus on small worksites. Of the participating worksites, 80% met our target definition for small. Although LHJ staff sometimes enrolled larger worksites, we analyzed the main outcomes with and without the larger worksites and did not find differences. Small worksites are underserved by health-promotion services, and their employees are often low-wage and at increased risk for health disparities. Another strength is the use of widely available LHJ staff as disseminators. A third is the careful collection of cost data. One limitation is the single-arm, pre-post design, which is subject to historical effects, although we identified none that would explain our findings. Another limitation is the short, 12-month duration of follow-up, although maintenance of implementation of most EBIs was encouraging. We also did not measure individual health behaviors in this dissemination-oriented study of EBIs.

Further work is needed to understand how LHJ staff can be assisted in recruiting worksites and increasing implementation of policy, cancer-screening, and tobacco EBIs. In only one of the six participating LHJs did the disseminators meet their worksite-recruiting targets. This was also the LHJ with the largest number of trained disseminators, and the disseminators with the most time dedicated to work on this project. Disseminators from all LHJs reported to us that they found recruitment surprisingly difficult, and most had trouble balancing their CtW work and their other grant-funded duties. In future studies, we plan to explore with LHJ leadership how disseminators can be given protected time to complete the work of CtW with its full spectrum of health-promoting EBIs. We also need to identify a replacement for the group physical-activity program.

In summary, we found promising short-term and sustained implementation changes when training and supporting LHJ staff as disseminators to assist small worksites in implementing EBIs for chronic disease prevention. The LHJ staff, however, struggled with recruitment and finding time for the project. Future research should focus on how better to support and incentivize LHJ staff to do this important work.

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Implications for Policy and Practice

- Worksites can serve as widely available community settings for implementation of evidence-based interventions (EBIs) to increase health-promoting behaviors to prevent and control chronic diseases.
- Small worksites are the most common worksites, particularly in rural areas, are more likely to offer low wages than larger worksites, and are under-served by commercial workplace-health-promotion vendors. Small worksites, therefore, provide an opportunity for local health jurisdictions (LHJs) seeking community settings for chronic-disease prevention.
- In this study, we found that LHJ staff can assist small worksites to implement these EBIs. This implementation was largely maintained after a maintenance period.
- LHJs still face challenges in doing this work. Specifically, their staff face competing priorities that limit their ability to assist worksites. They also face challenges in recruiting small worksites.

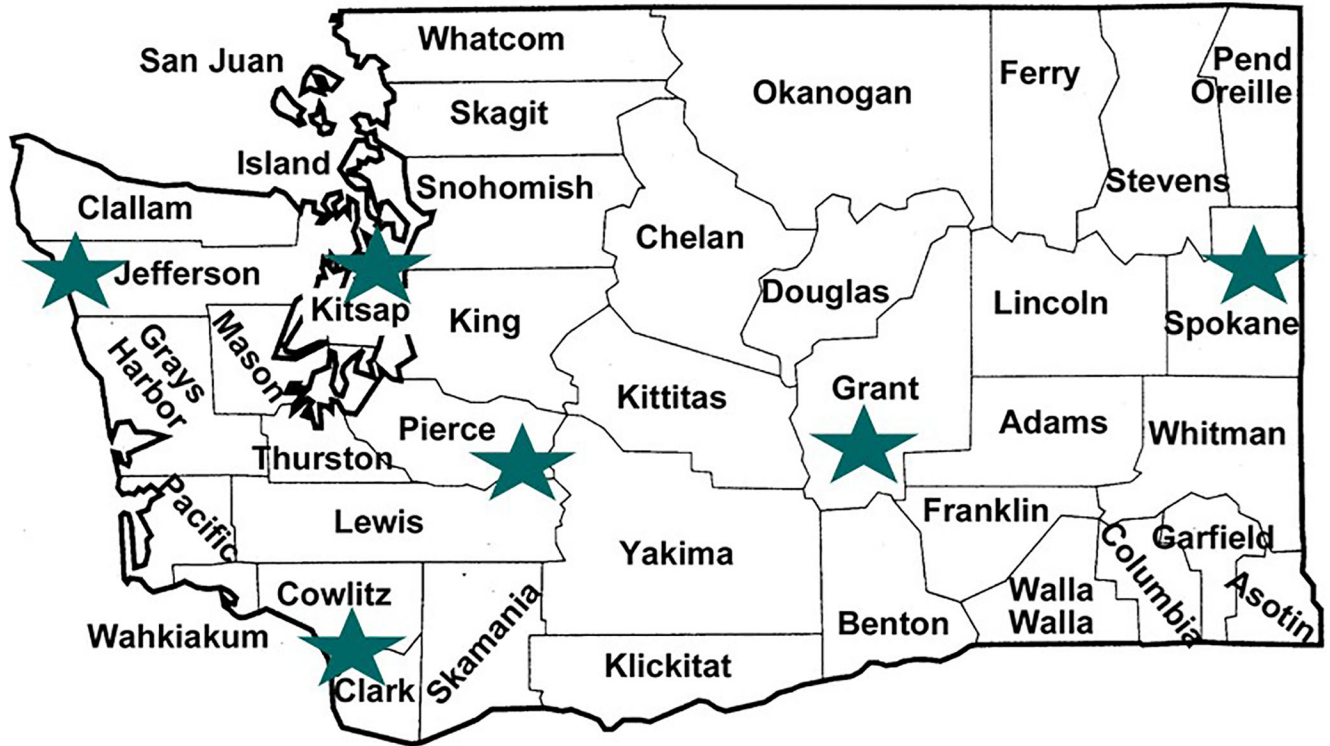


Figure 1:
Washington State counties in which local health jurisdictions delivered Connect to Wellness to worksites, April 2015 to March 2018.
See accompanying file.

Table 1.

Evidence-based interventions promoted in the Connect to Wellness program.

Behavior	Intervention	Approach
Tobacco Cessation	Adopt a policy to restrict or ban tobacco use at worksite	Policy
	Promote the Washington State Tobacco Quit Line via brochures and other small media	Communication
	Promote benefits coverage at those worksites with insurance coverage for tobacco cessation	Communication
Healthy Eating	Adopt policies to offer healthy food options, label them, and price them competitively	Policy
	Adopt policies to offer healthy beverage options, label them, and price them competitively	Policy
	Adopt policies to support offering healthy foods and beverages at meetings and events	Policy
	Distribute brochures and post posters to educate workers about healthy food and beverages	Communication
Physical Activity	Adopt a policy to support employee physical activity	Policy
	Negotiate discounts at local gyms	Policy
	Offer ACS Active for Life or other physical activity program suitable for the worksite	Program
	Post "Use the Stairs" signs	Communication
	Distribute brochures and post posters to educate workers about recommended physical activity	Communication
Breast, Cervical, and Colon Cancer Screening	Distribute brochures and post posters to educate workers about screening guidelines for breast, cervical, and colon cancer	Communication
	Promote the Washington Breast, Cervical, and Colon Health Program to uninsured workers; include information about local providers, screening free of charge, and treatment coverage for those diagnosed with cancer	Communication

Table 2:

Characteristics of 35 employers participating in the Connect to Wellness study in Washington State, April 2015 to March 2018.

	Mean (SD)	Percent
Worksite Characteristics		
Total employees	194.51 (349.01)	
Average salary	\$44,864.68 (11,742.47)	
Percent full-time employees	77.66 (25.59)	
Percent union membership	20.75 (34.74)	
Insurance		
Company offers health insurance to employees		97.14
Company is self-insured		11.76
Employees eligible for health insurance		84.18
Eligible employees enrolled in health insurance		83.12
Industry		
Government		28.57
Social Services		17.14
Health Care		14.29
Manufacturing		11.43
Education		8.57
Wholesale and Retail Trade		5.71
Other (specify)		5.71
Leisure and Hospitality		2.86
Natural Resources and Mining		2.86
Professional and Business		2.86
Construction		0.00
Financial Activities		0.00
Information		0.00

Table 3:

Implementation by worksites over time of evidence-based interventions (EBIs), classified by approach and by health-promoting behavior, Washington State, April 2015 to March 2018 (n=35).

Approach or Behavior	Wave						
	Baseline	6-Months		12-Months			
	Mean (SD)	Mean (SD)	Change in score ^a	p-value ^b	Mean (SD)	Change in score ^c	p-value
<i>Communication EBIs</i>							
Beverages	23.21 (40.18)	49.11 (44.96)			47.68 (40.90)		
Breast, colon, and cervical cancer screening programs	4.11 (16.94)	2.68 (15.85)			4.46 (18.41)		
Cancer screening	12.14 (27.20)	15.54 (32.17)			17.68 (33.67)		
Healthy eating	27.86 (42.21)	46.96 (44.82)			52.14 (39.64)		
Physical activity	32.74 (36.53)	55.60 (41.35)			54.29 (38.99)		
Quitline	17.68 (33.40)	34.82 (39.36)			35.00 (39.68)		
Tobacco	21.25 (34.64)	11.25 (28.23)			13.93 (31.58)		
Total communication score	21.89 (26.75)	34.85 (27.56)	12.96	0.001	36.18 (26.42)	14.29	.002
<i>Policy EBIs</i>							
Beverages	68.21 (31.31)	70.48 (28.71)			74.76 (25.76)		
Food	19.89 (22.24)	30.79 (22.62)			34.48 (26.01)		
Physical activity	34.64 (20.36)	37.50 (21.65)			39.29 (17.97)		
Tobacco	72.86 (23.58)	75.71 (23.47)			78.21 (21.30)		
Total policy score	48.88 (12.81)	53.62 (12.74)	4.74	0.004	56.69 (12.08)	7.81	0.001
<i>Program EBIs</i>							
Physical activity	28.93 (43.70)	52.86 (44.98)			22.50 (36.73)		
Total program score	28.93 (43.70)	52.86 (44.98)	23.93	0.004	22.50 (36.73)	-6.43	0.41
Total EBI Implementation Score	33.23 (22.04)	47.11 (21.83)	13.88	<0.001	38.46 (17.74)	5.23	0.14
<i>Mean scores by topical area</i>							
Cancer Screening	11.07 (25.32)	14.55 (30.15)	3.48	0.43	17.68 (33.67)	6.61	0.22
Healthy Eating	34.77 (22.39)	49.34 (20.94)	14.56	<0.001	52.27 (22.47)	17.50	<0.001
Physical Activity	32.10 (26.63)	49.65 (28.74)	16.55	<0.001	38.69 (22.30)	6.59	0.10
Tobacco	45.58 (21.99)	49.58 (20.14)	5.00	0.01	50.89 (22.56)	6.31	0.01

^a All values are mean unless otherwise indicated. Mean follow-up score minus mean baseline score may not equal value in column for mean change in score because of rounding.

^b t-test confirmed with Wilcoxon signed-rank test

^c 12-month change in score values and associated p-values reflect change from baseline assessment score to 12-month assessment score