Workplace Health Promotion in Small Businesses: What is the Evidence and Is There a Role for State Health Agencies?

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Abstract

Introduction: The Affordable Care Act (ACA) of 2010 established a $200 million grant program to help small businesses develop workplace health promotion programs. The ACA specified the Secretary of Health and Human Services (HHS) shall establish guidelines for programs based on best-practices and scientific evidence. Compared to large businesses, where workplace health promotion has been more widely implemented and studied, small businesses face unique barriers and enablers. It is important that HHS develops program guidelines using small business-specific evidence.

Methods: To inform guideline development, a systematic review of the literature on workplace health promotion in small businesses and a scan of state health agency activities were conducted. PubMed, PsycInfo, EMBASE, CINAHL, Web of Science (ISI), and Google Scholar were searched for evaluations of worksite health promotion interventions in small businesses in the United States, Canada, Australia, and Europe between 1982 and 2012. Articles that met inclusion criteria were evaluated to determine the extent to which interventions included program components required by the ACA, and to assess the quality of the literature. State health agency websites for each US state and Washington, DC, were examined to determine the scope of their workplace health promotion activities.

Results: Of the 45 articles reviewed, sixteen met the criteria for inclusion. The health risk behaviors targeted were: physical activity and healthy eating (*N*=7), stress reduction (*N*=2), health screenings and follow-up medical evaluation (*N*=1), healthy eating only (*N*=2), physical activity only (*N*=2), and comprehensive programs with three or more

behaviors (*N*=2). The majority of interventions used program components established by the ACA. Most programs produced some short-term changes in health risk behaviors, although most changes were modest. The quality of the literature was judged to be moderate overall, with few articles rated as strong. There appeared to be interest or expertise in the majority of state health agencies regarding WHP; at least eight states had experience with workplace health promotion in small businesses.

Conclusions and Recommendations: The scientific literature on workplace health promotion in small businesses is limited and of moderate quality. Additional high quality evidence is needed to develop effective programs in small businesses. The Secretary of HHS should call on states with expertise for input on program guidelines, and should consider establishing an additional grant program for state health departments to evaluate the grant-funded programs in their states.

Introduction

The Affordable Care Act (ACA) of 2010 contains numerous provisions aimed at preventing disease in the US population. One of these provisions is the establishment of a grant program for small businesses to develop comprehensive workplace wellness programs (Sec. 10408). According to *The Luxembourg Declaration* of 1997, workplace wellness programs, or workplace health promotion (WHP) programs, are "the combined efforts of employers, employees and society to improve the health and wellbeing of people at work" (European Network for Workplace Health Promotion, 1997).

The small business grant program in the ACA authorizes $200 million in funding for fiscal years 2011 through 2015, although no funds have been appropriated as of 2012. These grants are intended to support the development of comprehensive workplace wellness programs in businesses with fewer than 100 employees who work at least 25 hours per week. The ACA specifies the Secretary of Health and Human Services (HHS) is responsible for establishing requirements for WHP program components that are based on best-practices and scientific evidence. At a minimum, programs developed under the grants must contain four components: increasing health awareness, maximizing employee engagement, changing unhealthy behaviors, and promoting a supportive environment. Table 1 outlines these components with examples of initiatives that might be included in each.

Businesses with fewer than 100 employees made up 98 percent of all firms in the US and employed more than 40 million people in 2009 (United States Small Business Administration, 2009). With such a large portion of the US workforce, small businesses are an ideal setting for new investment in WHP. Research suggests small businesses

likely face unique barriers and enablers compared to very large businesses, where WHP has been more widely implemented and studied (Stokols, McMahan, & Phillips, 2002). The small business grant program has the potential to improve the health of millions, but it is important that HHS develops program guidelines using small-business specific evidence.

This paper presents the results of a systematic review of the literature on workplace health promotion in small businesses, and a scan of state health agency WHP activities with the aim of informing guideline development for the small business grant program.

Table 1. Workplace health promotion program components and examples

Workplace Health Promotion Program Components	**Examples**
Increase health awareness	• Health risk appraisals • Individual health education • Health screenings
Maximize employee engagement	• Advertising • Incentives for participation
Change unhealthy behaviors	• Counseling • Seminars • Self-help materials • Skill development
Promote a supportive environment	• Workplace policies to encourage healthy eating, physical activity, good mental health • Healthy foods in cafeterias and vending machines • Flexible work schedules for participation

Population Health

US Health System

The US health system is made up of many components, but for the purpose of this review the emphasis will be on its two major components, public health and medical care. In 1988, the Institute of Medicine, in its landmark report "The Future of Public Health", defined public health as "what we as a society do collectively to assure the conditions in which people can be healthy" (Institute of Medicine, 1988). The public health system consists of public and private sector organizations, including government-run health agencies at the federal, state and local levels. Preventing health problems continues to be the major emphasis of public health and is its distinguishing feature in contrast to medical care. Although there has been a much greater emphasis on prevention in recent years, the medical care system continues to have its primary focus on treating illness once it occurs.

State health agencies or state health departments have a variety of governance structures and functions, but all are required to perform three core functions developed by the Institute of Medicine: assessment, policy development, and assurance (Institute of Medicine, 1988). Public health agencies perform ten essential public health services within the core functions: (a) monitoring health status to identify and solve community health problems; (b) diagnosing and investigating health problems and health hazards in the community; (c) informing, educating, and empowering people about health issues; (d) mobilizing community partnerships and action to identify and solve health problems; (e) developing policies and plans that support individual and community health efforts; (f) enforcing laws and regulations that protect health and ensure safety; (g)

linking people to needed personal health services and assure the provision of health care when otherwise unavailable; (h) assuring competent public and personal health care workforce; (i) evaluating effectiveness, accessibility, and quality of personal and population-based health services; and (j) researching new insights and innovative solutions to health problems (Public Health Functions Steering Committee, 1994).

Chronic Disease in the US

In the modern era, these ten essential public health services have increasingly focused on chronic diseases, such as cardiovascular diseases, diabetes mellitus, and chronic respiratory diseases. Chronic diseases are the leading cause of death in the US; nearly 40 percent of all deaths in 2009 were attributed to cardiovascular diseases, chronic respiratory diseases, or diabetes mellitus (National Center for Health Statistics, 2012). Likewise, the growing rate of obesity in the US is an increasing concern for public health due to its association with life-threatening chronic conditions. More than 70 million (35.7%) adults were obese in the US in 2009-2010 (Ogden, Carroll, Kit, & Flegal, 2012).

Persons with chronic diseases are likely to have reduced health-related quality of life, increased health care expenditures, and reduced productivity (Hoffman, Rice, & Sung, 1996; Hornbrook & Goodman, 1996). In 2006, cardiovascular disease and stroke resulted in nearly $258 billion in medical expenditures (Mensah & Brown, 2007). Obesity has been associated with 36 percent increase in health care spending in the outpatient and inpatient setting (Sturm, 2002). In working adults, chronic illness has been associated with increased rates of severe disability (Bhattacharya, Choudhry, & Lakdawalla, 2008).

The Centers for Disease Control and Prevention (CDC) has identified four behaviors as primary drivers of high rates of chronic disease (United States Centers for Disease Control and Prevention, 2009). These behaviors are tobacco use, lack of physical activity, unhealthy eating habits, and excessive alcohol use. Evidence suggests the US population is engaging in health risk behaviors at alarming rates. In 2009, less than a quarter of adults ate the recommended servings of fruits and vegetables daily (Centers for Disease Control and Prevention, 2009). Twenty-three percent of the population age 12 or older engaged in binge drinking, and 27 percent used tobacco in 2010 (Substance Abuse and Mental Health Services Administration, 2010). More than 25 percent of adults got no leisure-time physical activity in 2008 (Centers for Disease Control and Prevention, 2011).

Evidence-Based Public Health

As public health agencies are increasingly called upon to prevent or reduce health risk behaviors associated with chronic diseases, there is growing demand to develop an evidence base for public health interventions. Evidence-based public health (EBPH) refers to interventions that are planned and reviewed using systematic methods, and are grounded in theory and scientific literature. According to Brownson, Fielding, and Maylahn (2009), EBPH has several key features, including using the best peer-reviewed research in decision making, systematically using data, using frameworks for program planning based in theory, engaging the community in processes, conducting systematic evaluations, and disseminating lessons learned. The benefits of an evidence-based approach include greater likelihood of success and more efficient use of human and financial resources (Brownson et al., 2009).

Workplace Health Promotion

Background

The workplace was identified as a site for health promotion in the years following World War II (O'Donnell, 2002). Originally conceived as fitness programs for high-level executives, workplace health programs became increasingly comprehensive and accessible to employees at all levels in the mid-1970s (Sparling, 2010). Since then, businesses around the world have implemented workplace wellness programs in an attempt to increase healthy behaviors among employees. In 2009, Buck Consultants surveyed senior and mid-level professionals responsible for wellness strategy in 1,248 organizations in 47 countries. Sixty-six percent of all surveyed organizations reported having a wellness program, and 54 percent of multinational employers had a multinational strategy for employee wellness (Buck Consultants, 2009). In general, workplace wellness programs are more prevalent in higher income countries than those with lower incomes (Bloom et al., 2011).

Research suggests many business leaders are concerned about the negative effects of chronic disease among employees. In 2010, the World Economic Forum surveyed nearly 14,000 business executives in 149 countries; half of all business executives reported concern that chronic diseases were leading to negative financial consequences in their businesses (Bloom et al., 2011). Employees with poor health are more likely to be absent from work, have reduced productivity, and have higher medical costs, and increased medical costs often lead to higher health insurance premium costs for businesses (Harris & Fries, 2002). This is of great concern for employers, since ninety-three percent of businesses with 50 to 199 employees, and ninety-nine percent

of businesses with 200 or more employees offered health benefits in 2011 (Henry J.Kaiser Family Foundation & Health Research and Educational Trust, 2011). Furthermore, businesses paid a portion of health insurance premiums for 162 million Americans in 2007 (Doty, Collins, Rustgi, & Nicholson, 2009).

To counter rising health insurance premiums, increase productivity, and improve corporate image, businesses have developed a variety of WHP programs (O'Donnell, 2002). The targets of WHP programs have included physical activity, nutrition, weight management, tobacco control and cessation, medical self-care, and stress management. According to O'Donnell (2002), workplace health promotion programs often have three target activities: activities that enhance health awareness; activities that change behavior; and activities that create a supportive environment. In 2009, fifty-eight percent of businesses providing health benefits had at least one WHP activity, with ninety-three percent of firms with 200 or greater employees and fifty-seven percent of firms with 3 to 199 employees offering more than one activity (Claxton et al., 2009).

Workplaces vary significantly in their approach to workplace health promotion, and programs vary in scope, target employees, facilities, and staffing. Some businesses only target high risk employees, such as employees with obesity or diabetes, while others offer programs to all employees. Although many workplace wellness activities do not require specific facilities or equipment, some businesses have facilities onsite, such as gymnasiums, lockers, and showers. Businesses that lack this capacity sometimes offer paid or discounted memberships to local gyms. Large employers often have the resources to hire dedicated staff for WHP, including program managers, fitness trainers, health education teachers, and clerical staff.

Review of Evidence

Two sources of evidence are commonly used by public health agencies in program and policy development: the Guide to Community Preventive Services (Community Guide) and the scientific literature. The Community Guide makes recommendations for public health programs and policies based on systematic reviews of the scientific literature. Currently, the Community Guide (2012) recommends six WHP interventions: health risk assessment with health education; obesity prevention; point-of-decision prompts for stairs; creating environments and outreach programs to increase physical activity; tobacco-free workplace policies; and incentives and competitions for smoking cessation (Centers for Disease Control and Prevention, 2012). None of these reviews specifically targeted small businesses.

The scientific literature is the other major source for evidence on WHP, and studies have shown mixed results. Harden, Peersman, Oliver, Mauthner, & Oakley (1999) performed a systematic review of 110 evaluations published between 1994 and 1997. They found the majority of articles published over that time period evaluated interventions to reduce cardiovascular disease risks. The authors judged only fifteen articles to be methodologically sound. Of those, three were judged to be effective, eight were judged to be partly effective, and four were judged ineffective. The interventions judged to be effective or partly effective included health education, personalized education, skill development, environmental changes, and comprehensive programs with more than one intervention. Interventions deemed ineffective included health education plus incentives and one comprehensive intervention. Harden et al. concluded

the majority of outcome evaluations reported in the literature lack sufficient scientific rigor to make significant contributions to the evidence base.

Benedict and Arterburn (2008) conducted a systematic review of worksite wellness programs for weight loss that included articles from 1995-2006. In eleven studies with randomized controlled trial designs, groups receiving a weight loss intervention lost more weight than control groups, but the weight loss was modest for the intervention group. Benedict and Arterburn (2008) judged the methodological quality of the majority of published studies as poor, and concluded there was a need for higher quality studies that include educational, behavioral, environmental, and economic support components for employees.

Maes et al. (2011) systematically reviewed the literature on programs aimed at increasing healthy eating between 1990 and 2010. Of thirty articles, eighteen reported positive effects on employees' diets, and four reported reductions in body composition. The authors judged the methodological quality of the majority of articles to be moderate to weak, and they concluded there was limited to moderate evidence for the success of healthy eating programs at worksites.

Goals of the Paper

Given the newly-created opportunity for small businesses to influence health risk behavior, the goals of this paper are:

1. To review the evidence for WHP in small businesses.
2. To determine if there is congruence between the required WHP components in the ACA (Table 1) and the existing scientific literature.

3. To evaluate the quality of the scientific literature on WHP in small businesses.
4. To scan the information and expertise available for WHP, especially for small businesses, in state health agencies and determine if they have a potential role in the small business grant program.

Methods

Definition of Terms

1. *Small business* – A firm with 500 or fewer employees.[1]
2. *Process evaluation* – A systematic evaluation of program implementation. Process evaluations provide information on the whether the program was implemented as planned, reached the intended audience, and can help identify barriers and facilitators.
3. *Impact evaluation* – A systematic evaluation that measures the short-term effects of a program. Short-term behavior change, increased health awareness, and organizational change can be measured through impact evaluation.
4. *Outcome evaluation* – An evaluation of the long-term effects of a program. Sustained behavior change, reductions in disease incidence or prevalence, morbidity, and mortality can be measured through outcome evaluations.
5. *Modifiable heath risk behavior* – A voluntary behavior that has the potential to impair health. Modifiable health risk behaviors include unhealthy eating habits, lack of physical activity, and tobacco and alcohol use.

[1] There is no standard definition for the term small business, although the US Small Business Administration defines small businesses for research purposes as having fewer than 500 employees. The ACA small business grant program defines small businesses as those employing fewer than 100 employees. Limiting the literature search to businesses with fewer than 100 employees did not produce enough articles for a systematic review.

Systematic Review of the Literature

A search for evidence was conducted using the following health sciences databases: PubMed, PsycInfo, EMBASE, CINAHL, Web of Science (ISI), and Google Scholar. The search terms included words and phrases associated with workplace health promotion and small businesses. Search terms for workplace health promotion included: workplace wellness; workplace health promotion; worksite wellness; worksite health; employee health; health promotion; health behavior; and health. Search terms associated with small businesses were combined with the health search terms using "and" as a logical operator. These terms included: small business(es); small employer(s); small worksite(s); small firm(s); small enterprise(s); fewer than 500 employees; <500 employees; and 500 employees. The searches were limited to literature published between 1982 and 2012, and written in English.

Since the aim of the review was to evaluate the evidence for workplace health promotion initiatives addressing modifiable health risk behaviors (e.g., physical activity, tobacco use), studies were excluded if they focused on occupational health and safety only (e.g., ergonomics, industrial hygiene). Studies were not limited by the type of health promotion program implemented.

Articles were first categorized based on the type of evaluation (i.e., process, impact, or outcome). Articles that evaluated the process of starting a worksite health promotion program were grouped together, and those that evaluated the impact or outcome of an intervention were grouped as a separate category.

The impact and outcome evaluation articles were further stratified based on the scope of intervention activities. The ACA requires small businesses receiving

workplace health promotion grants to include components that 1) increase health awareness, 2) maximize employee engagement, 3) change unhealthy behaviors, and 4) promote a supportive environment.

The following classification scheme was developed:

- Category 1: Process evaluation of a new worksite health promotion initiative
- Category 2: Impact or outcome evaluation, 1 component from ACA (e.g. increase health awareness, maximize employee engagement, change unhealthy behaviors, or promote a supportive environment)
- Category 3: Impact or outcome evaluation, 2 components from the ACA
- Category 4: Impact or outcome evaluation, 3 components from the ACA
- Category 5: Impact or outcome evaluation, 4 components from the ACA

Articles in Categories 2 through 5 were then evaluated using the Quality Assessment (QA) Tool for Quantitative Studies developed by the Effective Public Health Practice Project (EPHPP) (Effective Public Health Practice Project, 2010). This tool was designed to help public health professionals and policy makers make informed judgments about the literature. The QA Tool helps users decide on a global rating of a paper based on six components: selection bias, study design, confounders, blinding, data collection methods, withdrawals and dropouts. Ratings from each component are evaluated to create a global rating of strong, moderate, or weak. Articles were given a rating of strong if they had no weak rating on any component. The moderate rating was assigned to articles with only one weak component, and the weak rating was assigned

to articles with two or more weak components. Category 1 articles were excluded from this analysis because primary outcomes were based on qualitative study design.

Scan of State Health Agency Activities

A scan of workplace health promotion activities in state health agencies was conducted. State health agency websites for each US state and Washington, DC, were searched for information regarding WHP. Websites that contained information on WHP were examined to determine the type of information available online and the scope of activities. Websites were examined for the following: any WHP information available online, the target population (state employees or private businesses), links to resources from other organizations, state-specific toolkits for developing WHP programs, environmental, employee interest or organizational readiness assessments, example programs or vignettes from within the state, onsite program development or consultation for businesses, state sponsorship of a WHP conference, a specific focus on small businesses, and awards or best practices recognition programs. The number of state health agency websites with each type of information was recorded. For agencies with no WHP information on their websites, an internet search for workplace health promotion activities was conducted using the state name and the search terms: workplace wellness; workplace health promotion; worksite wellness; worksite health; department of health; and health agency. “And” was used as a logical operator between the WHP terms and health agency terms. Information resulting from these searches was examined using same criteria for the agency websites.

Results

Search Results

A total of 45 articles on workplace health promotion in small businesses were identified. Sixteen articles met the criteria for inclusion. Twenty-eight were excluded because they did not report the results of a process, impact or outcome evaluation. Topics of the excluded articles included surveys of workplace health promotion activities, training of health promotion staff, characteristics of employees prior to intervention, qualitative analyses of barriers to program development, and opinion or policy statements. One article was excluded because it included individual worksites that were part of larger business organizations.

The sixteen articles that met criteria for inclusion included five process evaluations, nine impact evaluations, one outcome evaluation, and one combined impact and outcome evaluation. One impact study contained process evaluation components, but was mainly focused on program impacts so was classified as an impact evaluation. The process evaluation articles evaluated initiatives to increase physical activity and healthy eating (*N*=3), reduce stress (*N*=1), and increase health screening participation and follow-up medical evaluation for high risk employees (*N*=1). The impact evaluation articles addressed healthy stress unwinding (*N*=1), healthy eating only (*N*=1), healthy eating and physical activity (*N*=3), and physical activity only (*N*=2). Two impact evaluations looked at comprehensive, multicomponent approaches, including physical activity, health screenings, healthy eating, stress reduction, and smoking cessation. The single outcome evaluation addressed increased fruit and

vegetable intake over the long-term, and the combined impact and outcome evaluation looked at healthy eating and physical activity to reduce obesity.

Process Evaluations

Of the articles that met inclusion criteria, five reported process evaluation results. Eakin, Cava, and Smith (2001) reported a qualitative evaluation of a stress reduction intervention for businesses of in twenty-two businesses with 25-99 employees. The study reported several barriers, including reports by public health nurses implementing the program that they had a "hard time" relating to business clients compared to "typical" users of public health services. The program was ultimately discontinued.

Hunt et al. (2007) examined a randomized controlled study of 26 businesses with 34-119 employees targeting nutrition and physical activity. Results from the qualitative study suggested organizational factors, including management support, worker input, and a history of social interaction between workers and management, likely contributed to high participation rates by employees. Devine et al. evaluated a walking and healthy eating intervention in five worksites with 18-202 employees. They concluded certain elements were associated with participation, including active leadership, visible environmental changes, critical mass of participants, public display of accomplishments, accountability to co-workers, and group decision making.

Laing et al. (2012) evaluated a physical activity, healthy eating, and tobacco cessation intervention in twenty-three businesses with fewer than 250 employees. Study authors found small businesses with upper management support, those with support from a community partner, and those receiving outside resources and hands-on support were positively associated with evidence-based WHP implementation.

Margolis, Richmond, Brown, and Jackson (2003) evaluated a cardiovascular disease risk reduction program in 30 African American-owned businesses with 1-40 employees. The authors found relatively high participation in an onsite health screening program, but significantly lower rates of participation in employer-paid, follow-up appointments with a physician. They concluded employees' ability to participate in WHP programs, especially programs that require activities away from work, may be limited in very small worksites due to time and financial constraints.

Physical Activity

Physical activity was the health behavior target of two interventions. Taylor et al. (2010) studied the effects of 15-minute group exercise classes in a company of fourteen employees (*N*=14). After six months, the fourteen-employee cohort lost an average of 14 pounds and showed significant improvements in high-density lipoprotein (HDL) cholesterol (p=0.04) compared to baseline. Warren, Maley, Sugarwala, Wells, and Devine (2010) studied the effects of a walking program on a cohort of 188 employees from ten worksites in rural New York State. Worksites had a mean size of 46 employees. After ten weeks, intention to treat analysis showed a mean increase of 1,503 daily steps, and the percent of enrollees rated somewhat active (7.49-9.99k steps/day) increased from 23 percent to 36 percent ($p<0.005$) compared to baseline.

Nutrition

Nutrition was the target of two interventions. Braekman, DeBacquer, Maes, and DeBacker (1999) studied the effects of an intervention to decrease dietary fat intake in male employees at four worksites with 250-500 employees each. Worksites were randomized; two received the intervention (*N*=272 employees) and two served as

controls (*N*=366 employees). After three months, total fat intake and calorie consumption were significantly reduced in the intervention group compared to the control ($p<0.05$), and nutrition knowledge increased significantly ($p<0.001$). HDL cholesterol decreased by 6.7 percent in the intervention group, but the reduction was only seen in employees with hypercholesterolemia at baseline. Beresford et al. (2010) evaluated the long-term outcome of a nutrition intervention aimed at increasing fruit and vegetable consumption among employees in worksites with 50-100 employees. The study was a follow up to an 18-month intervention at 44 worksites, with an average length from baseline to follow-up of 4.4 years. Twenty-nine of the original 44 participated in the follow-up study, including 17 original intervention sites and 12 original controls. The study found fruit and vegetable intake increased in both groups, but the changes were larger in the intervention worksites (0.25 servings per day, 95% confidence interval=0.09 to 0.40).

Physical Activity and Nutrition Combined

Two studies presented the results of combined physical activity and nutrition programs. Brownell, Cohen, Stunkard, Felix, and Cooley (1984) studied a weight-loss competition intervention for 176 employees in three banks with a combined total of 570 employees. After 12 weeks, participants in the cohort had a total weight loss of 9.7 percent. Brehm, Gates, Singler, Succop, and D'Alessio (2011) studied an intervention to reduce behaviors associated with obesity in eight manufacturing companies with 150 to 350 employees each. Four businesses were randomized to the intervention (*N*=168 employees) and four served as controls (*N*=173 employees). After 12 months, the intervention group had lower saturated fat and cholesterol intake and compared to the

control group ($p<0.05$), but no other effects were found. Sorensen et al. (2005) studied a nutrition and physical activity intervention in twenty-six multiethnic worksites with 50-150 employees. Thirteen worksites were randomly assigned to the intervention (*N*=806 employees) and thirteen were assigned to the control (*N*=931 employees). After the 18-month intervention, there were statistically significant improvements in multivitamin use and physical activity in the intervention group compared to the control.

Mental Health

Mental health was the focus of one study. Patterson, Bennett, and Wiitala (2005) studied behaviors used in stress unwinding in businesses with fewer than 500 employees. Businesses were randomly assigned to one of two interventions (*N*=194 and *N*=124 employees, respectively) or control conditions (*N*=212 employees). Interventions were aimed at increasing healthy stress unwinding behaviors (e.g., exercise, meditation, socializing) and reducing unhealthy unwinding behaviors (e.g., alcohol, tobacco, and drug use). After four weeks, researchers found both interventions improved positive unwinding behaviors compared to controls.

Comprehensive

Four studies presented the results of comprehensive interventions aimed at changing multiple health risk behaviors. Campbell et al. (2002) studied the effects of a comprehensive program (physical activity, nutrition, smoking cessation, and cancer screening) in 538 women in nine blue-collar businesses of 125-250 employees. Worksites were randomized to intervention conditions (4 worksites, *N*=362 employees) and control conditions (5 worksites, *N*=298 employees). After 18 months, the intervention group had a statistically significant increase in fruit and vegetable

consumption compared to the control group (0.7 daily servings, $p<0.05$). No differences were observed between the groups for tobacco use or cancer screening. Erfurt and Holtyn, (1991) studied a comprehensive program (nutrition, physical activity, tobacco cessation, and stress management) at three worksites with 5-296 employees. Intervention participants at the first worksite (N=130 employees) shared the financial costs of the program, while all costs were paid by the employer at the second worksite (N=77 employees) and third worksite (N=5 employees). While 130 employees were recruited at the first worksite, none completed the WHP program. After the twelve-month intervention, the cohort in the second worksite had statistically significant decreases in blood pressure, cholesterol, cigarette smoking, and increased physical fitness ($p<0.01$ for each), and decreased percent body fat ($p<0.05$). The sample size was too small at the third worksite for statistical analysis. Merrill et al. (2011) studied a comprehensive WHP program (smoking cessation, physical activity, nutrition, and men's and women's health) at one business with 440 employees (Merrill et al., 2011). A cohort of 279 employees participated in the intervention for three years, and statistically significant improvements were found in body fat, blood pressure, and flexibility between baseline and follow-up.

Classification of Studies by ACA Requirements

Five process evaluation articles were classified as Category 1 (Table 2). No articles were found that reported an impact or outcome evaluation of a program with one or two required components from the ACA small business grant program (Categories 2 and 3). Six articles were classified as Category 4, and they were all impact evaluations. Five articles were classified as Category 5, evaluations of programs

containing all required components listed in the ACA. Three were impact evaluations, one was a combined impact and outcome evaluation, and one was an outcome evaluation.

Table 2. Articles by evaluation type and number of ACA required components

Category	Articles
Category 1: Process evaluation	5
Category 2: Impact or outcome evaluation, 1 component from ACA	0
Category 3: Impact or outcome evaluation, 2 components from ACA	0
Category 4: Impact or outcome evaluation, 3 components from ACA	6
Category 5: Impact or outcome evaluation, 4 components from ACA	5
Total	16

Classification of Studies by EPHPP Global Rating

Category 1 articles were not evaluated by the EPHPP and no articles were classified as Category 2 or 3. Out of six Category 4 articles, one received a global rating of strong, four were classified as moderate, and one was rated weak (Table 3). Of the five Category 5 articles, three were rated strong, one was classified as moderate, and one was rated weak.

Table 3. Articles by ACA Category and EPHPP Global Rating

Article (year)	Health Behavior or Condition	EPHPP Global Rating
Category 4: Impact or outcome evaluation, 3 components from ACA		
Patterson (2005)	Healthy unwinding (substance use)	Strong
Erfurt (1991)	Comprehensive program (wellness screening, referral to physician, on-site wellness, follow-up counseling)	Moderate
Warren (2010)	Physical activity (walking)	Moderate
Campbell (2002)	Nutrition and physical activity	Moderate
Braeckman (1999)	Nutrition (low fat diet)	Moderate
Brownell (1984)	Overweight	Weak
Category 5: Impact or outcome evaluation, 4 components from ACA		
Beresford (2010)	Nutrition (fruit and vegetable consumption)	Strong
Brehm (2011)	Obesity (nutrition and physical activity)	Strong
Sorenson (2004)	Cancer prevention (nutrition and physical activity)	Strong
Merrill (2011)	Comprehensive program (physical activity, nutrition, smoking cessation, men's and women's health)	Moderate
Taylor (2010)	Physical activity	Weak

Scan of State Health Agency Activities

State health agency websites for each US state and Washington, DC were searched for information on WHP. Of 51 (US States and Washington, DC) websites examined, 39 posted information about WHP online (Table 4). Five states had information regarding programs available to state employees only, and these were excluded from further analysis. Of the 34 websites with WHP information intended for private businesses, 28 provided links to resources on external websites. The most common link was to the Wellness Council of America, a national non-profit membership

organization that provides WHP resources to members. Links to the CDC's website were also prevalent. Twenty-three state health agency websites provided a downloadable toolkit businesses could use for WHP planning, implementation, and evaluation. Sixteen websites provided a downloadable survey or interactive form to help businesses assess employee interest, current workplace environment and areas for improvement, or organizational readiness for change. Fifteen websites contained vignettes describing successful programs from businesses located in the state. It could not be determined from the majority of websites whether state health agencies offered onsite consultation, planning, implementation, or evaluation services to businesses, but nine websites reported agency staff were available for some type of onsite assistance to businesses. Eight websites provided information about upcoming or prior annual WHP conferences in the state. Only 8 websites contained information specific to small businesses, but the business size was not stipulated. Six websites provided information on a state-wide award program recognizing businesses for best practices in WHP.

Table 4. State health agency resources for workplace health promotion

	Number of States (percent)
US States and DC (*N*=51)	
Information available online	39 (76%)
Program for state employees only	5 (13%)
States with WHP Information Online for Private Employers (*N*=34)	
Links to external resources	28 (82%)
Toolkit available	23 (67%)
Environmental assessment available	16 (47%)
Example program or vignette from state	15 (44%)
Onsite help/consultation	9 (26%)
Wellness conference	8 (24%)
Small business specific information	8 (24%)
Award/recognition program	6 (18%)

Discussion

Evidence for Workplace Health Promotion in Small Businesses

Overall, very few articles in the literature examined WHP in small businesses. The majority of articles included in this review supported prior research suggesting small businesses face unique challenges in implementing WHP programs. For example, Margolis et al. (2003) noted low participation in activities that required employees to vacate their posts during working hours. This was a particular problem in service industries, such as gas stations and dry cleaners, where employees did not have anyone to cover their positions during absences.

Outside support and community linkages were associated with successful WHP program implementation in small businesses. Small businesses often have financial,

personnel, and facility constraints that limit their ability to provide WHP programs. Outside support, especially from public health agencies with program planning and evaluation expertise, was shown to decrease the effects of these barriers. Other enabling factors included active leadership, worker input, environmental changes, history of social interaction between workers and management, accountability to co-workers, and public recognition of accomplishments.

The small number of articles made it difficult to draw conclusions regarding the effectiveness of particular approaches. Most programs produced some short-term changes in health risk behaviors, although most changes were modest. Few examined whether changes in behavior were sustained or resulted in improved health outcomes over the long term. The time from baseline to follow-up ranged from four weeks to 4.4 years. Beresford et al. (2010) was the only study to evaluate long-term changes in behavior several years after the active phase of an intervention was discontinued. They found behavior changes were sustained in intervention worksites compared to controls over the long-term, but the results were modest.

Congruence Between ACA Components and Scientific Literature

Research suggests individual health risk behaviors are complex, with multiple contributing and interacting social and environmental factors. The ACA appears to address this by requiring that interventions contain four different components. All impact or outcome evaluation articles contained three or four components from the ACA (Categories 4 and 5, respectively), indicating there is congruence between existing WHP research and the ACA requirements.

The results also suggested an association between Category 5 articles and the use of theoretical frameworks in program planning. Of sixteen articles that met inclusion criteria, five described a theoretical basis for the program evaluated. The Social Ecological Model was used in four articles, and one used the Transtheoretical Model of Behavior Change. The majority of articles that described a theoretical framework were Category 5.

Quality of Scientific Literature

The reviewer found at least one significant problem with selection bias, study design, confounders, blinding, data collection methods, withdrawals or dropouts in more than half of the articles. These ratings were slightly better than the EPHPP global ratings of healthy eating articles evaluated by Maes et al. (2011), but congruent with the results of other systematic reviews suggesting the quality of WHP evaluations needed to be improved. A greater percent of Category 5 articles were rated as strong compared to Category 4 articles, but small sample sizes in both categories limited the conclusion that could be drawn from those results. There was no apparent pattern between WHP health behavior target and EPHPP rating.

Potential Role for State Health Agencies

There appeared to be interest or expertise in the majority of state health agencies regarding WHP. Based on website content, more than three-quarters of state health agencies were involved in some aspect of WHP, and several states (at least 9) appeared to have significant expertise in WHP. Eight states had experience with small business WHP, and five had information regarding WHP programs for state employees.

Health agencies are likely a good, but relatively untapped, source of information on WHP. Workplace health promotion program development and evaluation fit within the ten essential public health services, especially informing, educating, and empowering people about health issues, mobilizing community partnerships and action to identify and solve health problems, and researching new insights and innovative solutions to health problems. Health agencies with small business WHP experience, those with WHP programs for state employees, and those that sponsor annual WHP conferences are likely to be able to make significant contributions to development of ACA guidelines for the small business grant program.

Recommendations

Through a systematic review of the literature and scan of state health agency activities, this study revealed several opportunities to inform guideline development for the ACA small business grant program. The author recommends:

1. Additional high quality scientific literature is needed for small business WHP. Public health agencies, academic institutions, and other researchers should use the highest quality study design, paying particular attention to selection bias, confounders, blinding, data collection methods, and withdrawals.
2. HHS should develop program guidelines that are based on the key elements of evidence-based public health, especially the use of theoretical models in program design. The Social Ecological Model is a likely candidate, but other evidence-based models should be considered.

3. The Secretary should call on states with expertise in WHP for input on program guidelines. HHS should consider hosting a conference and inviting the eight states with small business WHP expertise to share best practices.
4. HHS should consider establishing a grant program for state health departments to evaluate ACA small business WHP grantees in their states. Small businesses are unlikely to have the expertise in house to evaluate their programs, and the existing grant program does not cover the expense of an external evaluation. A grant program could generate evidence for the base and increase in-house expertise in state agencies, while covering staff and resource costs.

Limitations

This study has several important limitations. First, the QA Tool is intended to be used by two reviewers per article. If discrepancies in any of the reviewers' six component scores appear, the discrepancies are to be discussed and the source of the discrepancy determined. The final global rating of the paper is then determined by mutual agreement between the reviewers. For this paper, only one reviewer rated each paper. This could lead to misjudgment of the quality of the evidence. Since the global rating for each paper is a composite of six ratings, it is unlikely that a strong paper was judged as weak, or a weak paper was judged as strong. There is a higher chance of error for the moderate category with a single reviewer.

Second, using websites to scan the activities of state health agencies does not provide information on the full scope of activities or expertise. A survey would have aided in evaluating WHP activities in state health agencies.

Finally, it should be noted that the quality or successful outcome of a particular study does not necessarily correlate with generalizability. Small businesses are a heterogeneous group of settings and people. Given the small number of articles on WHP in small businesses, additional research is necessary to determine how generalizable programs are in other settings.

Conclusion

This study presented a systematic review of the literature and scan of state health agency activities with regard to workplace health promotion in small businesses. With 40 million workers, small businesses are an ideal setting for new investment in WHP, but the results suggested WHP in small businesses has not been well studied. The ACA small business grant program required grant-funded programs to contain multiple components to ensure success. The majority of interventions evaluated were congruent with the ACA guidelines, and most programs produced some short-term changes in health risk behaviors. Most changes were modest, and the quality of the literature was judged to be moderate, suggesting need for improved study design. There appeared to be interest or expertise in the majority of state health agencies regarding WHP. Additional high quality evidence is needed to develop effective programs in small businesses. The Secretary of HHS should call on states with expertise for input on program guidelines, and should consider establishing an additional grant program for state health departments to evaluate the small business grantees in their states.

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