The Health and Cost Benefits of Work Site Health-Promotion Programs

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Abstract

We review the state of the art in work site health promotion (WHP), focusing on factors that influence the health and productivity of workers. We begin by defining WHP, then review the literature that addresses the business rationale for it, as well as the objections and barriers that may prevent sufficient investment in WHP. Despite methodological limitations in many available studies, the results in the literature suggest that, when properly designed, WHP can increase employees' health and productivity. We describe the characteristics of effective programs including their ability to assess the need for services, attract participants, use behavioral theory as a foundation, incorporate multiple ways to reach people, and make efforts to measure program impact. Promising practices are noted including senior management support for and participation in these programs. A very important challenge is widespread dissemination of information regarding success factors because only ~7% of employers use all the program components required for successful interventions. The need for more and better science when evaluating program outcomes is highlighted. Federal initiatives that support cost-benefit or cost-effectiveness analyses are stressed, as is the need to invest in healthy work environments, to complement individual based interventions.

INTRODUCTION

WHP: work site health promotion

In a 1993 report prepared by the Office of Disease Prevention and Health Promotion, McGinnis, former Deputy Assistant Secretary of Health, wrote, "Worksite health promotion has taken on increasing importance as a contributor to improved health for many Americans." He continued, "With the expanded activity comes an interest and obligation to assess the results of such programs to ensure that we have a clearer notion of what works best in various settings" (83).

The report, written a decade and a half ago, spotlighted the experience of 61 employers, large and small, public and private, that were providing work site health promotion (WHP) programs aimed at improving the health and well-being of their employees and reducing health care, workers' compensation, and disability costs. Since that report was released, researchers and program evaluators, largely university based, have increased the knowledge base related to health promotion efforts in the workplace. However, that experience and the insights garnered from the research have not been well communicated and applied to the audience that would benefit the most: employers.

Here, we critically examine WHP and discuss how knowledge from this field has advanced since the early 1990s. We review the literature supporting the hypotheses that WHP programs positively influence workers' health, medical service use, and productivity, and we evaluate the quality of the evidence. We discuss ways in which evidence-based WHP practices can and should be disseminated more broadly so that the positive health and economic outcomes from such initiatives can be realized.

DEFINING WORK SITE HEALTH PROMOTION

WHP programs are employer initiatives directed at improving the health and well-being of workers and, in some cases, their dependents. They include programs designed to avert the occurrence of disease or the progression of disease from its early unrecognized stage to one that's more severe (27). At their core, WHP programs support primary, secondary, and tertiary prevention efforts. Primary prevention efforts in the workplace are directed at employed populations that are generally healthy. They also offer opportunities for workers who do not maintain good health and who may fall prey to diseases and disorders that can be prevented or delayed if certain actions are taken. Examples of primary prevention include programs that encourage exercise and fitness, healthy eating, weight management, stress management, use of safety belts in cars, moderate alcohol consumption, recommended adult immunizations, and safe sex (53).

Health promotion also incorporates secondary prevention directed at individuals already at high risk because of certain lifestyle practices (e.g., smoking, being sedentary, having poor nutrition, practicing unsafe sex, consuming excessive amounts of alcohol, and experiencing high stress) or abnormal biometric values (e.g., high blood pressure, high cholesterol, high blood glucose, overweight). Examples of secondary prevention include hypertension screenings and management programs, smoking cessation telephone quit lines, weight loss classes, and reduction or elimination of financial barriers to obtaining prescribed lipid-lowering medications.

Health promotion sometimes also includes elements of tertiary prevention, often referred to as disease management, directed at individuals with existing ailments such as asthma, diabetes, cardiovascular disease, cancers, musculoskeletal disorders, and depression, with the aim of ameliorating the disease or retarding its progression. Such programs promote better compliance with medications and adherence to evidence-based clinical practice guidelines for outpatient treatment. Because patient self-management is stressed, health-promotion practices related to behavior change and risk reduction are often part of disease management protocols. Full-service

disease management programs also encourage collaboration among patients, their families, physicians, other health care providers, and the staff of the disease management program, and routine feedback loops are established among these groups (33).

ESTABLISHING A BUSINESS CASE FOR WORK SITE HEALTH PROMOTION

The Centers for Disease Control and Prevention (CDC), in conjunction with its *Healthy People in Healthy Places* initiative, has observed that workplaces are to adults what schools are to children, because most working-age adults spend a substantial portion of their waking hours in their workplaces (113). Historically, WHP programs have been referred to as wellness, health management, health promotion, health enhancement, and health and productivity management (HPM) programs. For the sake of simplicity, we use the term WHP and define it as a set of workforce-based initiatives that focus primarily on providing traditional health-promotion services (e.g., health management or wellness programs) and may also include disease management (e.g., screening, care management, or case management programs), demand management (e.g., self-care, nurse call line programs), and related efforts to optimize employee productivity by improving employee health (54).

Today, many employers associate poor health with reduced employee performance, safety, and morale. The organizational costs of workers in poor health, and those with behavioral risk factors, include high medical, disability, and workers' compensation expenses; elevated absenteeism and employee turnover; and decreased productivity at work (often referred to as presenteeism) (44, 48, 51). In addition, one worker's poor health may negatively affect the performance of others who work with him or her (44, 48, 80).

The question for employers is whether well-conceived WHP programs can improve employees' health, reduce their risks for disease, control unnecessary health care utilization, limit illness-related absenteeism, and decrease health-related productivity losses (1, 26, 43, 92, 93). If effective, WHP programs could reach large segments of the population that would not normally be exposed to and engaged in organized health improvement initiatives. Still, many employers are reluctant to offer sufficiently intensive and comprehensive work site programs because they are not convinced that these programs deliver on the promise that they can reduce risk factors for their employees and achieve a positive financial return on investment (ROI) (8, 42, 73, 90).

BARRIERS TO IMPLEMENTING WORK SITE PROGRAMS

A 1999 survey of WHP fielded by the U.S. Office of Disease Prevention and Health Promotion reported that 90% of work sites offered workers at least one type of health-promotion activity (68). The key word in that report was "activity." Almost all employers reported having one or a string of activities loosely connected to WHP, but most had no organizing framework for these programs. The most recent National Worksite Health Promotion Survey (68) reports that only 6.9% of employers provide all five elements considered key components of a comprehensive program: (*a*) health education, (*b*) links to related employee services, (*c*) supportive physical and social environments for health improvement, (*d*) integration of health promotion into the organization's culture, and (*e*) employee screenings with adequate treatment and follow up.

Some employers do not opt to invest in WHP, and some even cut funding to existing programs, sometimes in spite of compelling data showing that these programs achieve good results. Their reasons for not supporting new or existing work site initiatives are multifaceted.

A subset of employers are philosophically opposed to interfering with their workers' private lives, health habits, and medical decision-making, considering such actions as

akin to playing the role of big brother. Some employers consider WHP programs as luxuries and not central to the organization's main business purpose. Still others may be concerned that programs promoted during work hours may distract workers from their day-to-day duties and consequently negatively impact worker productivity. Some employers argue that there is no grassroots support for WHP, as evidenced by poor attendance in health education sessions, or that labor unions may object, claiming that company cash outlays for such programs reduce workers' take-home pay (16, 97).

Other employers' objections to health promotion may be less defined, and in fact, they may believe that these programs exert a positive effect. However, they may find it difficult and expensive to prove positive outcomes to senior managers seeking hard evidence of program impacts. Furthermore, it may also be difficult to isolate specific program elements that are more effective than others—those that deliver the "biggest bang for the buck."

Furthermore, some employers may be reluctant to institute programs that achieve a positive ROI only after many years of investment, and the promises of quick returns never match reality. Also, they contend, even if they wished to start such programs, there are too few best practices to emulate. Finally, small businesses complain they lack the resources necessary to implement initiatives similar to those of large companies because they lack the advantages of scalability and infrastructure possessed by larger employers (112).

RATIONALE FOR INVESTING IN WORK SITE HEALTH PROMOTION

Despite these objections to WHP, our recent informal discussions with health-promotion vendors report a heightened interest in and demand for their services. Vendors report that they are besieged with requests for proposals (RFPs) from employers wishing to provide to their employees health risk appraisals (HRAs), health education programs, health decision support tools, health improvement coaching, and other preventive care services, within the context of a more holistic way to manage employee health and costs (R. Goetzel, personal communication, October 2, 2007). Benefit consultant surveys that usually target large employers report that almost two thirds of those responding to their surveys now offer wellness programs, and 15% more plan to do so (73).

There are several reasons offered by employers for investing in WHP.

Workplaces Offer a Practical Setting for Health Promotion

The workplace presents a useful setting for introducing and maintaining health-promotion programs for working-age adults. It contains a concentrated group of people, usually situated in a small number of geographic sites, who share a common purpose and common culture. Communication and information exchange with workers are relatively straightforward. Individual goals and organizational goals, including those related to increasing profitability, generally are aligned with one another.

Because good worker health has the potential to enhance company profitability and help achieve other organizational goals, the objectives of health promotion can be aligned with the organization's mission. Social and organizational support is likely to be available when behavior change efforts are attempted. Organizational policies and social norms can help guide certain behaviors and discourage others, and financial or other incentives can be introduced to encourage participation in programs. Finally, measurement of program impact is often practical, using available administrative data collection and analysis systems.

Health Care and Health-Promotion Expenditures

The main driving force behind employers' growing interest in providing WHP services

to their workers is undoubtedly rapidly rising health care costs (74, 78).

Employers' health care costs, primarily focused on sickness care, are increasing exponentially with no immediate attenuation in sight. In 2006, U.S. health care spending totaled $2.1 trillion—about 16.0% of the gross domestic product (95). Employers pay more than one third of the total annual medical bill, and the balance is funded by Medicare, Medicaid, other government programs, individual insurance coverage, and patient out-of-pocket expenditures (64). In 2006, employer premiums for medical care averaged $3615 a year for single coverage and $8508 for family coverage (61).

At the same time, the prevalence of illnesses that are at least partly caused by modifiable health risk factors and poor lifestyle habits also continues to rise. For example, the United States has been witnessing alarming increases in obesity, contributing to heightened rates of diabetes and related disorders (84). These strain the health care system's resources because individuals who are burdened by them generate significantly higher health care costs (36).

A large body of medical and epidemiological research confirms the links between chronic illnesses and common modifiable risk factors, such as smoking, obesity, physical inactivity, excessive alcohol consumption, poor diet, high stress, and social isolation (3, 18, 72, 75). Preventable or postponable illnesses make up ~70% of the total burden of disease (as measured in terms of premature deaths and potential years of life lost and their associated costs) (113). The World Health Organization (77) has observed that smoking, alcohol misuse, physical inactivity, and poor diet are among the top five contributors to disease and injury worldwide. McGinnis & Foege and Mokdad et al. showed that about half of all deaths in the United States may be premature because they are caused by behavioral risk factors and behavior patterns that are modifiable (71, 72, 75).

MODIFIABLE HEALTH RISKS AND EMPLOYER COSTS

Studies by Goetzel et al. (45) and Anderson et al. (7) examined the relationships between ten modifiable health risk factors and medical claims for more than 46,000 employees from private and public sector employers over a 6-year period. The risk factors studied included obesity, high serum cholesterol, high blood pressure, stress, depression, smoking, diet, excessive alcohol consumption, physical fitness and exercise, and high blood glucose. The authors found that these risk factors accounted for ~25% of total employer health care expenditures for the employees included in the study. Moreover, employees with seven of the risk factors (tobacco use, hypertension, hypercholesterolemia, overweight/obesity, high blood glucose, high stress, and lack of physical activity) cost employers 228% more in health care costs compared with those lacking any of these risk factors (45). Other reports have shown that workers with these modifiable risk factors are also more likely to be absent, have higher rates of disability, and be less productive (2, 9, 11, 13, 17, 24, 29, 30, 58–60, 62, 63, 66, 103, 105, 110, 111, 118).

Synthesizing the health-promotion literature spanning 15 years, Aldana (1) concluded that there is consistent evidence of a relationship between obesity, stress, multiple risk factors, and subsequent health care expenditures as well as subsequent worker absenteeism. Thus, the health risk profile of an employer's workforce is likely to have a significant impact on total labor costs.

Work Site Health-Promotion Programs' Effects on Behaviors and Health Risks

Work site programs have been associated with changes in the health habits of workers. A systematic review of the literature pertaining to workplace-based health-promotion and disease-prevention programs was commissioned by the CDC in 1995 (117), and

a more recent review was concluded by the Community Preventive Services Task Force in 2007 (109).

One specific focus of the earlier review was multicomponent WHP programs and their impact on employee health and productivity. In that review, Heaney & Goetzel examined 47 peer-reviewed studies over a 20-year period (57) and found that WHP programs varied widely in terms of their comprehensiveness, intensity, and duration. Consequently, the measurable impact of these programs was shown to be uneven because different intervention and evaluation methods were employed.

Despite the variability in programs and study designs, the authors concluded that there was "indicative to acceptable" evidence supporting the effectiveness of multicomponent WHP in achieving long-term behavior change and risk reduction among workers. The most effective programs offered individualized risk-reduction counseling to the highest risk employees, but they did so within the context of broader health awareness programs and a "healthy company" culture. On the basis of the evidence, the reviewers noted that changing the behavior patterns of employees and reducing their health risks were achievable objectives in a work site setting, assuming favorable conditions exist, including proper program design and execution (26, 57, 117). Unfortunately, this review did not report on the average effect sizes of the interventions, but instead only on whether the program achieved "significant" reductions in the health and productivity outcomes examined.

Findings from the *Community Guide* Review of Work Site Health Promotion

In February 2007, the Community Guide Task Force released the findings of a comprehensive and systematic literature review focused on the health and economic impacts of WHP (109). Using established and rigorous guidelines for their review (119), the Task Force examined the literature for work site programs that include an assessment of health risks with feedback, delivered verbally or in writing, followed by health education or other health-improvement interventions. Additional health-promotion interventions included counseling and coaching of at-risk employees, invitations to group health education classes, and support sessions aimed at encouraging or assisting employees in their efforts to adopt healthy behaviors. Interventions with an environmental or ecological focus included enhancing access to physical activity programs (exercise facilities or time off for exercise), providing healthy food choices in cafeterias, and enacting policies that support a healthier work site environment (such as a smoke-free workplace). In most cases, WHP interventions provided at the work site were offered free of charge to encourage participation.

Health and productivity outcomes from these interventions were reported from 50 studies qualifying for inclusion in the review. The outcomes included a range of health behaviors, physiologic measurements, and productivity indicators linked to changes in health status. Although many of the changes in these outcomes were small when measured at an individual level, such changes at the population level were considered substantial (109).

Specifically, the Task Force found strong evidence of WHP program effectiveness in reducing tobacco use among participants (with a median reduction in prevalence rates of 1.5 percentage points), dietary fat consumption as measured by self-report (median reduction in risk prevalence of 5.4 percentage points), high blood pressure (median prevalence risk reduction of 4.5 percentage points), total serum cholesterol levels (median prevalence reduction of 6.6 percentage points), the number of days absent from work because of illness or disability (median reduction of 1.2 days per year), and improvements in other general measures of worker productivity.

However, insufficient evidence of effectiveness was found for some desired program

outcomes, such as increasing dietary intake of fruits and vegetables, reducing overweight and obesity, and improving physical fitness. Also, in a parallel review, the Task Force concluded that evidence was insufficient to determine the effectiveness of HRAs with feedback when implemented alone, without follow-up programs (109). Thus, employers that administered an HRA but provided no meaningful follow-up interventions would likely not realize changes in employees' health and related outcomes. These findings confirmed an earlier review that reached similar conclusions (6).

Aside from changes in health risks, the Task Force noted that there may be additional benefits associated with work site programs, including increasing worker awareness of health issues; increasing detection of certain diseases, or risk for disease at an earlier or presymptomatic stage; referral to medical professionals for employees at high risk for disease; and creation of need-specific health-promotion programs based on the analysis of aggregate results. The Task Force also identified some possible negative consequences associated with these programs, including workers' fear of breaches in confidentiality and the possibility that those who think or know they have significant health risks may be unwilling to participate in programs that expose those risks.

Several threats to internal and external validity inherent in work site studies were also highlighted in the Task Force review. These included using biased samples comprised of volunteers willing or even anxious to participate in health improvement-initiatives (the so-called worried well, who actively seek out medical information on their own); high attrition rates; the possibility that the social desirability of responses to HRA questions will yield invalid answers to survey questions; maturation effects; unaccounted-for secular changes (e.g., introduction of new laws or company policies); and publication bias (whereby studies that report positive results are more likely to be reported, leading to an overly optimistic view of health-promotion impacts).

Return on Investment from Work Site Health-Promotion Programs

If WHP programs can influence employees' health habits and behaviors, can they also reduce health care costs? Over the past 20 years, several studies have addressed that question, and there is growing evidence that work site programs can yield acceptable financial returns to employers that invest in them. Several literature reviews that weigh the evidence from experimental and quasi-experimental studies suggest that programs grounded in behavior change theory and that utilize tailored communications and individualized counseling for high-risk individuals are likely to produce a positive return on the dollars invested in those programs (1, 26, 50, 93, 114).

The ROI research is largely based on evaluations of employer-sponsored health programs. One important caveat in assessing those evaluations is that they are most often funded by employers implementing the programs, and these employers may desire a positive assessment to justify their investment decisions. Studies often cited with the strongest research designs and large numbers of subjects include those performed at Johnson and Johnson (15, 19), Citibank (86), Dupont (12), Bank of America (38, 67), Tenneco (10), Duke University (63), the California Public Retirees System (39), Procter and Gamble (49), and Chevron Corporation (46). Even accounting for inconsistencies in design and results, most of these work site studies produced positive financial results.

A 1998 review of early WHP studies, mostly conducted in the 1980s and early 1990s (50), estimated ROI savings ranging from $1.40 to $3.14 per dollar spent, with a median ROI of ~$3.00 saved per dollar spent on the program. The review acknowledged that negative results were not likely to be reported in the literature and that the quality of many of the studies was less than optimal.

In 2001, Aldana (1) performed a comprehensive literature review of the financial impact of health-promotion programming on health care costs in which he rated the rigor of the evaluations. In his analysis, only 4 of 32 studies reviewed reported no effects of health promotion on health care costs. However, these four studies did not employ a randomized design, whereas several of the other studies that reported positive results applied experimental or rigorous quasi-experimental methods. The average ROI for seven studies reporting costs and benefits was $3.48 for every dollar expended.

In the same review, Aldana (1) also reported the impact of work site programs on absenteeism. All 14 absenteeism studies reviewed by Aldana found reductions in employee absenteeism, regardless of the research design used, but only three reported ROI ratios, from $2.50 to $10.10 saved for every dollar invested.

In a more recent review of economic outcomes, summarizing results from 56 qualifying financial impact studies conducted over the past two decades, Chapman in 2005 concluded that participants in work site programs have 25%–30% lower medical and absenteeism costs compared with nonparticipants, over an average study period of 3.6 years (26). However, Chapman's review included a mix of cross-sectional and prospective research studies and did not adjust for study design as rigorously as did Aldana, so his higher estimates of cost savings may be inflated.

Some researchers point to selection bias as the likely reason for finding cost savings and high ROI estimates in work site studies. In many studies, it is unclear whether program participants are healthier or more highly motivated than nonparticipants to begin with. Such a priori differences in health or motivation may explain why participants use fewer medical care or other services and may continue to do so even if a program was not available. Under this scenario, changes in medical expenditures or absenteeism may be due to underlying health and motivational factors that are independent of the program being evaluated, and these should not be counted in the program's favor. This type of selection bias can be minimized, however, if researchers are able to obtain data explaining why the decision to participate was made. Recent financial impact studies of work site programs have attempted to control for such inherent differences between participants and nonparticipants at baseline, referred to as selection bias, using methods suggested by Heckman, such as propensity matching and weighting, to yield more accurate estimates of program savings and ROI (87).

ELEMENTS OF PROMISING PRACTICES

As illustrated above, when WHP programs are grounded in behavior theory, implemented effectively using evidence-based principles, and measured accurately, they are more likely to improve workers' health and performance. These results can contribute to the organization's competitiveness and potentially enhance the organization's standing in the community. However, we need to learn more about the mechanisms and processes that facilitate behavior change among workers, as well as those that are ineffective.

Research is also needed to investigate the relationships between program design and implementation and the amount of time needed to develop new participant health habits initiated by such programs. An oft-cited example pertains to weight-reduction programs that help participants lose weight within a relatively short period, only to have them regain much of that weight after the program ends. Investigators must seek to understand more fully whether such behavior is due to poor program design, poor follow-up, or overriding influences of the environment that cannot easily be corrected.

Recent benchmarking and best-practice studies suggest that the effectiveness of work site programs is influenced greatly by such factors as having senior management support, a

champion at the work site promoting the program, alignment between the program and broader organizational objectives, data documenting program achievements, and the ability to create a healthy company culture (31, 40–42, 47, 81, 82, 116; D. Anderson, unpublished information).

In addition, several other key components frequently found in successful WHP programs are described below.

Needs Assessment

As highlighted in the *Community Guide* review, using an HRA to assess employees' health risks is a necessary but insufficient component of successful WHP programs (109). Nonetheless, most effective programs begin with the administration of an HRA in which employees answer questions about their health behaviors, biometric measures may be collected, and a series of estimates of health risks are provided to the individual. These HRAs also include questions designed to shape interventions most likely to improve employees' health risk profiles. For example, HRAs often assess participants' readiness to change, perceived level of self-efficacy, or other psychosocial factors affecting their willingness or ability to change behaviors. Without an HRA, it is difficult to tailor interventions that fit well with individuals' states of readiness to change behavior and learning style.

The HRA is usually a fairly low-cost tool, ranging in price from a few pennies to ~$50 per respondent depending on whether it is administered electronically or through the mail, and whether biometric measures are also taken (102). Thus, the HRA can be an efficient method of providing a gateway to follow-up interventions that are more costly and that should be recommended for those who are most in need.

One illustration of the value HRAs was provided in a study of retirees conducted by Ozminkowski et al. (88). In their financial analysis of Medicare claims data, the investigators found that the HRA was the cornerstone of successful programs for the elderly and that its administration, along with other health-promotion programs, was associated with significant cost savings. They used growth-curve analyses to account for preexisting trends in utilization for program participants and nonparticipants, along with propensity score weighting and other multiple regression analyses to control for differences in baseline health status, prior to estimating the impact of program participation.

The researchers found that cost trends were lowest (and savings were therefore highest) for HRA participants who also engaged in one or more follow-up interventions. These interventions included on-site biometric screenings, telephone lifestyle management counseling for high-risk individuals, nurse-support telephone lines, and wellness classes. In general, the more programs in which seniors participated, the lower were their subsequent health care costs. Cost savings were not observed for beneficiaries who engaged in follow-up programs without also completing an HRA; in some analyses, these beneficiaries even cost more. The authors therefore surmised that the HRA was an effective tool to triage and direct beneficiaries to other programs in an appropriate manner. Indeed, combining HRA results with other data, such as medical and pharmacy claims, may offer additional triage and targeting opportunities.

Achieving High Participation Rates

A high participation rate is a key element of any successful risk-reduction program. As Anderson opines, "Nothing happens until [people] participate" (101; D. Anderson, unpublished information). As described below, many methods can be used to achieve high participation rates, including the shrewd use of incentives. Participation is defined in many ways including taking HRAs, enrolling in programs, completing programs, and participating in self-care and self-management activities that are difficult to monitor. In a survey of Koop Award winners, Goetzel et al. (52) found

that the majority of former winners considered high participation rates "very important," especially among employees who are hard to reach, and that the average participation rate among exemplary WHP programs was 60%.

Providing Tailored Behavior Change Messages

A number of studies have demonstrated the increased efficacy of tailored messages relative to generic ones. For example, Kreuter and Strecher (65) compared the effects of tailored HRA feedback with generic feedback and found that individuals receiving the tailored feedback were 18% more likely to change at least one risk factor (usually cholesterol screening, dietary fat consumption, or physical activity).

This finding was confirmed in studies addressing single risk behaviors as well. For example, Rimer et al. (96), in a smoking cessation study, found that participants who received tailored print material were significantly more likely to reread the material and believe that the ideas were new, that the material was helpful, and that it was easy to use. In a randomized study of exercise behavior, Peterson & Aldana (94) found that individuals who received written messages tailored to their stage of change (as defined by Prochaska) demonstrated a 13% increase in physical activity, compared with 1% for those who received generic messages, and an 8% decrease for the control group over a six-week period.

Supporting Self-Care and Self-Management

Self-care or self-management refers to the notion that the individual is an active participant in his or her medical treatment or in ensuring health maintenance (69). For the chronically ill, effective self-management increases patients' ability to manage their prescribed medical treatment, by teaching or otherwise helping them adhere to medication or diet regimens, teaching them to use medical care services appropriately, and helping to address the emotional sequelae of health conditions.

Thus, self-management education is designed to teach skills and increase the participant's confidence in his or her ability to define and solve problems, make decisions, find resources, and form partnerships with health care providers. Such an approach can reduce symptoms and distress caused by many chronic diseases and improve psychological well-being as measured by standardized instruments (69). For example, in a review of self-management programs, Lorig & Holman (69) found that goal setting and action planning were critical to perceived health improvements.

As shown above, a key component of self-care and self-management is goal setting, which enhances treatment compliance and motivates behavior change. Lovato & Green (70) found that goal setting was the most effective method to maintain employee participation in WHP programs. They further noted that goal setting was most effective when goals are realistic, short-term, flexible, and set by the participant rather than imposed by program staff (70).

Guided self-help strategies are also key elements of self-management. These come in the form of printed materials or conversations with trained counselors that help participants define their goals (e.g., manage their symptoms or reduce their morbidity or mortality risks) and develop action plans (e.g., find better ways to adhere to pharmacotherapy or other treatments) (69). Orleans et al. (85) presented evidence that self-help smoking cessation guides are a promising addition to clinical treatments such as nicotine patches and that complementing pharmacotherapy with self-help guides and frequent interactions with trained counselors can help achieve high smoking-cessation rates.

In short, individualized and tailored behavioral interventions that use goal-setting techniques, reflective counseling, and

motivational interviewing, provided in a personalized and consistent manner, are more effective than general awareness building and information and education sharing programs (35, 55, 57, 91, 104).

Addressing Multiple Risk Factors

Addressing multiple risk factors simultaneously can increase the impact of the intervention because it facilitates individuals' involvement in the program through many entry channels. However, a strategic approach to addressing a participant's multiple risks is important. Several studies cited by Strecher et al. (108) suggest a need to break bad habits one at a time. People with multiple risk factors may be overwhelmed with the sheer number of health risks they have and may find it difficult to sort out the major from the minor. Thus a program should avoid recommending too much too quickly.

Risks can be prioritized on the basis of their near-term likelihood of morbidity or mortality and the participant's readiness to change any given risk factor. This approach is based on the presumption that an individual's high intrinsic motivation to change one even relatively benign behavior is more likely to achieve success, thus generating a sense of self-efficacy and continued motivation to change more behaviors. Thus, once one behavior or risk is successfully mitigated, the individual may feel greater confidence in his or her ability to address other health issues. Offering a comprehensive program that allows participants to move from one risk category to another is therefore desirable.

Offering a Variety of Engagement Modalities

With the understanding that some individuals prefer to work on behavior change on their own while others prefer to utilize social support, most work site programs offer a menu of interventions, including printed health education materials, individualized counseling, group classes, and work site–wide health-promotion activities. Although classes appeal to some, Erfurt et al. (34) found that offering a menu, including guided self-help, one-to-one, mini group, and full-group interventions, is more successful than offering only didactic sessions. Fries analyzed two programs for retirees delivered entirely through the mail and found that tailored print materials had a significant behavioral impact (38, 39). However, he did not test whether impacts would have been greater with additional engagement modalities. Several studies support the idea that with tailored interventions, on-site, face-to-face encounters between health educators and participants may not be necessary (35). However, this area requires further research because it is not clear what might be the relative effects of different engagement modalities (109).

Providing Easy Access to Programs and Effective Follow-Up

In WHP programs, easy access to programs is key to recruiting and maintaining participation. Erfurt et al. (34) found that, although half of employees indicated interest in smoking and weight-loss classes, fewer than 1% enrolled in the classes when offered off-site, compared with 8%–12% when offered onsite. Lovato & Green (70) cite several studies based on surveys of employees who dropped out of health-promotion programs; that the surveys identified logistical barriers (time and location) as the most often cited reasons for dropping out of the program.

For employees who participated in blood pressure treatment, work site weight-loss, or smoking-cessation programs, gains made are best maintained when the program includes ongoing routine and persistent follow-up counseling (34). Several studies reviewed by Pelletier (91) in these three areas found that one-time screening and counseling can have short-term impacts (up to three months), but without additional follow-up, the effect disappears within a year.

Social Support

Lovato & Green (70) cited social support and reinforcement as important factors in influencing participation in exercise programs, especially the support of a spouse, family, or significant others. Feedback from program staff can also be a source of social support. In a review of smoking-cessation studies, Orleans (85) noted that successful quitters reported more positive support from significant others than did relapsers or continued smokers.

Use of Incentives

In WHP programs, incentives have been offered for participation, compliance with behavior change recommendations, or achievement of certain health goals. Researchers have observed that an incentive valued at ~$100 (in 2006 dollars) is necessary to encourage the majority of employees to complete an HRA (101). However, others have argued that incentives should be used sparingly or intermittently to avoid situations in which positive health improvements are tied directly to incentives and then healthy actions stop when incentives are removed (25). Anderson (5) presented preliminary data at a recent conference showing that increasing incentives (typically through reductions in medical premiums) at $100 intervals (from a base of $100 in 2007 dollars) will result in incremental 10% improvements in HRA and program participation.

Culture of Health

Workplace programs embedded within a healthy company culture are more likely to succeed. A healthy company culture allows for the use of company equipment, facilities, and other forms of infrastructure to support health behaviors. In larger companies, physical plants are used to house fitness centers, on-site health education classes, and cafeterias featuring healthy food choices. Employers embodying a healthy culture can establish policies to reinforce desired behaviors and brand health improvement programs in ways that mirror other organizational initiatives (54).

Assuring Sufficient Duration of Programs

Evaluation studies have followed WHP participants from as short a period as six months to as long as 10 years (91). Heaney & Goetzel (57) suggest that a program must be in operation for at least one year to bring about risk reductions among employees, and Gomel (55) and Moore (76) state that it may be misleading to evaluate the program in less than a year because changes that occur in the first few months of a program may not be maintained over time. Aldana (1) calculated an average study duration of 3.25 years. Consensus opinion is that WHP programs need to be in place for at least three years to measure health and financial outcomes but that annual assessments of those outcomes are necessary to track progress and fine-tune the interventions (1, 26, 50, 93).

SUMMARY FINDINGS FROM BENCHMARK STUDIES

This review has touched on several individual components of WHP. Large-scale benchmarking and promising practice studies, conducted over the past decade, have looked at broad and general themes emanating from successful WHP programs. A review of benchmarking and best-practice studies was recently published by Goetzel et al. (54), and their observations mirror many of the individual success factors already noted. On the basis of findings from previous studies, coupled with discussions with subject matter experts and observations from site visits to several exemplary programs, the authors identified the following as effective WHP practices: *a*) integrating WHP programs into the

organization's central operations; *b*) addressing individual, environmental, policy, and cultural factors affecting health and productivity; *c*) targeting several health issues simultaneously; *d*) tailoring programs to address specific needs of the population; *e*) attaining high participation rates; *f*) rigorously evaluating outcomes; and *g*) effectively communicating these outcomes to key stakeholders.

REPRODUCIBILITY OF PROMISING PRACTICE PROGRAMS

Although insights about effective WHP programs are available in the scientific literature, many employers, especially small businesses, lack the knowledge and experience to design, implement, and evaluate effective programs likely to achieve desired outcomes (42). No large-scale education, communication, and dissemination efforts have been launched in this area, and consequently, we need better marketing and real-world application of current and emerging knowledge related to WHP—knowledge about what works, what does not work, and where significant gaps in knowledge exist.

More consistent evaluation of these interventions, their impact, and their potential for translation into public health practice is needed. Careful evaluation can improve the information relevant to translation issues (e.g., critical success factors, impediments) and thus provide needed data to public health practitioners, employers, local communities, organizations, and individual consumers to make informed health-promotion practice decisions.

Moreover, well-structured and large-scale experiments examining the application of commercially developed health-promotion programs are still in their infancy. Although several key process components leading to successful program outcomes have been documented and applied by leading employers, there is insufficient evaluation of program outcomes, especially financial outcomes, using rigorous study methods. Thus more research is needed before early successful WHP applications can be generalized to the broader employer community.

CONCLUSIONS

Recently, interest in WHP has increased dramatically. Examples of increased activity in this area include the work of Partnership for Prevention in promoting the Leading by Example Initiative (89), the Score Card Project from the Health Enhancement Research Organization (HERO) (56), the National Committee for Quality Assurance (NCQA) interest in accrediting and certifying health-promotion vendors (79), the CDC Foundation Worksite Initiative (22), The Conference Board Health Promotion Consortium (28), the NIOSH/CDC Work-Life Symposium (23), and several research studies funded by the CDC (21) and National Institutes of Health (115) focused on work site health promotion and disease prevention programs.

To maintain their momentum and achieve the status of a must-have company benefit, WHP programs will need to document enduring health improvements for their targeted population and related cost impacts. This involves periodically measuring the health risks of their workers and evaluating changes in health behaviors, biometric measures, and utilization of health care services. Furthermore, for WHP programs to be deemed successful, they will need to engage large segments of the population, especially those with the greatest need for such programs.

In addition, to remain viable and sustainable as a business investment, WHP programs will need to produce data supporting their cost-effectiveness and cost-benefit. To achieve a positive ROI, programs will need to be funded at an optimal investment level so that program savings can be deemed acceptable or, ideally, equal to or greater than program expenses. Knowing the tipping point—how much to spend to improve health and save

money—is currently an unanswered question for most employers. Hence, more research is needed on the optimal design and cost of interventions, and this research must reach employers for these programs to be applied more broadly.

The notion of delivering health improvement at a reasonable cost through WHP is the key to achieving greater support from private and public employers. Very few newly approved medical interventions actually save money, but they can improve health at a reasonable expense. However, this notion has rarely been used when considering the value of health-improvement programs. Instead, the more difficult-to-achieve objective of realizing net savings has been required in WHP program evaluations (16).

As employers and other payers acknowledge that investments in WHP are long-term in nature, and that there may be a significant lag between improvements in health and savings in medical expenditures or improvements in productivity, the importance of documenting cost-effectiveness may become a higher priority.

Today, many employers (especially large ones) provide WHP programs because they believe that good health care programs increase worker productivity and organizational effectiveness. Their view is that paying for quality health care and WHP programs is not just the cost of doing business, but rather is an investment in their human capital. As evaluations of WHP programs become more sophisticated, program impact estimates are likely to expand to include productivity measures and their effects on ROI. This will require the ability to link multiple sources of data to fully investigate the impact of WHP programs.

Sophisticated employers are also becoming increasingly aware that to improve the health and well-being of workers, they also need to address the organizational, environmental, and ecological elements of the workplace. Preliminary evidence suggests that the physical environment affects workers' physical activity levels and dietary habits (4, 14, 20, 37, 98, 99).

An organization is supportive of individual health-improvement efforts when it provides environmental and ecological supports for health improvement such as offering healthy food choices in cafeterias, stocking vending machines with nutritious snacks, requiring company-sponsored meals to be healthy, providing opportunities for physical activity, having a campus-wide no-smoking policy, making staircases attractive, and providing benefit coverage for recommended preventive screenings. Although many of these environmental and policy innovations have already been introduced at work sites, there is still sparse research on their individual and combined effects on such outcomes as improving the health of workers, reducing utilization of health care services, and improving worker productivity.

Consistent with this notion is a small but growing movement to integrate occupational safety initiatives with work site health promotion (32, 44, 100, 106, 107). Evidence shows that poor health increases the likelihood of industrial accidents or injuries (32, 100, 106).

If that is the case, successfully integrated WHP and safety initiatives can also help ensure the safety of work environments, leading to healthier and more productive employees.

Finally, as noted above, several large federally funded studies are currently underway to test alternative WHP models. Armed with better and more practical data on program effects, federal, state, and local governments can play a larger role in disseminating information about evidence-based programs, with the expectation that such dissemination will prompt more employers to adopt these programs. Through legislative or other initiatives, government agencies may also support financial incentives (e.g., tax credits) to encourage employers to implement effective programs.

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