



Health Promotion Worksite Initiative

A Literature Review

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Description: This literature review provides an overview of best and promising practice interventions for a comprehensive health promotion worksite initiative to achieve maximum effectiveness and outlines the health-related effects and cost outcomes associated with these programs. In addition, this review provides information to inform evaluation planning for a comprehensive health promotion worksite initiative.

Audience: A wide range of professionals including policy makers, planners, program managers, health professionals and other state agencies may find this information useful in developing, implementing and evaluating worksite health promotion efforts.

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ABSTRACT

Escalating health care costs have prompted many companies and organizations to implement health promotion worksite programs. The majority of health conditions and chronic diseases that cause the most morbidity, disability, and mortality are associated with modifiable health risk and therefore, are preventable. Much of the risk is associated with poor health habits, late diagnosis and intervention, and the physical environment. Depression, stress, high blood glucose, obesity, and tobacco use were among the most costly risk factors when annual health care expenditures were considered from a large corporate employee database. The evidence is mounting that comprehensive worksite health promotion programs can decrease health care utilization, lower health care costs, decrease absenteeism, and improve performance and productivity, particularly when demand management approach principles are used. This approach includes worksite health promotion, wellness programs, and access management. Organizations are implementing comprehensive health promotion worksite programs that include awareness, health education, behavioral change, and organizational environmental health initiatives to reduce injuries, health care costs and long-term disability.

A review of the literature was undertaken to identify best and promising practice interventions for a comprehensive health promotion worksite initiative to achieve maximum effectiveness and provide information on the reduced risk, improved health and cost outcomes associated with these programs. It was found that currently over 81% of American businesses with 50 or more employees report some form of health promotion program. The most popular programs offered by businesses address physical activity/exercise, smoking cessation, injury prevention, and stress management. In addition, multi-component interventions or those that focus on several topics simultaneously, rank higher in both clinical and cost-effectiveness as compared to programs that approach one disease or condition. Topics for program inclusion should be based on specific organization factors such as individual employee demographics, the company occupation, and the health characteristics of the employee population as well as organizational goals and objectives.

It is estimated that health promotion worksite programs result in overall, benefit-to-cost ratios of \$3.48 in reduced health care costs and \$5.82 in lower absenteeism costs per dollar invested. In addition, there is a return on investment of at least \$3 to \$8 per dollar invested or more within 5 years of program implementation. Although many health promotion worksite programs report low participation as a major barrier, a high return on investment can still be achieved by improving the health of a small subset of employees, especially those at risk for chronic illness. Development of a logic model and conducting a rigorous evaluation are critical to determine the overall effectiveness of a health promotion worksite initiative.

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Introduction

Many health professionals, employers and insurance companies are concerned about rising health care costs and the impact on organizations. More and more companies are implementing health and wellness strategies in an effort to achieve a healthier workforce; increase productivity and morale; and reduce absenteeism, injuries, disability and costs (e.g., health care and benefits).^{1,2} Health promotion programs are designed to contain health expenditures by reducing health care utilization and improve health by promoting a healthy lifestyle.

Missouri, like the nation, is plagued by chronic health conditions and lifestyle illnesses' related to the high prevalence of risk factors among the population. Prevalent chronic diseases in Missouri include heart disease, cancer, stroke, diabetes, chronic lower respiratory diseases, asthma, and arthritis.^{3,4} Reducing risk factors such as tobacco use, obesity, sedentary lifestyle, poor nutrition, high blood pressure, high cholesterol and others that lead to preventable illness and premature death are key to health improvement in Missouri. In addition, integrating occupational health and safety (e.g., injury and repetitive motion trauma) into a health promotion program may further increase participation and reduce morbidity.^{5,6} With Missouri's unemployment rate at 4.6%, the majority of individuals impacted by chronic disease and risk factors are in the workforce.⁷ Therefore, employers have a vested interest in individual health and well-being.

In a study of worksite health promotion programs in Missouri employers with 250 or more employees, it was found that of the 262 respondents only 34% offered any kind of program and 65% of these offered only awareness programs, the lowest level of intervention.⁸ According to the Wellness Councils of America (WELCOA), currently over 81% of American businesses with 50 or more employees report some form of health promotion program.⁹ The most popular programs offered by businesses address physical activity/exercise, smoking cessation, injury prevention, and stress management. In addition, multi-component interventions or those that focus on several topics simultaneously, rank higher in both clinical and cost-effectiveness as compared to programs that approach one disease or condition.^{10,11}

The overarching health vision for the population is *Healthy Missourians for Life*.¹² Worksite health promotion is a part of Missouri's priority to increase awareness, commitment to and investment in health. The specific State objective is to model and encourage worksite wellness throughout Missouri state government. The national Healthy People 2010 has two objectives that relate to health promotion in worksite settings: 7-5 Increase the proportion of worksites that offer a comprehensive employee health promotion program to their employees, and 7-6 Increase the proportion of employees who participate in employer-sponsored health promotion activities.¹³

Purpose

The purposes of this review are to:

- 1) Identify best and promising practice interventions related to health promotion, worksite wellness, and injury prevention.
- 2) Offer guidance in choosing interventions for a health promotion worksite program.
- 3) Provide information to inform evaluation planning.

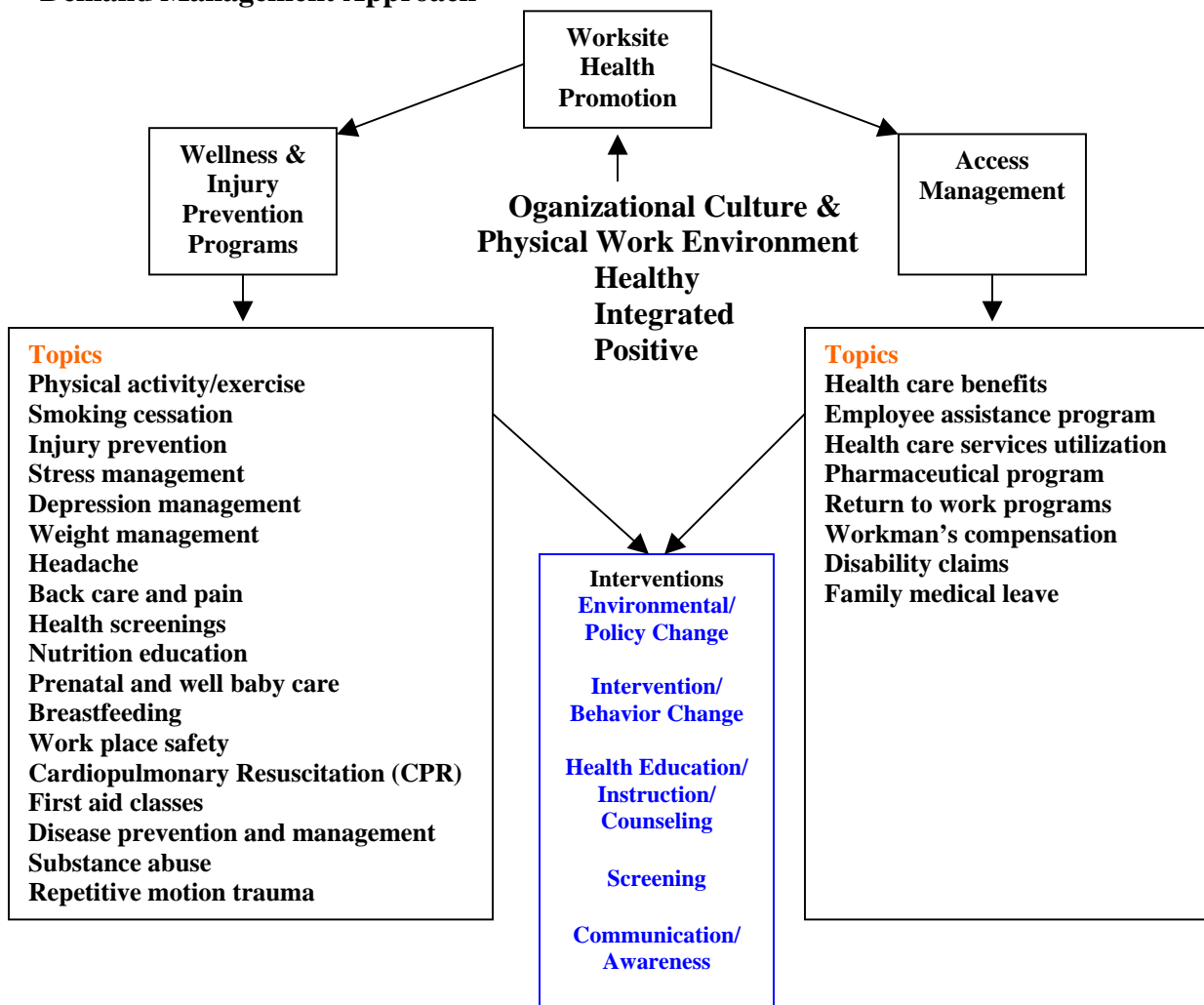
Worksite Health Promotion

Comprehensive worksite health promotion, for this context, is defined as an ongoing, planned, integrated, and evaluated composite of health promoting components (i.e., risk reduction, wellness programs, access management) that are consistent with organizational objectives.^{11, 14, 15}

A systems approach as the theoretical model emphasizes a healthy work culture and representation across all units in the planning process to optimize individual, organizational, and environmental factors that influence health. This conceptual model, also called demand management, combines multilevel strategic efforts with a supportive environment to improve health by promoting a healthy lifestyle, preventing disease, early intervention, and access to services (Figure 1).

Implementation of worksite health promotion interventions or change strategies are organized into to five hierarchical levels, with I as the lowest level: I) Communication/Awareness; II) Screening; III) Health Education/Instruction/Counseling; IV) Intervention/Behavior Change; and V) Environmental/Policy Change.^{8, 16} Evaluation should be completed with multiple levels of data (e.g., individual, program, organizational, and cost) and multiple data sources to access process, impact, and organizational level outcomes for informing next steps.

Figure 1. Overview of Comprehensive Worksite Health Promotion Model Based on the Demand Management Approach



Worksite Health Promotion Best Practices

The Task Force on Community Preventive Services has selected worksite health promotion as a topic for systematic review.¹⁷ These reviews will provide information on which available approaches to worksite health promotion are effective in promoting healthy lifestyles, preventing disease, and increasing the number of people who receive appropriate preventive counseling and screening. Accompanying the reviews will be recommendations on worksite-specific policies and components proven effective in changing behavior and improving the health of employees. The first set of topics will include:

- Tobacco
 - Incentives and competitions to increase smoking cessation
 - Smoke-free policies to reduce tobacco use among workers
- Nutrition
 - Enhancing access to healthy foods
- Physical activity, and
 - Point-of-decision prompts to increase stair use
 - Enhancing access to places for physical activity (e.g., providing venues, classes, or information)
- Assessment of health risk
 - With feedback to the employee to change health behaviors
 - With feedback and health education for the employee, along with other health interventions to help workers develop or enhance behaviors that support good health (e.g., reducing out-of-pocket costs through reduced gym membership fees or holding incentives and competitions to increase smoking cessation).

Literature Review

Types, sizes and locations of organizations that have been studied; and components of worksite health promotion programs, level of implementation, and duration of intervention and follow-up vary widely, but provide important findings and valuable information for planning. There are numerous reports of success in awareness, participant satisfaction, behavior change, improved health in employees, and/or cost-savings in private organizations and with comparable health results, albeit less documented in the literature, in federal worksites.¹⁸⁻²⁰ Multi-component programs with a variety of activities (e.g., information, skill building, organization and policy modifications, individual counseling and treatment, etc.) targeted to several risk factors that extends to family members tend to yield better results than targeting a single risk factor or hosting individual events in time.²¹⁻²³ Additionally, a multi-component program encourages different employees to participate in the same program by providing opportunities and appealing to a wide array of learning styles. Currently, comprehensive programs often include: health risk appraisal screening with printed feedback to employees, bimonthly health newsletter, resource center, free self-help materials, behavior change workshops, formation of the employee health team, on-site exercise space, policy changes, financial incentives for risk behavior reduction, personal one-on-one counseling, and follow-up.

Physical Activity

Physical activity, fitness and exercise programs alone or combined with other topics such as nutrition, were the most prolific in the literature. Within the context of health promotion, they involve a variety of activities including fitness and exercise, walking initiatives, health education

classes, outreach, and one-on-one counseling with follow-up contact. Fitness programs have been reported to reduce the risk of disease, enhance personal function, promote mental health, and have proven to be most beneficial in terms of employee and employer satisfaction.²⁴ In other studies regarding physical activity, positive outcomes were reported to include: reduced waist circumference and oxygen uptake; decreased body fat and BMI, increased muscle performance, overall activity, and fruit and vegetable consumption; improved oxygen consumption, total energy expenditure during sports; and improved cardio-respiratory fitness, blood pressure and cholesterol.²⁵⁻³⁰

One study involving a smaller worksite wellness program (less than 110 intervention and control participants) was successful in increasing awareness of stress reduction and increased exercise but unable to demonstrate a significant difference between groups in terms of exercise, weight, smoking, and stress.³¹ In addition, an individual counseling intervention at the workplace on physical activity showed positive effects on total energy expenditure during sports and leisure time activities, body fat, and blood cholesterol, but showed no effect on the prevalence of individuals meeting the public health moderate-intensity leisure time physical activity recommendation, body mass index (BMI) or blood pressure.²⁷ This reinforces the evidence that single interventions are unlikely to promote physical activity in those not engaging in leisure time physical activity.

Smoking

Worksite smoking cessation programs have shown the ability to decrease smoking. Using group programs, individual counseling, and nicotine replacement therapy, cessation rates increased in comparison to no treatment or minimal intervention controls in a review of approximately 30 studies.³² However, in this review of smoking cessation worksite interventions, self-help materials were less effective and there was a lack of evidence that comprehensive health promotion worksite programs reduced the prevalence of smoking. This implies that comprehensive health promotion programs should incorporate and evaluate best and promising tobacco control strategies (e.g., incentives and competitions to increase smoking cessation, education campaigns, low/no cost cessation therapies, quit lines, telephone counseling, etc.) in reducing the smoking prevalence in worksites.¹⁷ Although competitions and incentives increased quit attempts and tobacco policy bans decreased cigarette consumption during the working day, their effect on total consumption and overall quitting was less certain also indicating a need for further research.

Stress

One study, conducted in Sweden, assessed work attendance despite headache in the previous 3 months and its economic impact in two groups – private (i.e., technology company) and public (i.e., university hospital) employees.³³ The prevalence of headache was higher in the public employees (78%) compared to the private employees (64%). Almost 60% of the public employees and 39% of the private employees attributed their headache to stress. Approximately 50% went to work with a headache, the average number of days at work with a headache was similar between the two groups (6.1 days public employees versus 6.6 days private employees), and there was about a 25% decline in work effectiveness based on self-reports. The cost of lost effectiveness due to headache was estimated at 1.4 billion euros (or close to \$1.9 billion U.S.).

Costs

The long-term cost benefits of health and wellness programs within corporations are well documented.^{5, 9, 11, 34} For example, Johnson & Johnson has shown a large reduction in medical care expenditures (about \$224.66 per employee per year) over a four-year program period.^{5, 19} It is estimated that health promotion worksite programs result in overall, benefit-to-cost ratios of \$3.48 in reduced health care costs and \$5.82 in lower absenteeism costs per dollar invested. In addition, there is a return on investment of at least \$3 to \$8 per dollar invested within 5 years of program implementation.¹¹

Traditionally, when implementing worksite health promotion programs employers have focused on direct medical costs.³⁵ Short-term savings in some direct medical costs may be offset by increases in other direct costs as well as indirect costs such as absenteeism and productivity losses. An employee in poor health is more likely to be absent from work and less productive when at work and these indirect costs of poor health may actually exceed direct medical costs. Therefore, when evaluating the outcomes of a worksite health promotion program both direct and indirect costs should be considered.

Most analyses underestimate the benefit of reduced absenteeism by using an employee's wage as a proxy for the value of the person's time. However, the cost of lost work time can be substantially larger than the wage, when a perfect substitute is not available to replace the absent worker. In addition, in team oriented organizations an absent worker or a worker with on-the-job impaired productivity (i.e., presenteeism) also impacts the productivity of the team and can greatly delay completion of time sensitive projects. Therefore, a study was undertaken to determine the cost associated with missed work across 35 different jobs and it was found that multipliers are needed to increase the accuracy of estimating the cost by various jobs.³⁶ For example, for a median job the multiplier is 1.28 indicating that an absence from this job is 28% higher than the worker's daily wage. This investment-based health methodology was applied to the Dow Chemical Company and over 12,000 employees to consider medical, absenteeism, and presenteeism costs for those with chronic health conditions (Table 1).

It was found that 65% of the Dow employees reported having one or more chronic condition, with the two most prevalent conditions being allergies and arthritis/joint pain and stiffness. Depression/anxiety was the most expensive condition (on a worker basis) due in a large part to the substantial presenteeism costs. As a result of these findings, Dow is focusing more on prevention, quality of care, and purchasing, such as pay for performance programs.

In another example of an investment-based model of health benefit planning, Pitney Bowes, the mail and document management company with 35,000 employees worldwide, identified their primary health costs risks, and then reduced the co-pay for premium prescription medications to the minimum 10% co-pay for chronic diseases like diabetes and asthma in order to encourage optimal adherence to drug therapy regimens and prevent costly emergency department visits and hospitalizations.³⁷ The company reported that by reducing the co-pays of these prescriptions, they saved \$3.5 million in the first three years and reduced the amount of sick and short-term disability time that its employees used. It was concluded that the original tiered pharmacy benefits plan with the highest co-pay (25% to 50%) targeted at branded prescription medications was an obstacle to adherence and optimal disease management.

Table 1. Estimated Average Annual Cost Per Worker With Specific Health Conditions

Medical Condition	Prevalence Among Dow Workforce (%)*	Medical	Absences	Presenteeism	Total Cost Without Multipliers	Total Cost With Multipliers
Depression, anxiety, or emotional disorder	4.3	\$2,017	\$1,525	\$15,322	\$18,864	\$25,771
Stomach/bowel disorder	3.4	2,585	800	6,790	10,188	13,287
Back or neck disorder	7.0	2,249	839	6,879	9,975	13,131
Diabetes	2.4	3,663	514	5,414	9,620	12,021
Heart/circulatory	7.1	2,531	613	6,207	9,359	12,147
Migraine/chronic headaches	3.1	1,689	945	6,603	9,232	12,332
Arthritis/joint pain or stiffness	9.0	2,623	441	6,095	9,127	11,839
Asthma	1.3	1,782	383	5,661	7,870	10,304
Allergies	18.9	1,442	377	5,129	6,947	9,205

Note: The mean absence multiplier for absences (1.41) is based on the distribution of the Dow Chemical Company's U.S. workers in nine different job categories and the job-specific multipliers reported in a recent study by Nicholson and colleagues. It is assumed that the appropriate multiplier for presenteeism is equal to the absence multiplier, and that the multipliers are the same for each health condition.

*This is the percentage of surveyed Dow workers who report a particular medical condition as their "primary health condition." People who reported having more than one chronic condition are assigned in this table to the condition they indicate to be their primary condition, so these figures are underestimates of the incidence of a particular condition among the workforce.

These studies demonstrate wide variability in assigning intervention costs, cost savings, and defining outcomes (e.g., individual and corporate cost savings, medical expenditures, absenteeism, performance, and productivity).²² Nevertheless, these studies indicate that comprehensive programs designed to better integrate occupational health and safety, disability, wellness, medical and prescription benefits, and incorporate individual counseling and indirect cost savings may show substantial health and economic benefits in later years.

Selection of Topics

Health promotion program topics are numerous with employees reporting their participation in or availability of 33 different types of worksite programs on the 1994 National Health Interview Survey.³⁸ The programs with the highest mean availability were smoking cessation (43%), health education programs (31%), and screening tests (31%). However, participation in these programs varied widely from 32% in the health education programs to 5% in the smoking cessation programs. Therefore, worksite health promotion topics should be chosen based on information from the employees and costs figures (e.g., demographics, health assessments, employee interest, medical claims, absenteeism) as well as organizational goals and objectives, both short- (cost-savings) and long-term (retention and overall health).^{39, 40} In addition to data and goals, choices of topics and delivery methods should also be based on the available resources, the latest research, and support from top management.

While most employees did not rely exclusively on worksite activities, in a study of 10 federal worksites, it was found that employees on average participated in fewer than two agency-sponsored health related activities per year and a higher percentage of these employees participated in health risk assessment (40%) and fitness (17%).^{18,19} However, a proportion of employees participated only at the worksite in health promotion activities, particularly health risk assessment (27%), health and disease risk education (17%), medical care services (23%), personal safety and first aid training (26%), and stress management (17%).²⁰ Participants were more likely to be professionals, older, to have more years of federal service, have had their blood pressure and cholesterol checked in past year, be certified in CPR and less likely to smoke.¹⁸ Employees were also more likely to participate in worksite screening programs with: high perception of program support by supervisor and other employees, few identified barriers, offered at convenient times, relatively short duration, low or no cost, clear and easy to follow instructions, and focused on individual health promotion rather than job health protection.

The Health Enhancement Research Organization (HERO) is a national, not-for-profit, coalition of organizations focused on health promotion, disease management, and health-related productivity research.⁴¹ This coalition has facilitated the development of a multi-employer health promotion research database that contains over 47,000 employees with almost 114,000 person years experience. A primary objective for use of this database is to examine the impact of individual risk factors, combinations of risk factors, and changes in these risk factors on medical expenditures.

An initial study of the database examined the association between 10 modifiable risk factors and health care expenditures. The study included both self-report (i.e., physical activity, alcohol consumption, nutrition, tobacco use, stress and depression) and biometric / physiological measures (i.e., cholesterol, blood pressure, blood glucose, and weight). The results from this study are shown in Table 2 and indicated that the top three most costly risks were: persistent depression, uncontrolled stress, and high blood glucose compared to those not reporting the risk.

Table 2. Prevalence of Risk Factors and Associated Individual Health Care Expenditures, Health Enhancement Research Organization, (N = 46,026)⁴¹

Risk Factor	Prevalence	Adjusted Annual Health Care Expenditures
Depression	2.2% (n = 997)	70% greater
Stress	18.0% (n = 8,641)	46% greater
High blood glucose	5.0% (n = 2,271)	35% greater
Obesity	--	21% greater
Tobacco use	--	Former 20% greater Current 15% greater
High blood pressure	--	12% greater
Poor exercise habits	--	10% greater
High blood cholesterol	18.0% (n = 8,641)	0.8% lower*
Alcohol consumption	4.0% (n = 1,723)	3.0% lower**
Poor nutrition habits	20.0% (n = 9,278)	9.0% lower*
*May be low due to the risk associated with these factors were explained by the high association with the other factors and accounted for in the adjustment process. **Individuals consuming large amounts of alcohol may avoid the health care system and thus, results in low annual health care expenditures.		

Findings from other studies using the HERO database were that:

- Among males, smoking was the number one predictor of heart disease, but among women, profound obesity and uncontrolled stress were the main predictors.
- Men reporting persistent depression had 91% more health care costs than men reporting not being depressed. However, among women the increase was only 5% between those reporting persistent depression and those not.
- Employees with modifiable risk factors accounted for one-fourth of the total health care expenditures from employer's fee-for-service health care plans participating in the study. Other substantial contributors to the total costs were: stress 7.9%, former smokers 5.6%, and obesity 4.1%.

Barriers to Success

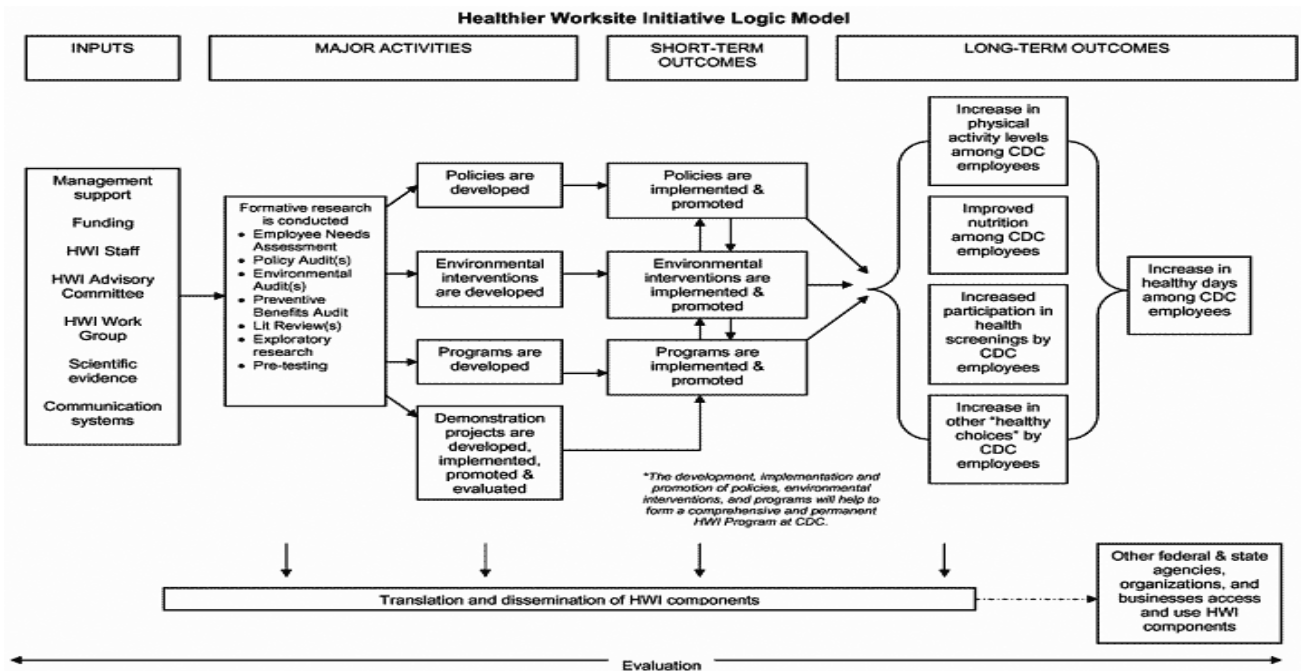
The most common barriers or challenges to health promotion program success cited by employers on the 2004 National Worksite Health Promotion Survey were: lack of interest among employees (63.5%); lack of staff resources (50.1%); lack of funding (48.2%); lack of participation by high risk employees (48.0%); and lack of management support (37.0%).⁴² In addition, lack of participation by high risk employees in worksites with 750 or more employees were significantly more likely to report this as a barrier. Additional barriers cited in federal worksites included lack of available space and insufficient personnel.¹⁸

Although there are many reasons for low participation in worksite wellness programs, the underlying causes may be different. These reasons may include: already participating in a program outside of the work environment, lack of interest, inadequate promotion or communication about the program, inconvenient times or locations, unwillingness or inability to pay to join a program, stress, no support of immediate work environment, or believe that the program is an intrusion into private health issues.^{18, 38, 42} Detail planning through an employee wellness committee, implementing a comprehensive marketing plan, offering a wide-variety of education approaches (e.g., self-help, Internet, group activities), and addressing stressful work conditions can help overcome potential barriers and challenges.

Evaluation Planning

Evaluation of a health promotion worksite program involves analyzing the results achieved by the program, determining if the results meet the goals and objectives, and identifying what was successful and what needs to be improved. This information then goes back into program planning to increase the efficiency and effectiveness of the overall program. A critical component in evaluation is the development of a logic model at the start of the program to serve as a map for program planning, implementation, and evaluation. The logic model is a tool that can be used to determine priorities, convey the whole program, build consensus with stakeholders, and make midcourse adjustments and improvements to programs. The logic model then provides a basis for program evaluation. In 2002, the Centers for Disease Control and Prevention (CDC) initiated the Healthier Worksite Initiative for its employees.⁴⁰ From this effort, CDC has created a website (<http://www.cdc.gov/nccdphp/dnpa/hwi/index.htm>) to share lessons learned, policies, materials, toolkits, and serve as a resource for other organizations. As part of the program development, CDC developed a Healthier Worksite Initiative logic model (Figure 2) as an example for other organizations.

Figure 2. Logic Model Example from the Healthier Worksite Initiative, CDC⁴⁰



CDC emphasizes the importance of each health promotion worksite program developing its own unique logic model based on the employer, organizational culture, work setting, and program-specific goals and objectives. Figure 3 is a beginning draft of a logic model for the Missouri Department of Health and Senior Services (DHSS) health promotion worksite program.

Figure 3. Sample DHSS Health Promotion Worksite Initiative Logic Model

Inputs	Activities	Outputs	Outcomes		
			Short-term	Intermediate	Long-term
<p>Management support</p> <p>Funding</p> <p>Advisory Committee</p> <p>Work Group</p> <p>Scientific evidence</p> <p>Communication systems</p>	<p>Early Activities</p> <p>Formative research:</p> <ul style="list-style-type: none"> • Health risk profiles • Employee assessment • Policy audit • Preventive benefits audit • Environmental assessment • Lit review • Medical claims info <p>Advisory board meetings convened and input sought</p> <p>Later Activities</p> <p>Work group compiles formative information</p> <p>High risk populations defined</p> <p>Common medical conditions identified</p> <p>Leading causes for healthcare use determined</p> <p>Employee interest documented</p> <p>Promising intervention practices reviewed</p> <p>Program developed with interventions selected</p> <p>Policies developed</p> <p>Evaluation plan completed</p>	<p>Policies implemented and promoted</p> <p>Program launched and interventions implemented</p> <p># of components/ topics offered</p> <p># of participants per component and % considered high risk</p> <p># attending health seminars and workshops</p> <p>% of total employees participating in program</p>	<p>Increased awareness of program, risk factors and related health conditions</p> <p>Improved health and work-related attitudes</p> <p>Change in knowledge, attitudes and beliefs</p> <p>Increased organizational commitment</p>	<p>Self-report of risks modification</p> <p>Increase in program activities such as:</p> <ul style="list-style-type: none"> • Physical activity • Selection of nutritious snacks from vending machines • Health screenings • Immunizations (depends on focus of program) <p>Decreased absenteeism (as a proxy for improved health, well being, and increased productivity)</p> <p>% Turnover</p>	<p>Policy changes enacted (e.g., smoke free campus)</p> <p>Environmental changes made (e.g., space allocated for exercise on-site)</p> <p>Improved physiological measures</p> <ul style="list-style-type: none"> • Blood pressure • Weight/BMI • Body fat • Aerobic fitness • Blood cholesterol <p>Decreased health care utilization</p> <p>Comprehensive preventive health benefits</p> <p>Decreased health care costs</p>

Summary

The evidence indicates that worksite health promotion programs are likely to reduce employee health risk, morbidity, and related costs; and improve health and well-being, if they contain the following:^{21, 22, 38}

- Individualized risk reduction counseling to high risk employees
- Sufficient duration (6 months to 5 years or longer is suggested) to achieve results
- Worksite environment encourages health and facilitates risk reduction
- Blend health promotion with human resources
- Define theoretical foundation and conceptual model of program activities
- Conduct rigorous evaluation using multiple data sources
- Market program and fully inform of program participation requirements
- Upper level management support
- Enact and promote policy and environmental changes to enhance safety and prevent occupational hazards

A major problem that has plagued health promotion worksite programs is low participation by employees. It is interesting to note that a high return on investment can still be achieved with low participation. By improving the health of a small subset of employees, especially those at risk for chronic illness and without exceptional participation rates among the entire employee population returns on investments can be achieved. However, gaining a smaller return (\$3 - \$6 per dollar invested) on the entire population will produce a higher total cost savings than gaining a higher return (\$7 - \$10 per dollar invested) on a smaller population subset such as those with a chronic illness enrolled in a disease management program.¹¹

While increasing participation in worksite health promotion programs among employees at all level of risk is a goal, engaging high-risk employees may produce important benefits. Additional research is suggested to identify best practices (e.g., tailored approaches, peer educators, Internet options that maintain privacy, on-site facilities, co-worker endorsement, etc.) for increasing participation overall, but particularly among individuals at higher risk of preventable illnesses. Nevertheless, when access to the worksite health promotion was equal for all workers, high-risk individuals were more likely to report participation. Additional activities for increasing participation include offering a more comprehensive program, increased marketing, incorporating occupational safety measures, and providing time off for employees to participate.

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